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Universal Test Lead Kits

Part # UTL-14K



Kit includes:

- One red, one black Universal straight test lead cords
- Two large spade lugs
- Four Banana plugs
- Two red, two black shielded alligator clips.
- One red, one black flexible test prods

Part # UTL-16K



Kit includes:

- One red, one black Universal right angle test lead cords
- Two medium spade lugs
 - Two tip plugs
- Two needle point plugs
 - Two Banana plugs
- Two red, two black shielded alligator clips
 - One red, one black flexible test prods

TV Alignment Tools

Part # AT-1

- 6 pieces set
- Strong, flexible
- Ends will not round or break

Heavy Duty Clip Leads

Part # CAL-5H



Kit includes:

- 5 piece set
- 24" long-assorted colors
- Insulated alligator clips on each end

Miscellaneous Replacement Antennas



STRAP-2H

Universal Telescoping Scanner Antenna (One piece construction) with right angle Motorola Plug, 5 Sections, 9 1/2" collapsed, 38 1/2" extended.



STEM-1BNC

Universal Telescoping Antenna with perpendicular BNC connector, 7 sections 6 5/8" collapsed, 40" extended.



STRAP-3BNC

Universal Telescoping Antenna with right angle BNC connector, 7 sections, 6 5/8" collapsed, 40" extended.

Rubber Duckie Antennas

Walkie-Talkie

Scanner



- VHF
- UHF
- UHF-T
- LOW
- HAM
- BUSINESS
- FM
- CB



- VHF
- UHF
- LOW
- HI/LO
- HI/LO/UHF
- HI/LO/UHF-T
- HAM
- GOVERNMENT

Replacement Antenna Rods Replacement Antennas for AM/FM Radios

FS Series (Complete Assembly)

Swivel Base-Female threaded base mounts on screw base in radio

PART#	BASE HEIGHT	BASE DIAM.	ABOVE SWIVEL	EXTENDED COLLAPSED	SECTIONS	TYPICAL MODEL
FS-3H	1 1/4"	.315	36"	6 5/8"	8	UNIVERSAL
FS-4H	4 1/2"	.315	19"	3 3/4"	7	UNIVERSAL
FS-5H	8 1/4"	.315	30"	8 1/4"	7	UNIVERSAL



Swivel Base-Locks into radio by means of screw through flat tongue underneath base assembly section

PART#	BASE HEIGHT	BASE DIAM.	TONGUE THICKNESS	ABOVE SWIVEL	EXTENDED COLLAPSED	SECTIONS	TYPICAL MODEL
FS-6H	1/2"	.415	.117	34"	9"	5	HITACHI
FS-7H	3/4"	.415	.117	34"	9"	6	HITACHI
FS-11H	1/2"	.422	.080	18"	4"	7	GE
FS-12H	3/4"	.315	.117	31"	9"	4	GE/SANYO
FS-14H	5/8"	.355	.117	33"	14"	3	SONY



Antennas

Swivel Base-Locks into radio by means of screw through quarter round tongue underneath base assembly section

PART#	BASE HEIGHT	BASE DIAM.	TONGUE THICKNESS	EXTENDED ABOVE SWIVEL	COLLAPSED	SECTIONS	TYPICAL MODEL
FS-8H	3/4"	.355	.117	41"	9"	5	PANASONIC
FS-9H	7"	.355	.117	36"	7"	9	PANASONIC/GE
FS-10H	3/4"	.355	.117	40"	14"	3	PANASONIC



SIM Series (Male Tongue)

For use when only antenna is broken. Remove screw through tongue of broken antenna (above base assembly section) and replace

PART#	BASE DIAM.	TONGUE THICKNESS	EXTENDED LENGTH	COLLAPSED	SECTIONS	TYPICAL MODEL
SIM-2H	.245	.060	24"	5"	6	SONY/UNIVERSAL
SIM-3H	.315	.078	36"	6 5/8"	8	UNIVERSAL
SIM-4H	.275	.105	40"	9 1/4"	5	UNIVERSAL
SIM-5H	.275	.140	42"	8 1/2"	6	UNIVERSAL
SIM-7H	.275	.078	36"	10"	5	PANASONIC/SANYO SONY/UNIVERSAL
SIM-10H	.245	.078	40"	14"	3	PANASONIC/WARDS
SIM-11H	.300	.078	18"	4"	7	GE
SIM-12H	.315	.082	31"	9"	4	GE/SANYO
SIM-18H	.315	.110	42"	6 5/8"	8	SONY



MIS Series (Female Slotted Base)

PART#	BASE DIAM.	SLOT	EXTENDED LENGTH	COLLAPSED	SECTIONS	TYPICAL MODEL
MIS-1H	.245	.060	16"	4 1/2"	6	SONY/UNIVERSAL
MIS-3H	.315	.078	36"	6 5/8"	7	SONY/UNIVERSAL



Adhesive Backed Bumpers

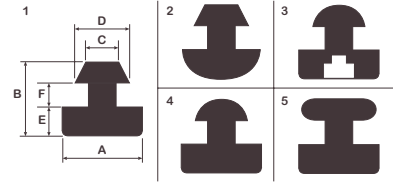
	PAD-5901 HT: .062" Dia: .250" Black	PAD-5802 HT: .062" Dia: .375" Black	PAD-5803 HT: .062" Dia: .500" Black	PAD-5804 HT: .062" Dia: .750" Black	PAD-5805 HT: .062" Dia: 1" Black
	PAD-5302-C HT: .085" Dia: .312" Clear	PAD-5303-C HT: .200" Dia: .440" Clear	PAD-5306-C HT: .150" Dia: .375" Clear	PAD-5003 HT: .195" Dia: .450" Black	PAD-5017 HT: .380" Dia: .760" Black
	PAD-5312-C HT: .140" Dia: .500" Clear	PAD-5012 HT: .140" Dia: .500" Black	PAD-5012-W White		
	PAD-5532 HT: .660" Dia: 1.880" Black	PAD-5001 HT: .140" Dia: .500" Black	PAD-5009 HT: .400" Dia: .880" Black		
	PAD-5532-W White	PAD-5009-W White			
	PAD-5007 HT: .100" Base: .400" Black	PAD-5008 HT: .120" Base: .500" Black	PAD-5018 HT: .230" Base: .500" Black	PAD-5023 HT: .300" Base: .812" Black	PAD-5705 HT: .240" Base: 1.250" Black
	PAD-5007-W White	PAD-5008-W White	PAD-5018-W White	PAD-5023-W White	PAD-5808 HT: .125" Width: .500" Black
	PAD-5510 HT: .150" Width: .500" Lgth: .50" Black	PAD-5008-G Gray	PAD-5023-Br Brown		
	PAD-5510-W White	Note: PAD 5510 can be cut to desired lengths for use under appliances, machines, etc, for sound vibration damping.			
	PAD-5077 HT: .160" Dia: .650" Black	PAD-5514 HT: .520" Base: .810" Black			
		PAD-5514-W White			
	PAD-5744 HT: .160" Dia: .750" Black				
	PAD-5806 HT: .062" Base: .625" Black	PAD-5807 HT: .062" Base: .875" Black			

*Note: Tolerances in height, length, width, and diameter= ± .02

Button Bumpers

All items shown are molded of natural and synthetic rubber compounds or reclaimed rubber in combination or blends thereof. *Items are listed in ascending order of diameter and height for each Figure Number.*

PART NO.	A MAX. DIAM..	B HGT.	C INSERT HEAD	D INSERT HEAD BASE	E BASE HGT.	F CHNL WIDTH	NOMINAL DURO-METER	FIG NO.
BUT-3169	3/8	1/4	1/4	5/16	1/16	.070	60	1
BUT-3062	3/8	1/4	1/4	5/16	3/32	3/64	60	1
BUT-3061	3/8	9/32	3/16	1/4	1/8	3/64	65	1
BUT-4061	3/8	5/16	3/16	1/4	1/8	1/16	60	1
BUT-4161	3/8	11/32	3/16	1/4	1/8	3/32	60	1
BUT-4162	3/8	11/32	1/4	5/16	5/32	1/16	60	1
BUT-3068	3/8	7/16	5/32	7/32	1/4	1/32	55	1
BUT-3063	7/16	1/2	1/4	5/16	3/16	3/64	60	1
BUT-3072	1/2	21/64	3/32	3/8	1/8	3/64	60	1
BUT-4071	1/2	3/8	3/16	1/4	1/8	1/16	50	1
BUT-4167	1/2	27/64	9/32	13/32	1/4	3/64	60	1
BUT-4171	1/2	7/16	3/16	1/4	3/16	1/16	55	1
BUT-4165	1/2	7/16	1/4	5/16	19/64	1/16	55	1
BUT-4075	1/2	9/16	13/64	1/4	5/16	1/16	55	1
BUT-4081	9/16	1/4	9/32	3/8	1/16	1/16	55	1
BUT-1160	3/4	1/2	.480	9/16	1/8	.050	55	1
BUT-611	7/8	1/2	5/16	13/32	1/4	5/64	65	1
BUT-4076	1/2	7/16	1/4	5/16	3/16	1/16	60	2
BUT-3065	7/16	11/32	1/4	5/16	1/8	1/16	60	2
BUT-306	3/8	3/8	3/16	17/64	3/16	.040	55	3
BUT-307	1/2	7/16	1/4	11/32	1/4	.040	55	3
BUT-407	1/2	7/16	1/4	11/32	1/4	1/16	55	3
BUT-317	1/2	1/2	1/4	11/32	1/4	1/8	55	3
BUT-308	5/8	9/16	3/8	15/32	5/16	.040	65	3
BUT-4068	7/16	17/64	3/16	1/4	3/32	5/64	60	4
BUT-3263	7/16	7/16	1/4	5/16	3/16	1/8	55	4
BUT-4083	5/8	9/32	13/32	17/32	1/8	3/32	60	5

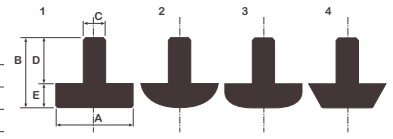


Bumpers & Grommets

Stem Bumpers

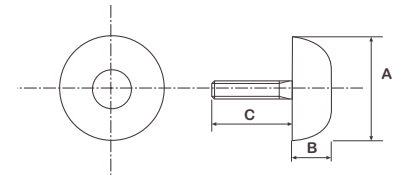
PART NO	A MAX. DIAM.	B HGT.	C STEM WIDTH	D STEM HGT.	E BASE HGT.	NOMINAL DURO-METER	FIG NO.
STE-602	3/16	.134	1/8	3/32	.040	75	1
STE-607	1/2	7/16	5/16	5/16	1/8	75	1
STE-6071	1/2	1/2	1/4	11/32	1/8	75	1
STE-601	1/4	5/32	1/8	3/32	1/8	75	2
STE-601W	1/4	5/32	1/8	3/32	1/8	65	2
STE-6011W	1/4	5/16	1/8	3/16	1/8	65	2
STE-604	3/8	5/16	.196	3/16	1/8	75	3
STE-6091	5/8	1/2	.507	3/8	1/8	75	4

Suffix W= White

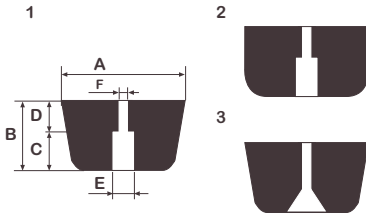


Machine Bumpers

PART NO.	A O. D.	B HEIGHT	C SCREW LENGTH	SCREW SIZE	NOMINAL DURO-METER
MAC-51	1/2	1/4	1/4	8-32	75
MAC-62	5/8	5/16	1/4	8-32	75
MAC-75	3/4	3/8	1/4	8-32	75
MAC-87	7/8	1/2	1/2	10-32	75
MAC-100	1	1/2	1/2	10-32	75
MAC-112	1 1/8	1/2	1/2	10-32	75



Recessed Bumpers

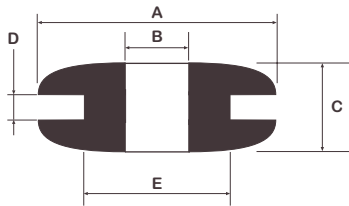


Suffix S - Steel Washer Insert

PART NO.	A MAX DIAM.	B HGT.	C SCREW HEAD DEPTH	D SCREW SHAFT DEPTH	E SCREW BASE OPENING	F SCREW SHAFT WIDTH	NOMINAL DURO- METER	FIG NO.
REC-2062	3/8	1/4	3/16	1/16	1/4	5/32	75	1
REC-2082	5/8	1/2	1/4	1/4	5/16	5/32	75	1
REC-2082S	5/8	1/2	1/4	1/4	5/16	5/32	75	1
REC-2090	5/8	5/8	7/16	3/16	5/16	.147	75	1
REC-2090S	5/8	5/8	7/16	3/16	5/16	.147	75	1
REC-2184S	3/4	1/4	3/16	1/16	13/32	1/8	75	1
REC-2084	3/4	3/8	3/16	3/16	7/16	3/16	75	1
REC-2084S	3/4	3/8	3/16	3/16	7/16	3/16	75	1
REC-2096	15/16	5/8	7/16	3/16	7/16	7/32	75	1
REC-2096S	15/16	5/8	7/16	3/16	7/16	7/32	75	1
REC-206	3/8	3/16	3/32	3/32	3/16	5/64	75	2
REC-2061	7/16	5/32	3/32	1/16	1/4	5/32	75	2
REC-207	1/2	1/4	1/8	1/8	1/4	1/8	75	2
REC-207S	1/2	1/4	1/8	1/8	1/4	1/8	75	2
REC-2081S	5/8	5/16	3/16	1/8	1/4	3/16	75	2
REC-2088	5/8	5/16	3/16	1/8	1/4	1/8	75	2
REC-2085	3/4	3/8	3/16	3/16	5/16	5/32	75	2
REC-2085S	3/4	3/8	3/16	3/16	5/16	5/32	75	2
REC-209	13/16	1/2	1/4	1/4	5/16	5/32	75	2
REC-209S	13/16	1/2	1/4	1/4	5/16	5/32	75	2
REC-2097	1	1	5/8	3/8	5/16	5/32	75	2
REC-2097S	1	1	5/8	3/8	5/16	5/32	75	2
REC-2099S	1	1 1/2	5/8	7/8	5/16	5/32	75	2
REC-2087	3/4	9/32	5/32	1/8	1/4	1/8	75	3
REC-2095	15/16	3/8	3/16	3/16	3/8	5/32	75	3
REC-2095S	15/16	3/8	3/16	3/16	3/8	5/32	75	3
REC-2197S	1	1/2	1/4	1/4	3/8	3/16	75	3

MS-35489 Grommets

Army-Navy Approved AN 931

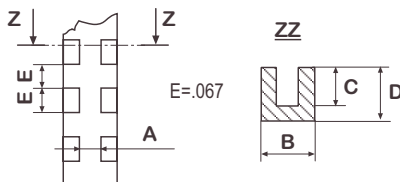


MS#	AN 931 #.	A O. D	B I. D	C THICKNESS	D WIDTH GROOVE	E O.D GROOVE
MS-35489-4	AN 931-3-5	7/16	3/16	3/16	1/16	5/16
MS-35489-6	AN 931-4-7	5/8	1/4	3/16	1/16	7/16
MS-35489-9	AN 931-5-9	13/16	5/16	5/16	1/16	9/16
MS-35489-11	AN 931-6-10	7/8	3/8	5/16	1/16	5/8
MS-35489-13	AN 931-7-11	15/16	7/16	5/16	1/16	11/16
MS-35489-14	AN 931-8-13	1-1/16	1/2	5/16	1/16	13/16
MS-35489-17	AN 931-10-14	1-1/8	5/8	5/16	1/16	7/8
MS-35489-19	AN 931-11-16	1-5/16	11/16	3/8	1/16	1
MS-35489-20	AN 931-12-17	1-3/8	3/4	3/8	1/16	1-1/16
MS-35489-22	AN 931-14-20	1-5/8	7/8	7/16	1/16	1-1/4
MS-35489-23	AN 931-16-22	1-3/4	1	7/16	1/16	1-3/8
MS-35489-35	AN 931-A4-7	5/8	1/4	3/16	1/8	7/16
MS-35489-40	AN 931-A6-10	7/8	3/8	5/16	1/8	5/8
MS-35489-42	AN 931-A7-11	15/16	7/16	5/16	1/8	11/16
MS-35489-43	AN 931-A8-13	1-1/16	1/2	5/16	1/8	13/16
MS-35489-49	AN 931-A12-17	1-3/16	3/4	3/8	1/8	1-1/16

(Military Standard) - Specification: MIL-G-3036 - Grommet, Elastic, Hot Oil and Coolant Resistant Material.

Grommets listed are most commonly used. Prices and availability for other MS or AN 931 grommets are offered for quotation upon request.

Caterpillar Grommets

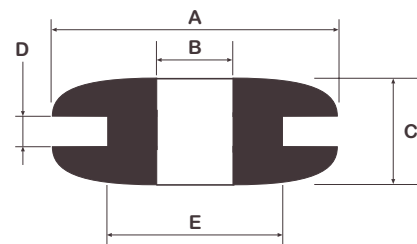


In addition to 12 3/4" lengths, Caterpillar Grommets are now available on 100', 500' & 1000' spools. Ideally suited to conform to irregular holes of any size, the "caterpillar" grommet requires no cementing. Available in several widths, the caterpillar grommet will fit a variety of metal thicknesses. Available from stock in 12 3/4" lengths the "caterpillar" can be easily cut to any desired length, they can also be molded in any length or size with minimum quantity orders. The "caterpillar" is used extensively in aircraft and space vehicles, computer and electronic fields, appliances, office furniture, lighting fixtures, and a variety of other industries to insulate wires which must pass through a hole in sheet metal. "Caterpillar" grommets conform to military standards #MS21266, and are molded of nylon which conforms to MIL P-20693A type 1 requirements.

	A	B	C	D	E	Metal Thickness
CAT1	.056	.150	.100	.155	.067	.015 to .052
CAT2	.090	.175	.100	.155	.067	.052 to .085
CAT3	.131	.220	.100	.155	.067	.085 to .128

Bumpers & Grommets

Grommets



PART NO.	A O. D	B I. D.	C HEIGHT	D GROVE W	E GROVE DIAM..	NOM. DUROMETER
GOB-2101	1/4	1/8	1/32	1/32	3/16	65
GOB-2104	11/32	7/64	3/16	1/16	13/64	65
GOB-2105	11/32	1/8	3/16	1/16	3/16	50
GOB-210	11/32	1/8	3/16	1/16	1/4	65
GOB-215	7/16	3/16	7/32	1/16	5/16	65
GOB-415	7/16	3/16	3/16	3/32	5/16	65
GOB-2171	1/2	3/16	3/16	1/32	3/8	65
GOB-2173	1/2	3/16	7/32	1/16	5/16	65
GOB-217	1/2	3/16	7/32	1/16	3/8	65
GOB-2172	1/2	1/4	5/32	1/32	5/16	65
GOB-219	17/32	7/32	13/32	3/32	11/32	60
GOB-2201	9/16	3/16	3/8	1/8	7/16	60
GOB-220	9/16	1/4	1/4	1/16	3/8	65
GOB-221	9/16	9/32	1/4	1/16	3/8	65
GOB-2211	9/16	9/32	1/4	1/16	13/32	65
GOB-321	9/16	9/32	5/16	1/8	3/8	65
GOB-324	19/32	5/16	3/8	1/8	7/16	65
GOB-2260	5/8	1/4	9/32	1/16	3/8	65
GOB-3251	5/8	1/4	3/8	1/8	3/8	50
GOB-2252	5/8	5/16	1/4	1/16	7/16	65
GOB-225	5/8	3/8	1/4	1/16	1/2	65
GOB-2258	5/8	3/8	11/32	1/16	17/32	65
GOB-2261	3/4	1/4	11/64	1/16	9/16	65
GOB-1101-1	3/4	3/8	1/2	1/8	17/32	60
GOB-1101	3/4	7/16	1/4	1/16	9/16	65
GOB-230	13/16	1/2	9/32	1/16	5/8	65
GOB-2271	7/8	3/8	5/16	1/16	5/8	65
GOB-1102-5	1 1/16	5/16	1/2	5/32	3/4	55
GOB-1102	1 1/16	1/2	5/16	1/16	13/16	65
GOB-1102-2	1 1/16	1/2	11/32	1/8	13/16	65
GOB-2301	1 1/16	11/16	1/4	1/16	13/16	65
GOB-1103	1 1/8	5/8	5/16	1/16	7/8	65
GOB-1105	1 1/8	13/16	1/4	3/64	15/16	65
GOB-1104	2 1/8	1 1/2	7/16	1/16	1 3/4	65

C H E M I C A L S

AIR & FREEZE

Dust-Off

Blows away dust and dirt from hard to reach places.
Ozone safe. Part# RU 305.
10 oz -285 g.



Dust-Off Refill

Same as above but with screw top adapted for chrome trigger sprayer.
Ozone safe.
Part # RU 305 R. 10 oz-285



Super Dust-Off

Extra pressure dust remover. 100 psi
Ozone safe. Part# RU 405.
10 oz -285 g.



Freeze 2000

Super cold to -60 F. For locating thermal intermittents of electronic components. Ozone safe.
Part # RU 306 R. 10 oz-285 g.



CLEANERS

Flux Clean

Extra Strength. Great for ionic and rosin fluxes.
Part # RU 101. 16 oz-450 g



Contact 2000

High performance for electrical contacts and electronic components.
Part # RU 102. 16 oz-340 g



Cleaner & Lubricant

Cleans and lubricates all electronic contacts.
Part # RU 103. 16 oz-325 g.



CLEANERS



Head Cleaner

For cleaning audio and video recording heads.

Part # RU 104. 4 oz-110 ml.



Glass Cleaner

Cleans glass and plastic surfaces.

Part # RU 109. 20 oz-500 g.



Screen Clean

For static-free cleaning and polishing of computer screen.

Part # RU 110. 8 oz-250 ml.



Audio-Video Clean

Static Free. High performance cleaner.

Part#RU 201. 8 oz-250 ml.



Super Wash

Fast drying electronic equipment cleaner. Leaves no residue.

Part# RU 202. 20 oz-400 g.



Super 99

3M HFE solvent. No CFC's or HCFC's. Non flammable cleaner for circuit boards, contacts and connectors. Fast evaporating, leaves no residue. Excellent dielectric properties. Part # RU 204. 12 oz-340 g

OTHERS



R2

Rubber rejuvenator

Part # RU 203. 4 oz-110 ml

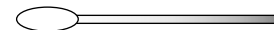
Swabs

Part # RU 501

6" Cotton swab. 100/pkg

Part # RU 502

3" Chamois swab. 10/pkg



INDUSTRIAL PRODUCTS

Smooth Slip

Silicone lubricant for metal, wood, rubber, cardboard, etc. Mold release agent.

RU 13500. 20 oz-400 g.



Multi-5

Penetrating oil, exceptional rust and corrosion protection.

Displaces moisture and loosens rusty parts. Lubricates and cleans

RU 12340. 16 oz-340 g.



Wyte Grease

White aerosol grease. Lithium base, water resistant.

Resists heavy loads. # RU 11397. 16 oz-290 g



JY-8

Solvent degreaser, contains citrus oil. Cleans all greasy

and oily parts. Dries quickly, leaves no residue.

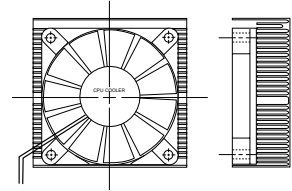
RU 16510. 20 oz-400 g.



CPU Cooling Fans with Heatsink

Part #	Description
T486	For use with 486 processors
T586	For use with Pentium 74-200 processors
TPENTRO	For use with Pentium Pro processors

- Easily installed
- 12 VDC
- Low Noise
- Anodized aluminum heatsink



Cooling Fans

Brushless DC Fans

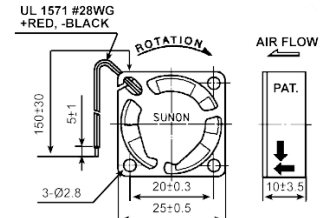
- Brushless DC motor design.
- Injection molded non-flammable thermoplastic UL94V-0 rated frame and impeller
- Life-lubricated sleeve or ball bearing systems
- Class E integral ground system rated @ 100°C
- Electronic locked rotor protected
- -10°C to +70°C operating temperature
- Operating Voltage is ±15% of rating
- Polarity protected

Axial AC Fans

- Shaded-pole motor construction
- Die-cast aluminum black frame
- Injection molded black thermoplastic UL94V-0 rated impeller
- Life-lubricated sleeve or ball bearing systems
- Class B integral ground system rated @ 120°C
- Impedance protected
- -10°C to +70°C operating temperature

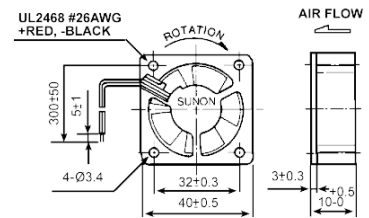
25mm x 25mm x 10mm/.98" x .98" x .39"

Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2825	5VDC	2	.12	10,000	24	Ball
T2855	12VDC	2	.06	10,000	24	Ball



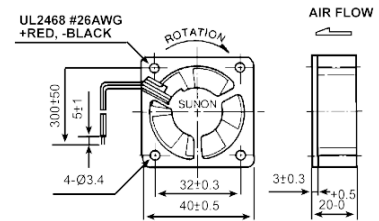
40mm x 40mm x 10mm/1.57" x 1.57" x .39"

Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2730	5VDC	5.6	.11	6,000	24	Sleeve
T2760	12VDC	5.6	.05	6,000	24	Sleeve



40mm x 40mm x 20mm/1.57" x 1.57" x .79"

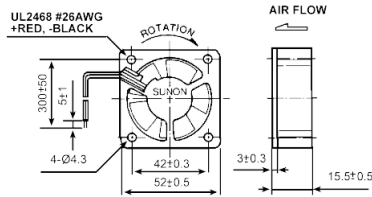
Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2640	5VDC	6.5	.21	6,000	25.5	Sleeve
T2670	12VDC	6.5	.07	6,000	25.5	Sleeve
T2680	12VDC	5.2	.05	4,500	22.8	Sleeve
T2700	24VDC	6.5	.05	6,000	25.5	Sleeve



Cooling Fans

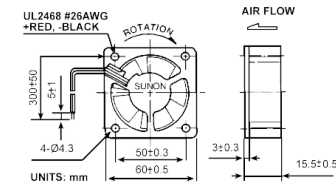


52mm x 52mm x 15mm/2.05" x 2.05" x .59"



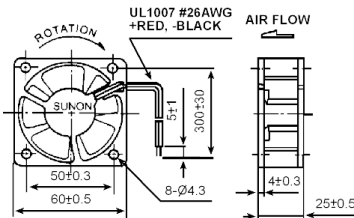
Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2580	12VDC	12.4	.14	5,000	27	Sleeve

60mm x 60mm x 15mm/2.36" x 2.36" x .59"



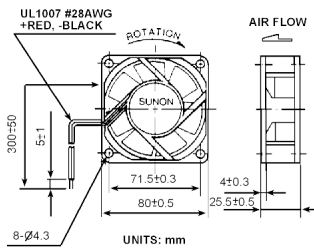
Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2460	5VDC	17.8	.39	4,000	31	Sleeve
T2490	12VDC	17.8	.16	4,000	31	Sleeve
T2500	12VDC	14.8	.09	3,300	26	Sleeve

60mm x 60mm x 25mm/2.36" x 2.36" x .98"



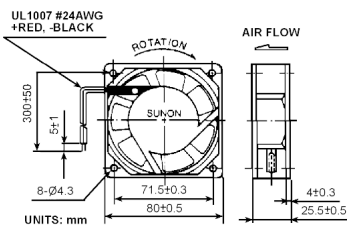
Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2390	12VDC	21.7	.19	4,500	34	Sleeve
T2400	12VDC	17.6	.13	3,800	31	Sleeve
T2410	12VDC	15.9	.09	3,300	26.7	Sleeve
T2420	24VDC	21.7	.11	4,500	34	Sleeve
T2430	24VDC	17.6	.08	3,800	31	Sleeve

80mm x 80mm x 25mm/3.15 x 3.15" x .98"



Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2300	12VDC	41.7	.22	3,000	34	Sleeve
T2305	12VDC	42.5	.22	3,200	36.5	Ball
T2310	12VDC	34.4	.16	2,650	30	Sleeve
T2315	12VDC	35	.16	2,800	32.5	Ball
T2320	12VDC	29.4	.12	2,200	24.5	Sleeve
T2325	12VDC	30	.12	2,500	28.5	Ball
T2330	24VDC	41.7	.12	3,000	34	Sleeve
T23230	115VAC	21	.10	2,750	33	Sleeve
T23235	115VAC	22	.10	2,900	34.5	Ball

80mm x 80mm x 38mm/3.15 x 3.15" x 1.5"

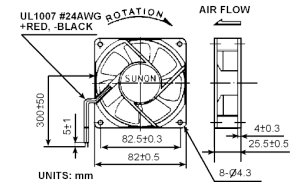


Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T3190	115VAC	30	.13	2,750	35	Sleeve
T3195	115VAC	31	.13	2,850	36.5	Ball
T3205	240VAC	31	.06	2,850	36.5	Ball

Cooling Fans

92mm x 92mm x 25mm/3.62" x 3.62" x .98"

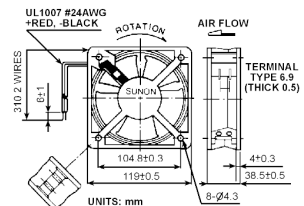
Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2210	12VDC	50	.23	2,800	35	Sleeve
T2215	12VDC	51	.23	3,000	37	Ball
T2225	12VDC	45	.18	2,600	34	Ball
T2230	12VDC	39	.13	2,100	27	Sleeve
T2235	12VDC	40	.13	2,300	28	Ball
T2240	24VDC	50	.12	2,800	35	Sleeve
T3150*	115VDC	36	.11	2,750	39	Sleeve
T3155*	115VAC	37	.11	2,850	40	Ball
T3165*	240VAC	37	.06	2,850	40	Ball



* Uses terminals for VAC input and uses frame ground lug

120mm x 120mm x 38mm/4.72" x 4.72" x 1.52"

Part #	Volt	CFM	AMP	RPM	Noise (DBA)	Bearing
T2120	12VDC	107	.57	3,000	41	Sleeve
T2140	12VDC	83	.27	2,300	34	Sleeve
T2170	24VDC	83	.17	2,300	34	Sleeve
T3010*	115VAC	115	.24	3,100	49	Sleeve
T3015*	115VAC	117	.24	3,150	50	Ball
T3060*	115VAC	105	.18	2,900	48	Sleeve
T3065*	115VAC	107	.18	3,050	50	Ball
T3100*	115VAC	76	.11	2,200	38	Sleeve
T3105*	115VAC	78	.11	2,300	39	Ball
T3020*	240VAC	115	.12	3,100	49	Sleeve
T3075*	240VAC	107	.11	3,050	50	Ball

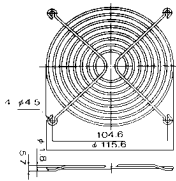


* Uses terminals for VAC input and uses frame ground lug

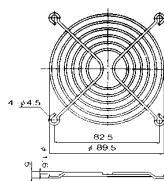
- All fans available in bulk quantities
- All specifications are subject to change without notice

Accessories

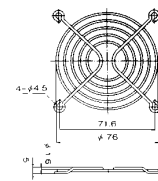
Metal Finger Guards



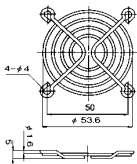
DOWPAK PN T3500
for 120mm/4.72" sq.fan



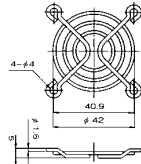
DOWPAK PN T3505
for 92mm/3.62" sq.fan



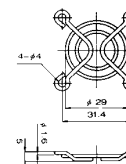
DOWPAK PN T3510
for 80mm/3.15" sq.fan



DOWPAK PN T3515
for 60mm/2.36" sq.fan

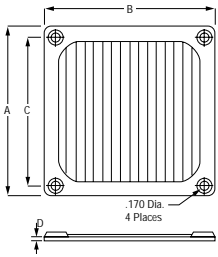


DOWPAK PN T3520
for 52mm/2.05" sq.fan



DOWPAK PN T3525
for 40mm/1.57" sq.fan

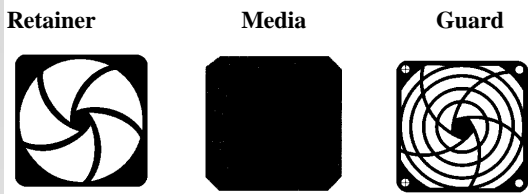
Aluminum Fan Filters



- Mill finish to enhance EMI/RFI shielding
- Tightly woven aluminum corrugated mesh screen in a formed aluminum frame
- Easily washed in solvent or degreaser

Part No.	Description	Dimensions			
		A	B	C	D
T3530	For use with 120mm/4.72" fans	4.68	4.68	4.13	.175
T3535	For use with 92mm/3.62" fans	3.62	3.62	3.245	.175
T3540	For use with 80mm/3.15" fans	3.30	3.30	2.810	.175

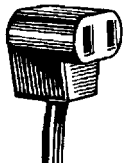
Plastic Fan Filter Assemblies



Dowpak Part #	Description
T3550	For use with 120mm/4.72" fans
T3555	For use with 92mm/3.62" fans
T3560	For use 80mm/3.15" fans
T4105	Media for 120mm assembly T3550
T4205	Media for 92mm assembly T3555
T4305	Media for 80mm assembly T3560

- Retainer and guard for media filter assembly
- Removes dust and contaminating particles

Fan Power Cords



Dowpak Part no.	DESCRIPTION
T3636	36" long 90 degree connector w/ stripped end
T3660	60" long 90 degree connector w/ stripped end
T3661	60" long 90 degree connector w/ male AC plug



Dowpak Part no.	DESCRIPTION
T3736	36" long straight connector w/ stripped end
T3760	60" long straight connector w/ stripped end
T3761	60" long straight connector w/ male AC plug

Alphabet

Black	White	Size
AM-1	AM-1W	1/8"
AM-2	AM-2W	1/4"
AM-3	AM-3W	3/8"
AM-4	AM-4W	1/2"
AM-5	AM-5W	21/32"
AM-6	AM-6W	25/32"



Numerals

Black	White	Size
NM-1	NM-1W	1/8"
NM-2	NM-2W	1/4"
NM-3	NM-3W	3/8"
NM-4	NM-4W	1/2"
NM-5	NM-5W	21/32"
NM-6	NM-6W	25/32"



Electronic Words Markit®

An electronic glossary with over a thousand words from "AC" to "ZOOMS" in alphabetical order for easy application to control panels, prototypes, drawings, terminal boards, electrical and mechanical components:

- EM-1 (Black)
- EM-1W (White)



Dial Marking Kit

Contains dial patterns, arcs, wedges, lines, dots, symbols, graduation lines, lines for rotary tap switches, potentiometers and calibrated meter dials.

- DM-1 (14 pages Black)
- (13 Pages White)



Terminal and Chassis Markit®

Contains numbers (through 200, 1 through 0 and 01 through 09) plus complete alphabets. All numbers 1/8" high. For application in prototypes and production:

- TC-1 (15 pages Black)
- (12 pages White)



Logic Diagram Symbols Markit®

Contains flops, arrows, arrowheads, time delays, and, nand, or, nor, registers, shift registers, connection, dots, shmidt triggers, single shots:

- LD-1 (Black)



Printed Circuit Pads Markit®



Thousands of printed circuit pads: Circles (with center hole), teardrops, teardrops with vanishing points, elbows, elbow (terminal), T-connector, fillets, ovals:
PC-1 (Black)

Each Markit® contains 27 3"x 6" pages in Loose Leaf form bound with Plastic Spiral Ring

Markits (Numeral) Contents

The following table denotes the quantity of numerals per kit. Symbols are included

ITEM	SIZE	1	2	3	4	5	6	7	8	9	0	+	-	=	C	\$.	/	;
NM-1	1/8"	1253	702	703	702	702	702	702	702	702	2079	297	297						
NM-1W	1/8"	1253	702	702	702	702	702	702	702	702	2079	297	297						
NM-2	1/4"	144	144	144	144	144	144	144	144	144	144	56	106	56	78	67	78	78	78
NM-2W	1/4"	144	144	144	144	144	144	144	144	144	144	56	106	56	78	67	78	78	78
NM-3	3/8"	86	86	86	86	86	86	86	86	86	86	29	58	40	43	40	43	40	40
NM-3W	3/8"	86	86	86	86	86	86	86	86	86	86	29	58	40	43	40	43	40	40
NM-4	1/2"	72	72	72	72	72	72	72	72	72	72	25	54	25	43	36	47	36	47
NM-4W	1/2"	72	72	72	72	72	72	72	72	72	72	25	54	25	43	36	47	36	47
NM-5	21/32"	52	42	42	42	42	42	42	42	42	42	13	28	13	26	21	39	21	34
NM-5W	21/32"	52	42	42	42	42	42	42	42	42	42	13	28	13	26	21	39	21	34
NM-6	25/32"	42	36	36	36	36	36	36	36	36	36	10	22	10	18	18	36	18	32
NM-6W	25/32"	42	36	36	36	36	36	36	36	36	36	10	22	10	18	18	36	18	32

Markits (Alphabet) Contents

The following table denotes the quantity of letters per kit. All caps.

Item	Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
AM-1	1/8"	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351	297	297	297	297	297	297	297	297	297	297	297
AM-1W	1/8"	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351	351	297	297	297	297	297	297	297	297	297	297	297
AM-2	1/4"	219	73	73	73	219	73	73	73	459	26	26	34	39	34	185	47	26	73	73	73	146	21	13	13	13	13	13
AM-2W	1/4"	219	73	73	73	219	73	73	73	459	26	26	34	39	34	185	47	26	73	73	73	146	21	13	13	13	13	13
AM-3	3/8"	72	36	36	36	108	36	36	36	216	16	20	36	36	36	72	26	10	36	36	36	52	20	6	10	10	10	10
AM-3W	3/8"	72	36	36	36	108	36	36	36	216	16	20	36	36	36	72	26	10	36	36	36	52	20	6	10	10	10	10
AM-4	1/2"	72	36	36	36	108	36	36	36	108	16	20	36	36	36	72	26	10	36	36	36	52	20	4	6	6	6	6
AM-4W	1/2"	72	36	36	36	108	36	36	36	108	16	20	36	36	36	72	26	10	36	36	36	52	20	4	6	6	6	6
AM-5	21/32"	36	18	18	18	36	18	18	18	18	7	11	18	18	18	36	11	7	18	18	18	36	5	8	4	7	7	7
AM-5W	21/32"	36	18	18	18	36	18	18	18	18	7	11	18	18	18	36	11	7	18	18	18	36	5	8	4	7	7	7
AM-6	25/32"	36	18	18	18	36	18	18	18	18	7	11	18	18	18	36	11	7	18	18	18	36	5	5	4	7	7	7
AM-6W	25/32"	36	18	18	18	36	18	18	18	18	7	11	18	18	18	36	11	7	18	18	18	36	5	5	4	7	7	7

EXP-1	Experimenter, Home & Intercom 4 sheets black	TC-13	Terminal & chassis 3 sheets black
EXP-1W	Experimenter, Home & Intercom 4 sheets white	TC-13W	Terminal & chassis 3 sheets white
AUD-1	Audio, TV & Hi-Fi 4 sheets black	AM-13	Alphabets (1/8" high) 3 sheets black
AUD-1W	Audio, TV & Hi-Fi 4 sheets white	AM-13W	Alphabets (1/8" high) 3 sheets white
TES-1	Test and Industrial 4 sheets black	AM-23	Alphabet (1/4" high) 3 sheets black
TES-1W	Test and Industrial 4 sheets white	AM-23W	Alphabet (1/4" high) 3 sheets white
HAM-1	Amateur radio & CB 4 sheets black	NM-13	Numerals (1/8" high) 3 sheets black
HAM-1W	Amateur radio & CB 4 sheets black	NM-13	Numerals (1/8" high) 3 sheets black
DM-13	Dial Marking 3 sheets black	NM-23	Numerals (1/4" high) 3 sheets black
DM-13W	Dial Marking 3 sheets white	NM-23W	Numerals (1/4" high) 3 sheets white

Metric Round Head Plastic Screw

Pitch x Length

Part No.	Screw Size	Part No.	Screw Size	Part No.	Screw Size
SCR-400	M3x8	SCR-405	M4 x 20	SCR-410	M5 x 25
SCR-401	M3 x 10	SCR-406	M4 x 25	SCR-411	M6 x 8
SCR-402	M3 x 12	SCR-407	M5 x 8	SCR-412	M6 x 12
SCR-403	M4 x 8	SCR-408	M5 x 12	SCR-413	M6 x 20
SCR-404	M4 x 14	SCR-409	M5 x 20	SCR-414	M6 x 25



Metric Pan Head Plastic Screw

Pitch x Length

Part No.	Screw Size	Part No.	Screw Size	Part No.	Screw Size
SCR-500	M2.6 x 7	SCR-505	M4 x 8	SCR-509	M4 x 25
SCR-501	M3 x 6	SCR-506	M4 x 10	SCR-510	M5 x 20
SCR-502	M3 x 8	SCR-507	M4 x 12	SCR-511	M6 x 16
SCR-503	M3 x 10	SCR-508	M4 x 20	SCR-512	M6 x 20
SCR-504	M3 x 12				



Please Note:

M2.6-PITCH is 0.45mm M5-PITCH is 0.8mm
M3-PITCH is 0.5mm M6-PITCH is 1.0mm
M4-PITCH is 0.7mm M= MILLIMETER

Metric Nut Plastic

Part No	Screw Size
NUT-200	M 2.6
NUT-201	M 3
NUT-202	M 4
NUT-203	M 5
NUT-204	M 6



Round Head Steel Machine Screw (Nickel Plated)

Part No.	Screw Size	Part No.	Screw Size	Part No.	Screw Size
SCR-100	#4-36 x 1/4"	SCR-106	#6-32 x 1/4"	SCR-111	#8-32 x 3/4"
SCR-101	#4-36 x 1/2"	SCR-107	#6-32 x 1/2"	SCR-112	#8-32 x 1"
SCR-102	#4-36 x 3/4"	SCR-108	#6-32 x 3/4"	SCR-113	#10-32 x 1/2"
SCR-103	#4-40 x 1/4"	SCR-109	#8-32 x 1/4"	SCR-114	#10-32 x 3/4"
SCR-104	#4-40 x 1/2"	SCR-110	#8-32 x 1/2"	SCR-115	#10-32 x 1"
SCR-105	#4-40 x 3/4"				



Philips Head Round Steel Screw (Nickel Plated)

Part No.	Screw Size	Part No.	Screw Size
SCR-200	#6-32 x 1/4"	SCR-300	#8-32 x 1/4"
SCR-201	#6-32 x 1/2"	SCR-301	#8-32 x 1/2"
SCR-202	#6-32 x 3/4"	SCR-302	#8-32 x 3/4"
SCR-203	#6-32 x 1"	SCR-303	#8-32 x 1"



Design & Engineering Kits

EK-200-Nylon Screws

EK-400-Nylon Spacers & Screw Insulators



Hex Steel Nut (Nickel Plated)



Part No.	Screw Size	Part No.	Screw Size
NUT-100	#4-40 x 1/4 x 3/32"	NUT-103	#8-32 x 1/4 x 3/32"
NUT-101	#6-32 x 1/4 x 3/32"	NUT-104	#8-32 x 5/18 x 7/64"
NUT-102	#6-32 x 5/16 x 7/64"	NUT-105	#10-32 x 3/8 x 1/8"

Round Head Screws (Nylon)



Part #	Thread	Length	Part #	Thread	Length
RHNY-003	2-56	1/4	RHNY-029	6-32	1
RHNY-0052	2-56	1/2	RHNY-031	8-32	1/4
RHNY-011	4-40	1/4	RHNY-033	8-32	3/8
RHNY-015	4-40	1/2	RHNY-034	8-32	1/2
RHNY-020	4-40	1	RHNY-036	8-32	3/4
RHNY-023	6-32	1/4	RHNY-037	8-32	1
RHNY-024	6-32	3/8	RHNY-043	10-32	1/4
RHNY-025	6-32	1/2	RHNY-045	10-32	1/2
RHNY-026	6-32	5/8	RHNY-048	10-32	1
RHNY-028	6-32	3/4			

- Threads per Unified Standard, Class 2B; UNC, UNF
- 6/6 Nylon per ASTM D4066
- UL Flammability 94 V-2
- Oxygen Index: 30
- Non-conductive, Non-corrosive; resistant to fuels, lubricants and most chemicals.

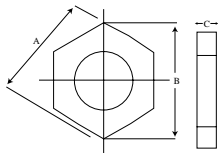
Binding Head Screws (Nylon)



Part #	Thread	Length	Part #	Thread	Length
BINY-006	2-56	1/4	BINY-028	6-32	3/4
BINY-0072	2-56	1/2	BINY-029	6-32	1
BINY-013	4-40	1/4	BINY-031	8-32	1/4
BINY-017	4-40	1/2	BINY-033	8-32	3/8
BINY-021	4-40	1	BINY-034	8-32	1/2
BINY-024	6-32	1/4	BINY-036	8-32	3/4
BINY-025	6-32	3/8	BINY-037	8-32	1
BINY-026	6-32	1/2	BINY-043	10-32	1/4
BINY-027	6-32	5/8	BINY-045	10-32	1/2
			BINY-048	10-32	1

- Threads per Unified Standard, Class 2B; UNC, UNF
- 6/6 Nylon per ASTM D4066
- UL Flammability 94 V-2
- Oxygen Index: 30
- Non-conductive, Non-corrosive; resistant to fuels, lubricants and most chemicals.

Hex Nut (Nylon)



Part #	Thread	C Thickness (Inch)	A Across Flats (Inch)	B Across Points (Inch)
HNNY-002	2-56	.065	.185	.210
HNNY-004	4-40	.090	.245	.280
HNNY-006	6-32	.110	.310	.350
HNNY-008	8-32	.125	.340	.388
HNNY-0102	10-32	.130	.370	.420

- Internal threads per Unified Standard, Class 2B, UNC, UNF
- Available in 6/6 Natural Nylon or Dyed Black Nylon: Contact Factory for availability in special materials.
- UL flammability 94 V-2
- Non-conductive, Non-corrosive. Resistant to fuels, lubricants and most chemicals

Fillister Head Screws (Nylon)

Part #	Thread	Length	Part #	Thread	Length
FLNY-006	2-56	1/4	FLNY-049	6-32	3/4
FLNY-011	2-56	1/2	FLNY-051	6-32	1
FLNY-025	4-40	1/4	FLNY-056	8-32	1/4
FLNY-030	4-40	1/2	FLNY-059	8-32	3/8
FLNY-034	4-40	1	FLNY-061	8-32	1/2
FLNY-043	6-32	1/4	FLNY-063	8-32	3/4
FLNY-045	6-32	3/8	FLNY-064	8-32	1
FLNY-047	6-32	1/2	FLNY-075	10-32	1/4
FLNY-048	6-32	5/8	FLNY-078	10-32	1/2
			FLNY-081	10-32	1

- Threads per Unified Standard, Class 2B; UNC, UNF
- 6/6 Nylon per ASTM D4066
- UL Flammability 94 V-2
- Oxygen Index: 30
- Non-conductive, Non-corrosive; resistant to fuels, lubricants and most chemicals.

Standard Flat Washers (Nylon)

Part #	Screw Size	Inside Dia.	Outside Dia.	Thickness
MWNY-001	No.2	.090	.250	.062
MWNY-002	No.4	.115	.250	.062
MWNY-003	No.6	.140	.312	.062
MWNY-004	No.8	.171	.375	.062
MWNY-005	No.10	.194	.375	.062

- Stock Sizes listed. Contact factory for a quotation on Custom sizes
- Available in 6/6 Natural Nylon or Dyed Black Nylon
- UL Flammability 94 V-2
- Oxygen Index: 30
- Non-conductive, Non-corrosive; resistant to fuels, lubricants and most chemicals
- Nylon is particularly resistant to repeated impact, and has a low coefficient of friction and an excellent resistance to abrasion.

Flat Head Screws (Nylon)

Part #	Thread	Length	Part #	Thread	Length
FHNY-0002	2-56	1/4	FHNY-012	6-32	3/4
FHNY-0022	2-56	1/2	FHNY-013	6-32	1
FHNY-005	4-40	1/4	FHNY-0134	8-32	1/4
FHNY-006	4-40	1/2	FHNY-0136	8-32	3/8
FHNY-007	4-40	1	FHNY-014	8-32	1/2
FHNY-0074	6-32	1/4	FHNY-0142	8-32	3/4
FHNY-008	6-32	3/8	FHNY-0143	8-32	1
FHNY-010	6-32	1/2	FHNY-015	10-32	1/4
FHNY-011	6-32	5/8	FHNY-0161	10-32	1/2
			FHNY-018	10-32	1

- Threads per Unified Standard, Class 2B; UNC, UNF
- 6/6 Nylon per ASTM D4066
- UL Flammability 94 V-2
- Oxygen Index: 30
- Non-conductive, Non-corrosive; resistant to fuels, lubricants and most chemicals.

Philips PAN Head Metric Machine Screws

Zinc Plated Carbon Steel



MMS-600HC	1.6mm x 3mm	MMS-614HC	3mm x 6mm
MMS-601HC	2mm x 3mm	MMS-615HC	3mm x 8mm
MMS-602HC	2mm x 5mm	MMS-616HC	3mm x 12mm
MMS-603HC	2mm x 8mm	MMS-617HC	3mm x 14mm
MMS-604HC	2mm x 10mm	MMS-618HC	3mm x 20mm
MMS-605HC	2mm x 14mm	MMS-619HC	4mm x 4mm
MMS-606HC	2mm x 20mm	MMS-620HC	4mm x 6mm
MMS-607HC	2.6mm x 3mm	MMS-621HC	4mm x 8mm
MMS-608HC	2.6mm x 5mm	MMS-622HC	4mm x 10mm
MMS-609HC	2.6mm x 8mm	MMS-623HC	4mm x 14mm
MMS-610HC	2.6mm x 10mm	MMS-624HC	4mm x 20mm
MMS-611HC	2.6mm x 12mm	MMS-625HC	5mm x 8mm
MMS-612HC	2.6mm x 16mm	MMS-626HC	5mm x 14mm
MMS-613HC	3mm x 4mm	MMS-627HC	5mm x 20mm

Philips PAN Head Metric Machine Screws

Black Zinc Plated Carbon Steel



BMS-700HC	2mm x 8mm	BMS-709HC	3mm x 12mm
BMS-701HC	2mm x 10mm	BMS-710HC	3mm x 14mm
BMS-702HC	2mm x 14mm	BMS-711HC	3mm x 20mm
BMS-703HC	2mm x 20mm	BMS-712HC	4mm x 8mm
BMS-704HC	2.6mm x 8mm	BMS-713HC	4mm x 14mm
BMS-705HC	2.6mm x 10mm	BMS-714HC	4mm x 20mm
BMS-706HC	2.6mm x 12mm	BMS-715HC	5mm x 8mm
BMS-707HC	2.6mm x 16mm	BMS-716HC	5mm x 14mm
BMS-708HC	3mm x 8mm	BMS-717HC	5mm x 20mm

Metric Flat Washers

Zinc Plated Carbon Steel



WSH-100HC	2.2mm x 5mm x 0.3mm
WSH-101HC	2.8mm x 7mm x 0.5mm
WSH-102HC	3.2mm x 7mm x 0.5mm
WSH-103HC	4.3mm x 9mm x 0.8mm
WSH-104HC	5.3mm x 10mm x 1.0mm

Metric Lock Washers

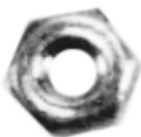
Hardened Strain Relieved Spring Steel



LKW-100HC	2.1mm x 4.4mm x 0.5mm
LKW-101HC	2.7mm x 5.2mm x 0.6mm
LKW-102HC	3.1mm x 6.2mm x 0.8mm
LKW-103HC	4.1mm x 7.6mm x 0.9mm
LKW-104HC	5.1mm x 9.2mm x 1.12mm

Metric Hex Nuts

Zinc Plated Carbon Steel



NUT-300HC	1.6mm
NUT-301HC	2mm
NUT-302HC	2.6mm
NUT-303HC	3mm
NUT-304HC	4mm
NUT-305HC	5mm

SN 60

DIAMETER (INCHES)	ALLOY (Sn/Pb) TIN/LEAD	DOWPAK PN	
		1/2 LB.	1 LB.
.063	60/40	N/A	E0112
.050	60/40	N/A	E0113
.036	60/40	N/A	E0115
.032	60/40	N/A	E0116
.028	60/40	E0120	E0117
.022	60/40	E0121	E0118
.015	60/40	E0122	N/A

- Use for printed circuits, audio and video repair, wiring
- Non-corrosive flux
- 5 core flux construction
- Faster flowing
- Extra active
- 1/2 lb. or 1 lb. spools



SN 63

DIAMETER (INCHES)	ALLOY (Sn/Pb) TIN/LEAD	DOWPAK PN	
		1/2 LB.	1 LB.
.050	63/37	N/A	E0133
.040	63/37	N/A	E0134
.036	63/37	N/A	E0135
.032	63/37	N/A	E0136
.028	63/37	E0140	E0137
.022	63/37	E0141	E0138
.015	63/37	E0142	N/A

- Use for printed circuits, audio and video repair, wiring
- 5 core flux construction
- Faster flowing
- Extra active
- 1/2 lb. or 1 lb. spools



SPECIALTY SOLDER No clean solder

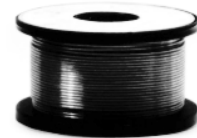
DIA. (IN)	TYPE	SIZE	DOWPAK PN
.032	SN63	1 lb. reel	E0506
.028	SN63	1 lb. reel	E0507
.022	SN63	1 lb. reel	E0508

- Low residue flux
- Non-corrosive
- Halide-free
- Fast soldering

Savbit® Alloy solder

DIA. (IN)	TYPE	SIZE	DOWPAK PN
.050	SAVBIT	1 lb. reel	E0263
.028	SAVBIT	1 lb. reel	E0267

- Prevents rapid erosion and pitting of copper and plated soldering iron tips
- Contains small controlled copper addition



Water Soluble Solder

DIA. (IN)	TYPE	SIZE	DOWPAK PN
.031	SN60	1 lb. reel	E0186
.028	SN63	1 lb. reel	E0437

- Flux residue removed with water and brush or light defluxer

Silver Solder

DIA. (IN)	TYPE	SIZE	DOWPAK PN
.050	SN62	1 lb.	E0153
.028	SN62	1 lb.	E0157

- 2% Silver content

High Melting Point Solder

DIA. (IN)	TYPE	SIZE	DOWPAK PN
.050	HMP	1 lb.	E0223
.028	HMP	1 lb.	E0227

- 1.5% Silver content
- Liquidus at 574°C

Tinning Cup

DIA. (IN)	TYPE	SIZE	DOWPAK PN
N/A	N/A	Resealable Cup	E1060

- Use for cleaning soldering iron tips.
- Helps remove carbon build up and prolongs tip life



Bar Solder



DIA. (IN)	TYPE	SIZE	DOWPAK PN
N/A	SN60	1 lb.bar	E0303
N/A	SN63	1 lb.bar	E0304

- Ultra high purity
- Oxide-free
- Homogeneous Solder

Handy Pack Solder



DIA. (IN)	TYPE	SIZE	DOWPAK PN
.036	SN60	Pocket Dispenser	E1000

- 4 core flux
- No pre-cleaning
- Handy pull out dispenser
- Non-corrosive
- .6 oz 11.5 g

EZ 100 Dispenser Pack



DIA. (IN)	TYPE	SIZE	DOWPAK PN
.048	SN60	Tube Disp.Pack (14 ft.)	E1010

- 5 core flux
- Extra fast
- Extra Active
- Non-corrosive

PC 115 Dispenser Pack



DIA. (IN)	TYPE	SIZE	DOWPAK PN
.028	SN60	Tube Disp.Pack (21 ft.)	E1020

- 5 core flux
- Extra thin
- Extra Fast
- Non-corrosive

SR 120 Serviceman's Pack



DIA. (IN)	TYPE	SIZE	DOWPAK PN
.040	SN60	Sm.Reel (40 ft.)	E1030

- 5 core
- Extra Fast
- Non-corrosive

ER 220 Econo-Reel



DIA. (IN)	TYPE	SIZE	DOWPAK PN
.040	SN60	Reel (100 ft.)	E1035

- 5 core
- Extra Fast
- Non-corrosive

RF Flux Paste



DIA. (IN)	TYPE	SIZE	DOWPAK PN
N/A	Rosin	Dispenser 75g	E1045

- Controlled Activity
- Clear residue
- Minimum fumes
- Non-corrosive

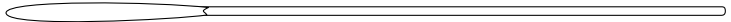
Alloy Specs

Type	Alloy	Melting Temperature-°F		Characteristics	
		Solidus	Liquidus		
HMP	5/93.5/1.5	Sn/Pb/Ag	565	574	High Melting Point
SABVIT	50/48.5/1.5	Sn/Pb/Cu	361	419	Saves copper erosion
SN60	60/40	Sn/Pb	361	370	Electrical/Electronic
SN62	62/36/2	Sn/Pb/Ag	354	354	Silver and Gold Surfaces
SN63	63/37	Sn/Pb	361	361	Electronics



Lint Free Cotton Tip Applicators

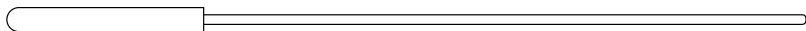
- Ideal for industrial, audio-visual, optics, electronics, and general cleaning applications.
- Splinter -free wood shaft



6" Single End Applicator		6" Double End Applicator	
Dowpak PN	Pieces/Pack	Dowpak PN	Pieces/Pack
SWSC25	25 pc.pack	SWDC25	25 pc.pack
SWSCC	100 pc.pack	SWDCC	100 pc.pack
SWSCM	1000 pc.pack	SWDCM	1000 pc.pack

Foam Tip Applicators

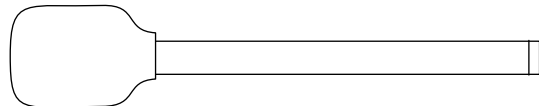
- 100% urethane foam tip with 100 ppi porosity
- Polypropylene shaft
- Resistant to solvents such as Freon TP 35, 1,1,1-Trichlorethane, Freon TF, Isopropyl Alcohol, and Acetone



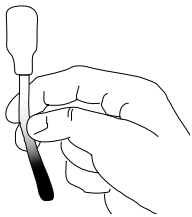
6" Foam Tip W/Poly Shaft		6" Anti-static Foam/Poly Shaft	
Dowpak PN	Pieces/Pack	Dowpak PN	Pieces /Pack
SWFP10	10 pc. pack	SWASP10	10 pc. pack
SWFP35	35 pc. pack	SWASP35	35 pc. pack
SWFPC	100 pc. pack	SWASPC	100 pc. pack

Foam-Tip Self-Saturating Swab

Dowpak PN	Pieces/Packs
SWSS6	6 pc. pack
SWSS25	25 pc. pack
SWSSC	100 pc. pack



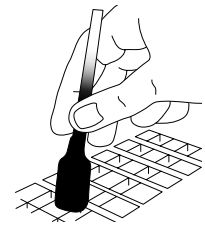
- Combines solvent and applicator in one easy-to-use swab
- Simply squeeze the popule handle to break the internal seal and release liquid into the foam head.
- Popule contains 91% Isopropyl Alcohol and 9% deionized water



To saturate the foam, hold swab between thumb and forefinger. Then give the handle a quick, sharp squeeze to break the internal seal.



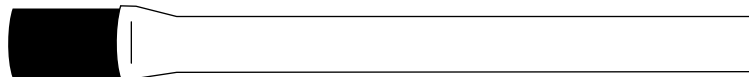
Next, squeeze the handle to release more liquid into the foam tip.



Standard popule is filled with 91% Isopropyl alcohol and 9% deionized water

Horse Hair Acid Brushes

Dowpak/PN	Pieces/Pack
AB10	10 pc.pack
ABGR	144 pc. pack



- 3/8" wide brush head
- Metal shaft

Shieldmu 30



Strip		Strip		Strip		Strip	
Part#	Width (in)	Part#	Width (in)	Part#	Width (in)	Part#	Width (in)
THICKNESS .001"		THICKNESS .002"		THICKNESS .004"		THICKNESS .006"	
M30-1-OQ	1/4	M30-2-OQ	1/4	M30-4-OQ	1/4	M30-6-OQ	1/4
M30-1-TE	3/8	M30-2-TE	3/8	M30-4-TE	3/8	M30-6-TE	3/8
M30-1-OH	1/2	M30-2-OH	1/2	M30-4-OH	1/2	M30-6-OH	1/2
M30-1-TQ	3/4	M30-2-TQ	3/4	M30-4-TQ	3/4	M30-6-TQ	3/4
M30-1-1	1	M30-2-1	1	M30-4-1	1	M30-6-1	1
M30-1-2	2	M30-2-2	2	M30-4-2	2	M30-6-2	2
				M30-4-4	4	M30-6-4	4
				M30-4-8	8	M30-6-8	8
				M30-4-12	12	M30-6-15TE	15 3/8

80% Nickel-Iron Alloy

Maximum flux 7,000-8,000 gaussses

Typical permeability is 20,000 at 40 gaussses; 150,000 at 2,500 gaussses

For maximum attenuation, even at low inductions

Shieldmu 10



Strip		Strip		Strip		Strip	
Part#	Width (in)	Part#	Width (in)	Part#	Width (in)	Part#	Width (in)
THICKNESS .001"		THICKNESS .002"		THICKNESS .004"		THICKNESS .006"	
M10-1-OQ	1/4	M10-2-OQ	1/4	M10-4-OQ	1/4	M10-6-OQ	1/4
M10-1-TE	3/8	M10-2-TE	3/8	M10-4-TE	3/8	M10-6-TE	3/8
M10-1-OH	1/2	M10-2-OH	1/2	M10-4-OH	1/2	M10-6-OH	1/2
M10-1-TQ	3/4	M10-2-TQ	3/4	M10-4-TQ	3/4	M10-6-TQ	3/4
M10-1-1	1	M10-2-1	1	M10-4-1	1	M10-6-1	1
M10-1-2	2	M10-2-2	2	M10-4-2	2	M10-6-2	2
				M10-4-4	4	M10-6-4	4
				M10-4-8	8	M10-6-8	8
				M10-4-12	12	M10-6-15TE	15 3/8

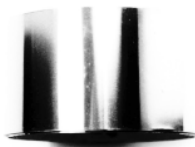
50% Nickel-Iron Alloy

Maximum flux 14,000-15,000 gaussses

Typical permeability is 5,000 at 40 gaussses; 100,000 at 6,000 gaussses

For good attenuation, even at high inductions

Shieldmu 3



Strip		Strip		Strip		Strip	
Part#	Width (in)	Part#	Width (in)	Part#	Width (in)	Part#	Width (in)
THICKNESS .001"		THICKNESS .002"		THICKNESS .004"		THICKNESS .006"	
M3-1-OQ	1/4	M3-2-OQ	1/4	M3-4-OQ	1/4	M3-6-OQ	1/4
M3-1-TE	3/8	M3-2-TE	3/8	M3-4-TE	3/8	M3-6-TE	3/8
M3-1-OH	1/2	M3-2-OH	1/2	M3-4-OH	1/2	M3-6-OH	1/2
M3-1-TQ	3/4	M3-2-TQ	3/4	M3-4-TQ	3/4	M3-6-TQ	3/4
M3-1-1	1	M3-2-1	1	M3-4-1	1	M3-6-1	1
M3-1-2	2	M3-2-2	2	M3-4-2	2	M3-6-2	2
				M3-4-4	4	M3-6-4	4
				M3-4-8	8	M3-6-8	8
				M3-4-12	12	M3-6-15TE	15 3/8

Silicon-Iron Alloy

Maximum flux 18,000 gaussses

Typical permeability is 1000 at 100 gaussses; 15,000 at 8,000 gaussses

For economical shielding, with high induction capability

Adhesive Backed Shieldmu Tape & Foil

Shieldmu with adhesive backing eliminates the necessity of taping or spot welding Shieldmu in place. No curing is necessary so you simply use scissors to cut the tape or foil to the desired shape, peel away the protective backing, and press the adhesive backed shieldmu in place. Your component is now protected by a firmly anchored high permeability material which provides the magnetic shielding performance you require.

The thickness of the adhesive itself is nominally .002". Clear in color and chemically stabilized for long term life, the adhesive has a bond strength ranging up to 40 oz. per inch at a 90° pulling angle. It is a thermosetting pressure sensitive adhesive which may be operated in temperatures up to 130°C.

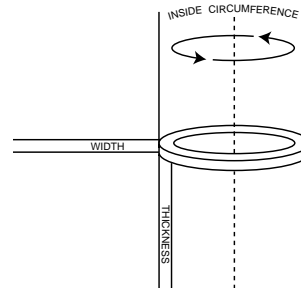
Shieldmu 30, Adhesive Backed				Shieldmu 10, Adhesive Backed				Shieldmu 3, Adhesive Backed					
Part#	Strip Width (in)	Part#	Strip Width (in)	Part#	Strip Width (in)	Part#	Strip Width (in)	Part#	Strip Width (in)	Part#	Strip Width (in)	Part#	Strip Width (in)
THICKNESS .002		THICKNESS .004		THICKNESS .002		THICKNESS .004		THICKNESS .002		THICKNESS .004		THICKNESS .004	
ABM30-2-OQ	1/4"	ABM30-4-OQ	1/4"	ABM10-2-OQ	1/4"	ABM10-4-OQ	1/4"	ABM3-2-OQ	1/4"	ABM3-4-OQ	1/4"	ABM3-2-OQ	1/4"
ABM30-2-OH	1/2"	ABM30-4-OH	1/2"	ABM10-2-OH	1/2"	ABM10-4-OH	1/2"	ABM3-2-OH	1/2"	ABM3-4-OH	1/2"	ABM3-2-OH	1/2"
ABM30-2-TQ	3/4"	ABM30-4-TQ	3/4"	ABM10-2-TQ	3/4"	ABM10-4-TQ	3/4"	ABM3-2-TQ	3/4"	ABM3-4-TQ	3/4"	ABM3-2-TQ	3/4"
ABM30-2-1	1"	ABM30-4-1	1"	ABM10-2-1	1"	ABM10-4-1	1"	ABM3-2-1	1"	ABM3-4-1	1"	ABM3-2-1	1"
ABM30-2-2	2"	ABM30-4-2	2"	ABM10-2-2	2"	ABM10-4-2	2"	ABM3-2-2	2"	ABM3-4-2	2"	ABM3-2-2	2"
ABM30-2-4	4"	ABM30-4-4	4"	ABM10-2-4	4"	ABM10-4-4	4"	ABM3-2-4	4"	ABM3-4-4	4"	ABM3-2-4	4"
ABM30-2-6	6"	ABM30-4-8	8"	ABM10-2-6	6"	ABM10-4-8	8"	ABM3-2-6	6"	ABM3-4-8	8"	ABM3-2-6	6"
		ABM30-4-12	12"			ABM10-4-12	12"			ABM3-4-12	12"		

REPLACEMENT IDLER TIRES

Stock No.	INSIDE CIRCUMFERENCE			WIDTH			THICKNESS			FITS EVG IDLER
	Fraction	Decimal	Metric	Fraction	Decimal	Metric	Fraction	Decimal	Metric	
1428-01	1.000	25.400	5/64	.077	1.956	7/64	.110	2.794		
1428-10	1 1/2	1.500	38.100	3/32	.090	2.290	7/64	.100	2.540	
1428-15	1 1/2	1.500	38.100	9/64	.140	3.560	7/64	.110	2.790	1408-113
1428-20	1 5/8	1.625	41.280	9/64	.140	3.560	7/64	.100	2.540	1408-115
1428-25	1 5/8	1.625	41.280	5/32	.160	4.060	1/8	.127	3.230	1408-112
1425-13	2 1/4	2.250	57.150	3/32	.094	2.388	3/32	.103	2.616	
1428-30	2 5/16	2.312	58.720	9/64	.140	3.560	1/8	.123	3.120	1408-102
1428-35	2 9/16	2.562	65.070	7/64	.100	2.540	5/64	.080	2.030	1408-106
1428-40	2 3/4	2.750	69.850	3/16	.190	4.830	7/64	.115	2.920	1408-111
1428-40	2 3/4	2.750	69.850	3/16	.190	4.830	7/64	.115	2.920	1408-114
1428-45	2 7/8	2.875	73.030	1/8	.120	3.050	9/64	.140	3.560	1408-103
1428-50	3	3.00	76.200	1/8	.120	3.050	9/64	.145	3.683	1408-101
1428-55	3 1/8	3.125	79.380	1/8	.120	3.050	1/8	.120	3.050	1408-110
1428-60	3 1/8	3.125	79.380	1/8	.120	3.050	1/8	.130	3.30	1408-131
1428-65	3 5/16	3.312	84.120	1/8	.120	3.050	9/64	.133	3.38	1408-107
1428-04	3 11/32	3.344	84.938	9/64	.140	3.556	5/32	.157	3.988	
1428-70	3 11/16	3.687	93.650	11/64	.170	4.320	7/64	.100	2.540	1408-100
1428-75	3 13/16	3.812	96.820	1/8	.120	3.050	9/64	.135	3.430	1408-105
1428-76	3 1/4	3.256	82.707	1/8	.118	3.000	1/8	.128	3.251	1408-104
1428-77	2 5/32	2.153	54.699	1/8	.118	3.000	1/8	.122	3.100	1408-108
1428-78	2 5/32	2.153	54.699	3/16	.189	4.800	1/8	.122	3.100	1408-109
1428-79	2 31/32	2.969	75.405	1/8	.126	3.200	13/64	.205	5.194	1408-116
1428-80	2 13/64	2.202	55.936	3/16	.193	4.902	1/8	.122	3.100	1408-117
1428-81	2 59/64	2.918	74.129	1/8	.122	3.100	1/8	.126	3.200	1408-118
1428-82	2 29/32	2.906	73.810	13/64	.197	5.003	1/8	.128	3.250	1408-119
1428-83	2 23/32	2.721	69.102	5/32	.158	4.000	1/8	.118	3.000	1408-120
1428-84	3 13/16	3.809	96.750	11/64	.164	4.152	9/64	.134	3.404	1408-123
1428-85	3 49/64	3.760	95.514	5/32	.158	4.000	1/8	.130	3.302	1408-124
1428-86	3 1/8	3.120	79.236	1/8	.126	3.200	1/8	.120	3.050	1408-125
1428-87	2 41/64	2.647	67.227	5/32	.158	4.000	1/8	.128	3.250	1408-126
1428-88	2 59/64	2.918	74.129	1/8	.118	3.000	7/64	.104	2.650	1408-135
1428-89	2 23/32	2.721	69.102	7/64	.116	2.950	1/8	.130	3.302	1408-173
1428-90	3 27/32	3.847	97.708	1/8	.118	3.000	1/8	.128	3.250	1408-142
1428-91	2 13/32	2.411	61.242	1/8	.126	3.200	1/8	.128	3.250	1408-144
1428-92	3 3/32	3.093	78.557	7/64	.114	2.896	5/32	.154	3.899	1408-170
1428-93	2 31/32	2.969	75.405	13/64	.200	5.093	1/8	.118	3.000	1408-146
1428-94	1 47/64	1.731	43.967	5/32	.162	4.102	1/8	.118	3.000	1408-147
1428-95	2 21/64	2.325	59.048	5/32	.158	4.000	1/8	.118	3.000	1408-151
1428-96	1 47/64	1.731	43.967	1/8	.118	3.000	1/16	.063	1.600	1408-152
1428-97	2 31/32	2.969	75.405	1/8	.128	3.251	11/64	.165	4.191	1408-172
1428-98	2 49/64	2.771	70.378	5/32	.154	3.900	9/64	.142	3.600	1408-154
1428-99	2 7/8	2.870	72.892	1/8	.118	3.000	1/8	.126	3.200	1408-155
1428-100	4	4.	101.777	1/8	.132	3.352	9/64	.134	3.404	1408-156
1428-101	3 17/64	3.266	82.946	1/8	.118	3.000	3/32	.095	2.400	1408-175
1428-102	2 23/32	2.721	69.102	5/32	.158	4.000	11/64	.173	4.394	1408-158
1428-103	4	4.	101.777	1/8	.118	3.000	7/64	.110	2.794	1408-159
1428-104	3 5/16	3.314	84.183	9/64	.138	3.505	1/8	.124	3.150	1408-160
1428-105	2 23/32	2.721	69.102	11/64	.173	4.394	9/64	.134	3.404	1408-167
1428-106	29/32	0.909	23.087	5/32	.155	3.937	5/64	.078	1.981	
1428-107	1 3/32	1.100	27.940	3/16	.190	4.826	3/16	.190	4.826	
1428-108	1 11/16	1.680	42.672	5/32	.158	4.013	7/64	.105	2.667	
1428-109	1 1/8	2.132	54.153	3/16	.190	4.826	1/8	.127	3.230	
1428-110	2 1/4	2.250	57.172	1/8	.115	2.921	1/8	.130	3.302	
1428-111	2 1/2	2.497	63.424	1/4	.245	6.223	1/8	.134	3.404	
1428-112	2 29/32	2.900	73.660	1/8	.125	3.180	3/32	.098	2.490	
1428-113	2 21/64	2.323	59.004	3/16	.188	4.776	9/64	.145	3.683	
1428-114	3 1/32	3.027	76.886	7/64	.115	2.921	1/8	.130	3.302	
1428-115	2 31/32	2.970	75.438	11/64	.177	4.496	9/64	.138	3.505	
1428-116	4 15/64	4.241	107.721	5/32	.158	4.013	1/8	.130	3.302	
1428-117	3 1/2	3.500	88.900	3/16	.192	4.877	7/32	.215	5.461	
1428-118	5	4.998	126.949	13/64	.200	5.080	11/64	.173	4.400	
1428-119	5 55/64	5.854	148.692	17/64	.270	6.858	3/16	.189	4.800	
1428-120	3 3/16	3.191	81.251	9/64	.142	3.607	1/8	.122	3.099	1408-181
1428-121	2 3/4	2.758	70.053	1/8	.118	2.997	1/8	.126	3.200	1408-182
1428-122	2 55/64	2.869	72.872	7/64	.102	2.591	7/64	.110	2.794	1408-183
1428-123	1 31/64	1.484	37.694	1/8	.118	2.997	7/64	.108	2.743	1408-185
1428-124	2 29/32	2.907	73.838	3/32	.098	2.489	7/64	.116	2.947	1408-186
1428-125	2 17/64	2.263	57.480	1/8	.120	2.997	7/64	.126	3.200	1408-187
1428-126	2 29/64	2.449	62.204	1/8	.122	3.099	1/8	.126	3.200	1408-188
1428-127	1 3/4	1.744	44.298	5/32	.157	3.988	7/64	.106	2.692	1408-193
1428-128	2 29/64	2.449	62.204	9/64	.138	3.505	5/64	.083	2.108	1408-194
1428-128	2 29/64	2.449	62.204	9/64	.138	3.505	5/64	.083	2.108	1408-195
1428-129	1 5/16	1.311	33.299	1/8	.124	3.150	3/32	.100	2.540	1408-176

ROUND BELTS SPECIFICATIONS

Part #	INSIDE CIRCUMFERENCE			THICKNESS		
	F	D	M(mm)	F	D	M(mm)
1407-50	3 7/64	3.105	78.867	1/16	.070	1.778
1407-51	3 1/2	3.498	88.849	1/16	.070	1.778
1412-14	3 45/64	3.700	93.980	1/8	.139	3.531
1412-15	4	4.000	101.600	1/8	.139	3.531
1407-52	4 3/32	4.085	103.759	1/16	.070	1.778
1412-10	4 13/64	4.200	106.680	3/32	.100	2.540
1410-52	4 17/64	4.267	108.382	1/8	.139	3.531
1410-52	5 55/64	5.837	148.260	1/8	.139	3.531
1407-179	4 9/32	4.283	108.788	1/16	.070	1.778
1407-40	4 43/64	4.675	118.845	1/16	.070	1.778
1412-25	4 45/64	4.700	119.380	13/64	.210	5.334
1407-333	5 1/4	5.258	133.550	3/32	.103	2.616
1407-104	5 7/16	5.477	138.350	9/64	.139	3.531
1407-53	5 29/64	5.460	138.684	1/16	.070	1.788
1407-331	5 13/16	5.813	147.650	3/64	.048	1.219
1407-334	5 27/32	5.849	148.650	3/32	.103	2.616
1410-71	5 55/64	5.853	148.666	1/16	.070	1.778
1412-20	5 29/32	5.900	149.860	3/64	.048	1.194
1410-06	6 7/32	6.230	158.242	1/8	.139	3.531
1407-54	6 1/4	6.245	158.623	1/16	.070	1.778
1407-335	6 7/16	6.439	163.550	3/32	.103	2.616
1407-336	6 5/8	6.625	168.270	9/64	.139	3.531
1410-68	6 41/64	6.638	168.605	1/16	.070	2.616
1499-32	7 1/64	7.015	178.181	1/8	.139	3.531
1407-41	7 1/64	7.024	178.410	3/32	.103	2.616
1407-180	7 1/32	7.030	178.562	1/16	.070	1.778
1412-21	7 19/64	7.300	185.420	11/64	.168	4.267
1410-07	7 13/32	7.407	188.138	1/8	.139	3.531
1499-30	7 39/64	7.615	193.421	3/32	.103	2.616
1407-337	7 51/64	7.803	198.190	9/64	.139	3.531
1407-38	7 13/16	7.815	198.501	1/16	.070	1.778
1407-96	7 29/32	7.906	200.812	3/64	.040	1.016
1407-56	8 13/64	8.208	208.483	1/16	.070	1.778
1407-332	8 1/4	8.250	209.550	3/64	.047	1.194
1410-08	8 37/64	8.585	218.059	1/8	.139	3.531
1407-95	8 39/64	8.600	218.440	1/16	.070	1.778
1412-11	8 13/16	8.800	223.500	3/32	.100	2.540
1410-57	8 31/32	8.977	228.016	1/8	.139	3.531
1499-20	8 63/64	8.987	228.270	3/32	.103	2.616
1407-39	8 63/64	8.993	228.422	1/16	.070	1.778
1410-87	9 5/32	9.156	232.562	1/16	.059	1.499
1410-58	9 3/8	9.378	238.201	3/32	.103	2.616
1407-206	9 25/64	9.385	238.379	1/16	.070	1.778
1407-32	9 49/64	9.762	247.955	1/8	.139	3.531
1412-12	10 3/32	10.100	256.540	3/32	.100	2.540
1410-73	10 5/32	10.155	257.937	1/8	.139	3.531
1407-204	10 11/64	10.170	258.318	1/16	.070	1.778
1412-22	10 13/64	10.200	259.080	11/64	.170	4.318
1410-10	10 35/64	10.547	267.894	1/8	.139	3.531
1412-16	10 29/32	10.900	276.870	1/8	.139	3.531
1499-15	10 15/16	10.940	277.876	1/8	.139	3.531
1410-50	10 61/64	10.949	278.105	3/32	.103	2.616
1407-203	10 61/64	10.955	278.257	1/16	.070	1.778
1410-59	11 21/64	11.332	287.833	1/8	.139	3.531
1412-17	11 45/64	11.700	297.180	1/8	.139	3.531
1410-12	11 47/64	11.734	298.044	3/32	.103	2.616
1407-37	11 3/4	11.740	298.196	1/16	.070	1.778
1407-338	12 1/8	12.122	307.890	9/64	.139	3.531
1499-18	12 33/64	12.519	317.983	3/32	.103	2.616
1499-33	12 17/32	12.525	318.135	1/16	.070	1.778
1407-435	13 1/4	13.250	336.550	3/32	.103	2.616
1407-205	13 19/64	13.295	337.693	1/8	.139	3.531
1407-31	13 5/16	13.310	338.074	1/16	.070	1.778
1412-18	13 39/64	13.600	345.440	1/8	.139	3.531
1412-29	14.0	14.000	355.600	1/16	.070	1.778
1412-19	14.0	14.000	365.600	1/8	.139	3.531
1410-65	14 3/32	14.089	357.861	3/32	.103	2.616
1410-14	14 15/32	14.472	367.589	1/8	.139	3.531
1412-30	14 51/64	14.800	375.920	1/16	.070	1.778
1412-27	14 29/32	14.900	378.460	13/64	.210	5.334
1407-202	15 1/4	15.257	387.528	1/8	.139	3.531
1412-26	15 39/64	15.600	396.240	3/16	.180	4.572
1407-26	15 21/32	15.659	397.739	3/32	.103	2.616
1407-181	14 43/64	15.665	397.891	1/16	.070	1.778
1412-13	18.0	18.000	457.200	3/32	.100	2.540
1410-18	18.0	18.005	457.327	1/8	.139	3.531
1410-76	18 25/64	18.397	467.284	1/8	.139	3.531
1410-21	21 9/64	21.145	537.083	1/8	.139	3.531
1412-23	21 13/64	21.200	538.480	11/64	.178	4.521
1412-24	22.0	22.000	558.800	5/32	.156	3.962
1410-77	22 47/64	22.729	577.317	1/8	.139	3.531
1412-28	22 13/16	22.800	579.120	13/64	.210	5.334



Inch Fraction	Inch Decimal	Millimeter
1/64	0.0156	0.3968
1/32	0.0312	0.7937
3/64	0.0468	1.1906
1/16	0.0625	1.5875
5/64	0.0781	1.9843
3/32	0.0937	2.3812
7/64	0.1093	2.7781
1/8	0.1250	3.1750
9/64	0.1406	3.5718
5/32	0.1562	3.9687
11/64	0.1718	4.3656
3/16	0.1875	4.7625
13/64	0.2031	5.1593
7/32	0.2187	5.5562
15/64	0.2343	5.9531
1/4	0.2500	6.3500
17/64	0.2656	6.7468
9/32	0.2812	7.1437
19/64	0.2968	7.5406
5/16	0.3125	7.9375
19/64	0.2968	7.5406

5/16	0.3125	7.6562
21/64	0.3281	8.3343
11/32	0.3437	8.7312
23/64	0.3593	9.1281
3/8	0.3750	9.5250
25/64	0.3906	9.9218
13/32	0.4062	10.3187
27/64	0.4218	10.7156
7/16	0.4375	11.1125
29/64	0.4531	11.5093
1/8	0.4687	11.9062
31/64	0.4843	12.3031
1/2	0.5000	12.7000
33/64	0.5156	13.0968
17/32	0.5312	13.4937
35/64	0.5468	13.8906
9/16	0.5625	14.2875
37/64	0.5781	14.6843
19/32	0.5937	15.0812
39/64	0.6093	15.4781
5/8	0.6250	15.8750
41/64	0.6406	16.2718



SK-1

VCR Spring Kit

- 20 Different types
- 100 total pieces
- Blister Pack with Header

Aluminum Electrolytic Capacitors Part Numbering System

Available items are shown on the data sheet of each series.
This is an explanation about Part Numbering System.

1 Series	2 Rated Voltage	3 Terminal Type	4 Capacitance	5 Capacitance Tolerance	6 Case Size	7 Lead Configuration	8 Option
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1) **SERIES** Series Names

2) **RATED VOLTAGE** Rated working voltage is shown in volts.

3) **TERMINAL TYPE** The following code is used for each terminal type:

Miniature:

VB=Radial Lead Type

T=Axial Lead Type

Surface Mount:

FC = MF/MFK series surface mount type

FD = MF/MFK series surface mount type with dummy terminal for mechanic support.

VC = MV/MVK series surface mount type.

Screw Type:

LG= Screw-insert type terminal

LH= Bolt type terminal

Large Size:

VN= Snap-in type terminal

VR= Pin type terminal

LI = Blade type terminal

VH= 2-lead radial lead type for RZ, RZA, RZL and GX-VH series.

VG= 3-lead radial lead type for RZ and RZA series

4) **CAPACITANCE**

Expressed in micro farads (μf) and 3-digit codes. For less than $100\mu\text{f}$, "R" is used as decimal point.

For $100\mu\text{f}$ and more, 3 digits are combined with first 2 digits of capacitance value and third digit meaning the number of zeroes. (eg., R10=0.10 μf , 1R0=1.0 μf , 101= 100 μf , 102=1000 μf .)

5) **CAPACITANCE TOLERANCE**

The following codes are used;

K= $\pm 10\%$ T= -10~+50%

M= $\pm 20\%$ U= -10~+75%

Q= -10~+30% W=-10~+100%

6) **CASE SIZE**

Indicates capacitor's case size with the code of DxL (Diameter x Length) in millimeters (mm). The case size D x L is shown in the case size tables for each series, and means nominal case size, but not maximum case size.

For the case size code used for Part numbering system, usually decimals are dropped from the diameter (D) and the length (L) shown in the Case Size tables, and "X" is put in between the diameter (D) and the length (L) without a space.

For most of surface mount types, the DxL code is not used. Use the size code specified on each surface mount series.

7) **LEAD CONFIGURATION**

Indicates the lead configuration for the radial lead (VB) and the axial lead (T) types. Our standard cut/formed leads and taping are available upon request.

LL = Standard long lead wire .

Also ,used as the code showing a standard terminal besides radial and axial lead types.

CC = Cut lead wire

FC = Formed cut lead wire

MC = Snap-in cut lead wire

FM = Snap-in cut lead wire formed to different lead space

TP = Tape and reel for axial leads or surface mount.

For axial leads, specify TP CODE

FT = Ammo pack taping for radial leads, recommended.

MT = Reel pack taping with the negative lead leading for radial leads

PT = Reel pack taping with the positive lead leading for radial leads

For radial leads , specify Lead Space (F) and H Dimension

	Series	Outline or Application	Load Life R = with ripple		New/ Extended	Miniaturization	Solvent-proof	Terminal Type	Rated Voltage Range (v)	Nominal Capacitance Range (µF)	
			(C')	(Hour)							
Surface Mount	MF	Low Profile, for reflow	85	2000	○	○	○		SMD4~50	0.1~150	
	MFK	Low Profile, for reflow	105	1,000~2,000	○	○	○	SMD	6.3~50	0.1~33 (1000)	
	MV	For reflow	85	1,000~2,000	○	○	○	SMD	4~50	0.1~220	
Low Profile	MVK	For reflow	105	1,000~2,000	○	○	○	SMD	6.3~50	0.1~470	
	SREC	5 mm height	85	1,000		○	○	Radial	4~50	0.1~100	
	KRE	5 mm height	105	1,000		○	○	Radial	4~50	0.1~100	
	SRAC	7 mm height	85	1,000		○	○	Radial	4~63	0.1~470	
	KMA	7 mm height	105	1,000		○	○	Radial	4~63	0.1~220	
	SRC	9-20 mm height	85	1,000		○	○	Radial	6.3~50	0.1~3,300	
	★SRG	7-25 mm height	85	1,000~2,000		○	○	Radial	4~50	0.1~10,000	
	★KRG	7-25 mm height	105	1,000		○	○	Radial	6.3~50	0.1~15,000	
	LLA	Low leakage current	85	1,000		○	○	Radial	4~50	0.1~100	
	General Purpose	KMC	General purpose	105	1,000~2,000			○	Radial	6.3~250	0.47~10,000
★SME/SSL		General, Miniaturized	85	2,000			⊗	Radial/Axial	6.3~400	0.1~2,200	
★KME/GLT		General, Miniaturized	105	1,000 R			⊗	Radial/Axial	6.3~400	0.1~2,200	
★SMG		General, Miniaturized	85	2,000	○	○	⊗	Radial	6.3~450	0.1~2,200	
★KMG		General, Miniaturized	105	1,000 R	○	○	⊗	Radial	6.3~450	0.1~2,200	
Bi-polar	SME-BP	General, Bi-polar	85	2,000		○	○	Radial	6.3~100	0.47~6,800	
	KME-BP	High temp, bi-polar	105	1,000		○	○	Radial	6.3~100	0.47~6,800	
	SM-NP	General, Bi-polar	85	1,000				Axial	6.3~50	4.7~2,200	
Low Impedance	KSA-BP	For horizontal deflection	105	1,000 R				Radial	50	2.2~15	
	SXE	General	105	1,000~2,000			○	Radial	6.3~100	1.5~15,000	
	★KMF	General	105	1,000~5,000 R	○	○	○	Radial	6.3~100	0.47~15,000	
	★LXF	General, long life	105	2,000~15,000 R	○	○	○	Radial	10~63	3.3~8,200	
	SXG	Lowest impedance	105	1,000~2,000 R	○	○	○	Radial	10~63	3.3~8,200	
	LX	General, long life	105	5,000			○	Radial	100~250	0.47~68	
	LXA	General, long life	105	5,000~7,000			○	Radial	10~63	0.47~4,700	
	GX	130°C	130	1,000				Radial Axial	10~63	0.47~1,000	
	GXC	130°C	130	1,000	○		○	Radial	10~63	0.47~1,000	
	Large cap. lead type	SMG	General, 20~40mm height	85	2,000	○	○	⊗	Radial	6.3~450	22~39,000
KRF		20~50mm height	105	1,000		○	○	Radial	10~250	68~39,000	
RZ		Low Impedance	105	2,000			○	Radial	7.5~250	15~16,500	
RZA		Low Impedance	105	5,000			○	Radial	6.3~250	56~33,000	
General Purpose		SMG	General purpose	85	2,000 R				Lug	160~450	68~1,800
		KMG	General purpose	105	2,000 R				Lug	160~450	68~1,800
		★SMH	General, Miniaturized	85	2,000 R		○	○	Lug	6.3~450	56~100,000
		★KMH	General, Miniaturized	105	2,000 R		○		Lug	6.3~450	68~82,000
High Reliability		VD	For V.D.E	105	2,000 R	○	○		Lug	250	82~2,200
		LXG	Long life	105	5,000 R	○	○		Lug	10~400	56~47,000
	TXG	Long life	105	10,000 R	○	○		Lug	10~250	150~47,000	
	GX-VH	130°C	130	1,000				Radial	10~250	56~18,000	
	RZL	Low life, low impedance	105	30,000 R	○		○	Radial	10~250	33~15,000	
Special Application	EL	For electronic ballast	105	5,000 R	○			Radial Lug	160~350	22~330	
	FTK	Flat shape	105	2,000				Radial	200, 400	33~560	
	PH	For photo flash	55	-				Radial Lug	330	60~1,200	
Screw Type	RWE	For inverter	85	2000 R		○		Screw	350~550	100~12,000	
	RWF	For inverter high ripple	85	5000 R	○	○		Screw	350~450	2,700~15,000	
	KME	General purpose	105	2000 R				Screw	10~400	220~680,000	
	LX	Long Life	105	5000 R	○	○		Screw	10~450	220~330,000	

★ Promotion Products

⊗ Part of the products are not solvent proof

SME/SSL, KME/GLT Series



- Miniaturized Standard Series. SME Series for 85°C, KME Series for 105°C Maximum Operating Temperature
- Solvent proof type except for:
 - SME/SSL, KME/GLT of 22mm dia. and up
 - SME/SSL, KME/GLT of 350-400WV
- Case Sizes of SME/SSL and KME/GLT are smaller than KMC series.
- SME/SSL series; 85°C, 2,000 hours assured
- KME/GLT series; 105°C, 1,000 hours assured with the rated ripple current applied.
- The leakage current of 0.002 CV or 2µA (whichever is greater) after 2 minutes is available upon request. (100V & less)

Characteristics

ITEM / SERIES	SME					KME					
Rated Working Voltage	6.3~400V					6.3~400V					
Operating Temperature range	-40~+85°C					-55~+105°C (for 6.3~100V) -40~+105°C (for 160~400V)					
Capacitance Tolerance	±20+-%					(at 20°C, 120Hz)					
Leaking current	Rated voltage	≤100V					>100V				
	Time	1 minute		2 minutes			1 minute		5 minutes		
							CV≤1,000	CV>1,000	CV≤1,000	CV>1,000	
	Leakage current	0.03CV or 4μA whichever is larger		0.01CV or 3μA whichever is larger			0.1CV+40	0.04CV+100	0.03CV+15	0.02CV+25	
Tan δ	(at 20°C)										
	Rated Voltage (V)	6.3	10	16	25	35	50	63	100	160-250	350-400
	tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.2	0.24
Note: Above tan δ specifications shall be 0.02 added every 1,000μF for capacitor exceeding 1,000μF (at 20°C, 120 Hz)											
Load Life	SME/SSL- Guaranteed for 2,000 hours at 85°C without ripple current applied										
	KME/GLT- Guaranteed for 1,000 hours at 105°C with the rated ripple current applied										
	Rated Voltage (V)	6.3~16			25~100			160~400			
	Capacitance change	SME	case dia.	≤6.3	20%			20%			20%
		KME		>6.3	20%			15%			20%
tan δ	SME	Less than 150% of the initial the specified value					Less than 200% of specified value				
	KME	Less than 200% of the initial specified value									
Leakage current	Less than the initial specified value										
Others	Satisfies characteristics W of JIS C 5141										

Ripple Current Multiplier
Frequency Multiplier:

Frequency / μF	50Hz	120Hz	300Hz	1KHz	10KHz	100KHz
~3.3	0.65	1.00	1.35	1.75	2.30	2.50
4.7~33	0.75	1.00	1.25	1.50	1.75	1.80
47~1,000	0.80	1.00	1.15	1.30	1.40	1.50
2,200	0.85	1.00	1.03	1.05	1.08	1.08

Temperature Multiplier:

Ambient Temperature	70°C	85°C	105°C
SME	1.3	1.0	-
KME		1.75	1.0

SME/SSL, KME/GLT
VB/Radial Lead
Case Sizes

← Use next higher voltage part

• For the products with ○ see SMG 20-25.4mm dia.Radial.

V Series / μF	6.3	10	16	25	35	50	63	100	160	200	250	350	400		
						SME, KME						SME	KME	SME	KME
0.1						5x11									
0.22						5x11									
0.33						5x11									
0.47						5x11		5x11	6.3x11	6.3x11	6.3x11	8x11.5	8x11.5		
1						5x11		5x11	6.3x11	6.3x11	6.3x11	8x11.5	10x12.5	8x11.5	10x12.5
2.2						5x11		5x11	6.3x11	6.3x11	8x11.5	10x12.5	10x16	10x12.5	10x16
3.3						5x11		5x11	8x11.5	8x11.5	10x12.5	10x16	10x16	10x16	10x20
4.7						5x11	5x11	5x11	8x11.5	10x12.5	10x12.5	10x16	10x20	10x20	10x25
10						5x11	5x11	6.3x11	10x16	10x16	10x20	12.5x20	12.5x20	12.5x20	12.5x25
22				5x11	←	5x11	6.3x11	8x11.5	10x20	10x20	12.5x25	12.5x25	10x20	16x25	16x25
33			5x11	5x11	5x11	6.3x11	6.3x11	10x12.5	12.5x20	12.5x25	12.5x25	16x25	16x25	16x31.5	16x31.5
47		5x11	←	5x11	←	6.3x11	8x11.5	10x16	12.5x25	12.5x25	16x25	16x31.5	16x35.5	16x35.5	18x31.5
100	←	5x11	6.3x11	6.3x11	8x11.5	8x11.5	10x12.5	12.5x20	16x25	16x31.5	18x35.5	18x40	18x40	○	○
220	←	6.3x11	←	8x11.5	10x12.5	10x16	10x20	16x25	18x35.5	○18x40	○	○	○		
330	6.3x11	←	8x11.5	10x12.5	10x16	10x20	12.5x20	16x25	○	○					
470	←	8x11.5	10x12.5	10x16	10x20	12.5x20	12.5x25	16x31.5	○						
1,000	10x12.5	10x16	10x20	12.5x20	12.5x25	16x25	16x31.5								
2,200	12.5x20	12.5x20	12.5x25	16x25	16x31.5	18x35.5	○								
3,300	12.5x20	12.5x25	16x25	16x31.5	18x35.5	○									
4,700	16x25	16x25	16x31.5	18x35.5	○18x40										
6,800	16x25	16x31.5	18x35.5	○18x40											
10,000	16x31.5	○18x35.5	○18x40	○											
15,000	18x35.5	○	○	○											
22,000	○	○	○												
27,000	○														

 The products in **bold** are are non-solventproof.

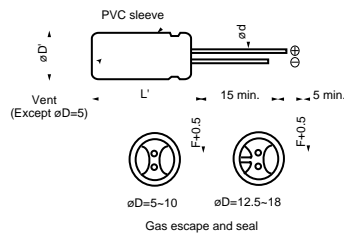
Maximum Ripple Current SME/SSL

(mA rms) at 85°C, 120Hz

µF / V	6.3	10	16	25	35	50	63	100	160	200	250	350	400
0.10						1.3		2.6					
0.22						2.9		5.8					
0.33						4.4		8.8					
0.47						11		12	12	12	12	15	
1.0						17		22	17	17	17	22	22
2.2						29		33	26	26	30	39	39
3.3						35		40	36	36	43	53	53
4.7						42	45	48	44	51	51	63	69
10						65	70	80	83	83	90	115	115
22				80		95	115	135	130	130	160	180	200
33			90	97	105	125	140	195	180	190	190	245	265
47		100		115		150	190	255	230	230	260	315	325
100		145	180	190	240	255	320	450	380	400	440	500	
220		250		320	420	490	565	810	640	660			
330	280		370	470	570	650	765	990					
470		415	520	620	740	860	990	1250					
1,000	650	790	910	1090	1300	1530	1700						
2,200	1150	1240	1420	1660	1890	2160							
3,300	1380	1590	1840	2070	2340								
4,700	1880	1980	2260	2520	2690								
6,800	2120	2390	2690	2380									
10,000	2500	2840	2920										
15,000	2990												

Capacitors

KME/GLT



DIMENSIONS

VB/Radial lead Unit (mm)

øD	5	6.3	8	10	12.5	16	18
ød	0.5	0.6	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
L'	L+1.0			L+1.5			
øD'	øD+0.5						

µF/V	6.3	10	16	25	35	50	63	100	160	200	250	350	400
0.47								7		10	9	9	10
1								13		15	12	12	18
2.2								20		23	19	19	30
3.3								25		29	26	26	37
4.7								30	32	34	31	36	48
10								46	50	56	59	64	79
22					57			68	82	96	95	110	145
33				64	69	75		90	100	140	125	140	175
7			70		82			110	135	180	165	180	230
100		105	125	135	170	180		225	320	270	285	310	330
220		175		230	300	345		400	570	450	470		
330	195		260	335	400	460		540	700				
470		290	370	440	520	610		700	880				
1,000	460	550	640	770	920	1080	1210						
2,200	810	860	1000	1170	1340	1530							
3,300	960	1100	1300	1460	1650								
4,700	1330	1400	1600	1780	1900								
6,800	1500	1690	1900	1950									
10,000	1765	1950	2060										
15,000	2075												

T/Axial Lead

SME/SSL, KME/GLT

Case Sizes

←: Use next higher voltage part

µF / V	6.3	10	16	25	35	50	63	100	160	200	250
0.47						5x12.5		5x12.5	6.3x12.5		6.3x12.5
1						5x12.5		5x12.5	←	6.3x12.5	6.3x16
2.2						5x12.5		5x12.5	←	6.3x16	8x16
3.3						5x12.5	5x12.5	6.3x12.5	←	←	8x16
4.7						5x12.5	5x12.5	6.3x12.5	←	8x16	10x20
10						5x12.5	6.3x12.5	6.3x16	10x20	10x20	10x25
22					5x12.5	6.3x12.5	6.3x16	6.3x16	8x16	10x25	12.5x25
33					6.3x12.5	←	6.3x16	6.3x16	8x20	12.5x25	12.5x30
47			5x12.5	6.3x12.5	←	←	6.3x16	8x16	8x20	12.5x30	16x25
100	6.3x12.5	←	←	6.3x16	←	8x16	8x20	10x25	16x30	16x40	16x40
220	←	6.3x16	←	8x16	8x20	10x20	10x25	12.5x30	22x40	22x40	22x50
330	←	←	8x16	8x20	10x20	10x25	12.5x25	16x25	22x40	22x50	25.4x50
470	←	8x16	8x20	10x20	10x25	12.5x25	12.5x30	16x40	22x50	25.4x50	SME25.4x50
1,000	10x20	10x20	10x25	12.5x25	12.5x30	16x25	16x30	22x40	25.4x70	25.4x90	
2,200	12.5x25	12.5x25	12.5x30	16x25	16x30	18x40	22x40	22x40	25.4x60		
3,300	12.5x25	12.5x30	16x25	16x30	16x40	22x40	22x50	25.4x80			
4,700	12.5x30	16x25	16x30	18x40	22x40	22x50	25.4x50				
6,800	16x30	16x30	16x40	22x40	22x50	25.4x50	25.4x80				
10,000	16x40	18x40	22x40	22x50	25.4x50	25.4x70					
15,000	18x40	22x40	22x50	25.4x50	25.4x70						
2,2000	22x40	22x50	25.4x50	25.4x70							

The products in bold are non-solventproof

T/Axial Lead

SME, KME

Case Sizes (continued)

μF/V	350 V		400 V	
	Series	SME	KME	KME
0.47		6.3x16	6.3x16	
1		6.3x16	6.3x16	8x16
2.2		8x16	8x16	8x20
3.3		8x20	8x20	10x20
4.7		10x20	10x20	10x25
10		12.5x25	12.5x25	12.5x30
22		12.5x30	16x30	16x30
33		16x30	16x30	16x40
47		16x40	16x40	18x40
100		22x40	22x40	22x50

Maximum Ripple Current

SME

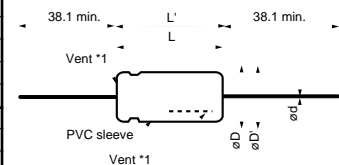
(mA rms) At 85°C, 120Hz

μF/V	6.3	10	16	25	35	50	63	100	160	200	250	350	400
0.47						12		14	12		12	15	26
1						17		21		17	21	23	38
2.2						26		31		31	35	38	57
3.3						32	36	45			42	52	68
4.7						38	43	54		51	62	68	120
10						56	73	87	91	91	99	120	210
22				70	89	100	120	140	140	160	160	190	275
33			81	100		130	140	190	200	210	210	255	335
47		86	110			150	190	230	250	250	260	330	520
100	130			190		250	310	410	440	440	440	520	890
220		240		320	380	470	570	730	700	700	730	845	
330			370	390	520	630	780	920	940	1010	1030		
470		390	480	580	680	830	1000	1250	1200	1230	1230		
1,000	650	710	860	1020	1190	1340	1610	1960	1980	2120			
2,200	1110	1210	1440	1570	1810	2120	2440	3080					
3,300	1310	1530	1720	1960	2190	2520	2870	3980					
4,700	1640	1800	2110	2400	2660	2970	3415						
6,800	2040	2170	2470	2770	3040	3510	4570						
10,000	2410	2510	2910	3160	3570	4380							
15,000	2710	2970	3270	3685	4410								
22,000	3050	3320	3753	4460									

KME/GLT

(mA rms) At 105°C, 120Hz

μF/V	6.3	10	16	25	35	50	63	100	160	200	250	350	400
0.47						8		9	9		9	11	18
1						12			12	12	14	16	30
2.2						18			22	22	25	27	40
3.3						22	25			30	30	36	52
4.7						26	30		36	36	44	48	91
10						39	51	61	64	64	70	85	145
22				49	62	70	84	98	99	110	110	145	195
33			57	70		91	98	130	140	145	145	180	235
47		60	77			100	130	160	175	175	185	230	385
100	91			130		170	210	280	310	310	310	365	630
220		160		220	260	330	400	510	495	495	515	595	
330			260	300	360	440	550	650	665	715	730		
470		270	330	410	480	580	700	880	845	870	920		
1,000	450	500	600	720	840	940	1130	1380	1400	1490			
2,200	780	850	1010	1110	1270	1490	1720	2170					
3,300	920	1080	1210	1380	1540	1780	2020	2800					
4,700	1150	1270	1490	1690	1880	2100	2404						
6,800	1440	1530	1740	1950	2140	2482	3220						
10,000	1700	1840	2050	2230	2513	3090							
15,000	1910	2100	2310	2601	3100								
22,000	2150	2340	2651	2150									



DIMENSIONS
T / Axial lead

Note: •1 Vent Location is either of above.
This Vent is applied only to the capacitors of
øD=10~25.4mm

øD	5	6.3	8	10	12.5	16	18	22	25.4
ød	0.6								0.8
L'	L+1.5								L+2.0
øD'	øD+0.5								

SME-BP Series / • 85°C Bi-Polar Type • Solvent proof
KME-BP Series • 105°C Bi-Polar Type • Solvent proof



- These capacitors are suitable for use in circuits whose polarity is sometimes reversed or unknown.
- These capacitors cannot withstand an AC application which exceeds the specified maximum permissible ripple current rating.

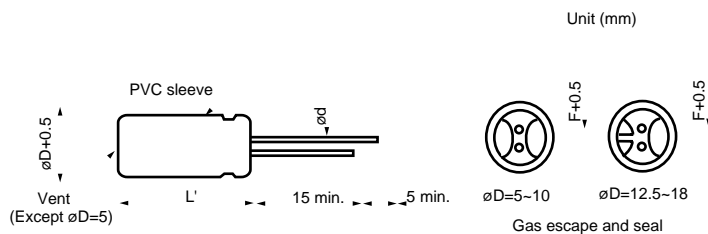
Capacitors

Characteristics

Item / Series	SME-BP	KME-BP						
Operating Temperature range	-40~+85°C	-55~+105°C						
Capacitance Tolerance	±20%							(at 20°C, 120Hz)
Leakage current	After 1 minute; I = 0.06CV or 10μA, whichever is greater After 5 minutes; I = 0.03CV or 3μA, whichever is greater Where; I; Leakage current (μA), C; nominal capacitance (μF), V; Rated Voltage (V)							(at 20°C)
tanδ	Rated Voltage (V)	6.3~10	16~25	35	50	63~80	100	(at 20°C, 120Hz)
	tanδ	0.24	0.20	0.16	0.14	0.12	0.10	
Above tan specifications shall be 0.02 added every 1,000μF for capacitor exceeding 1,000μF.								
Temperature characteristics	Impedance ratio							
	Rated Voltage (V)	6.3	10	16	25	35~100		
	Z(-25°C/20°C)	4	3	2	2	2		
	Z(-40°C/20°C)	10	8	6	4	3		
(at 120Hz)								
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 85°C (SME-BP), or 1,000 hours at 105°C (KME-BP). Polarization shall be reversed every 250 hours Capacitance change ≤ 20% of the initial value (~16V) ≤ 25% of the initial value (25V~) tanδ ≤ 150% of the initial specified value Leakage current ≤ The initial specified value							
Shelf Life	The above specifications shall also be satisfied when the capacitors are restored to 20°C after exposing them at maximum operating temperature for 1,000 hours-SME-BP, 500 hours-KME-BP without voltage applied. The rate voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not less than 48 hours before the measurements.							
Others	Other specifications shall comply with JIS C 5141, characteristics W							

Dimensions

VB/Radial Lead



øD	F	ød	L'
5	2.0	0.5	L+1.0
6.3	2.5	0.6	L+1.0
8	3.5	0.6	L+1.0
10	5	0.6	L+1.0
12.5	5	0.6	L+1.0
16	7.5	0.8	L+1.5
18	7.5	0.8	L+1.5

CASE SIZE

SME-BP, KME-BP

← Use next higher voltage part. $\phi D \times L$ (mm)

$\mu F / V$	6.3	10	16	25	35	50	63	80	100
0.47						5x11			5x11
1						5x11			5x11
2.2						5x11		5x11	6.3x11
3.3						5x11	5x11	←	6.3x11
4.7						5x11	6.3x11	←	6.3x11
10					5x11	6.3x11	6.3x11	←	8x11.5
22			5x11	←	6.3x11	8x11.5	8x11.5	10x16	10x16
33			5x11	6.3x11	←	8x11.5	10x12.5	10x16	12.5x20
47		5x11	←	6.3x11	8x11.5	10x12.5	10x16	10x20	12.5x20
100	←	6.3x11	←	8x11.5	10x16	10x20	12.5x20	12.5x25	16x25
220	←	8x11.5	10x12.5	10x16	12.5x20	12.5x25	16x25	16x31.5	18x35.5
330	8x11.5	10x16	10x16	12.5x20	12.5x20	16x25	16x31.5	18x35.5	
470	10x12.5	10x16	10x20	12.5x20	12.5x25	16x31.5	18x35.5		
1,000	10x20	12.5x20	12.5x25	16x25	16x31.5				
2,200	12.5x25	16x25	18x35.5						
3,300	16x25	16x31.5	18x35.5						
4,700	16x31.5	18x35.5							
6,800	18x35.5								

MAXIMUM RIPPLE CURRENT (mA rms)

SME-BP

At 85° C, 120Hz

KME-BP

At 105° C, 120Hz

$\mu F / V$	6.3	10	16	25	35	50	63	80	100	$\mu F / V$	6.3	10	16	25	35	50	63	80	100
0.47						11			14	0.47						7			8
1						17			21	1						10			12
2.2						25		29	34	2.2						15		16	20
3.3						27	28		39	3.3						18	20		20
4.7						34	34		47	4.7						22	24		30
10					43	52	57		71	10					30	37	4		50
22			57		73	89	96	125	135	22			40		51	63	68	89	97
33			70	80		105	135	150	220	33			49	56		77	98	105	140
47		76		95	120	150	180	195	240	47		54		67	86	105	130	140	170
100		125		160	230	265	320	350	425	100		90		110	160	190	225	245	300
220		215	275	305	410	480	575	615	720	220		150	195	215	290	340	405	435	510
330	265	345	375	450	505	650	755	655		330	185	240	265	320	350	460	535	570	
470	370	410	485	540	655	835	965			470	260	290	345	380	465	590	680		
1,000	650	720	855	950	1,140					1,000	460	510	605	670	805				
2,200	1,160	1,280	1,510	1,620						2,200	820	910	1,070	1,140					
3,300	1,570	1,690	1,980							3,300	1,100	1,200	1,400						
4,700	2,020	2,160								4,700	1,430	1,520							
6,800	2,600									6,800	1,830								

MAXIMUM ESR (ohm)

SME-BP, KME-BP

At 20° C, 120Hz

$\mu F / V$	6.3-10	16-25	35	50	63-80	100
0.47				494		353
1				232		166
2.2				106	90.5	75.4
3.3				70.4	60.3	50.3
4.7				56.5	49.4	35.3
10		33.2	26.5	23.2	19.9	16.6
22	12.1	15.1	12.1	10.6	9.05	7.54
33	12.1	10.1	8.04	7.04	6.03	5.03
47	8.47	7.06	5.65	4.94	4.24	3.53
100	3.98	3.32	2.65	2.32	1.99	1.66
220	1.81	1.51	1.21	1.06	0.905	0.754
330	1.21	1.01	0.804	0.704	0.603	
470	0.847	0.706	0.565	0.494	0.423	
1,000	0.398	0.332	0.265			
2,200	0.181	0.151				
3,300	0.121	0.101				
4,700	0.085					
6,800	0.059					

SM-NP SERIES

•Bi-Polar type capacitors of axial lead type



- SM-NP series capacitors are suitable for use in circuits whose polarity is sometimes reversed or unknown.
- These capacitors cannot withstand a continuous AC operation.
- Non solvent proof

CHARACTERISTICS

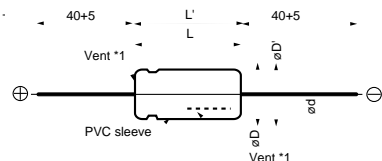
Items	Characteristics
Operating temperature range	-40~+ 85°C
Capacitance tolerance	±20%(M) (at 20°C, 120Hz)
Leakage current	After 1 minute: 0.06CV (μA) or 10μA, whichever is greater After 5 minutes: 0.03CV (μA) or 3μA, whichever is greater Leakage current shall be measured with voltage applied to the capacitor with the polarity direction shown on the item of DIMENSIONS. (at 20°C)
tan δ	Rated voltage(V)
	tan δ
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated DC voltage applied for 1,000 hours at 85°C. During this test the rated DC voltage shall be reversed on the capacitor every 250 hours Polarization shall be reversed every 250 hours Capacitance change ≤20% of the initial measured value tan δ ≤150% of the initial specified value Leakage current ≤The initial specified value
Others	Satisfies characteristic W of JIS C 5141

Case Sizes T/Axial lead	DxL (mm)					Ripple Current (mA rms) at 85°C				
	μF/V	16V	25V	50V	63V	μF/V	16V	25V	50V	63V
1				6.3x11	6.3x11	1			17	18
2.2				6.3x11	6.3x11	2.2			25	27
3.3				6.3x11	6.3x11	3.3			31	34
4.7				6.3x11	6.3x16	4.7			37	43
10				6.3x16	8x16	10			58	76
22				6.3x11	10x20	22			87	121
33			6.3x16	8x16	10x25	33		91	126	176
47	6.3x16	8x16	10x20	12.5x25	12.5x25	47	110	123	178	230
100	8x16	10x20	10x25	12.5x30	12.5x30	100	169	226	280	363
220	8x20	10x25	12.5x25	16x30	16x30	220	277	357	454	600
330	10x25	12.5x25	16x30			330	406	480	672	
470	10x25	12.5x25				470	469	561		
1,000	12.5x30					1,000	824			
2,200	16x30					2,000	1344			

DIMENSIONS

VB/Radial Lead

Unit (mm)



øD	ød	L'
6.3	0.6	L+1.5
8	0.6	L+1.5
10	0.6	L+1.5
12.5	0.6	L+1.5
16	0.8	L+1.5

Note: •1 Applied only to øD=10mm and up



- Bi-polar Type capacitors
- For horizontal deflection circuit of TV set
- 105°C 1,000 hours assured
- These capacitors cannot withstand a continuous AC operation
- Non-solvent proof

Characteristics

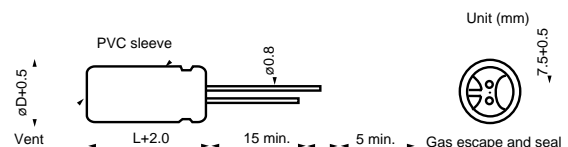
Item	Characteristics
Operating temperature range	-55~+105°C
Rated Voltage range	50V•DC
Capacitance Tolerance	±20% (at 20°C, 120Hz)
Leakage Current	100μA (After 3 minutes at 20°C)
tan δ	0.05 max. (at 20°C, 120Hz)
Load life with ripple current applied	The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage and the 105°C rated ripple current applied for 1,000 hours at 105°C. The sum of the DC voltage and peak AC voltage shall not exceed the full rated voltage of the capacitor Capacitance change ≤±15% of the initial value tan δ ≤200% of the initial specified value Leakage current ≤The initial specified value

KSA-BP Series
Standard ratings
 VB / Radial lead

Capacitance (μF) at 120 Hz	Case size (DxL) mm	Max.ripple current at 15.75 kHz		
		105°C	85°C	70°C
2.2	16x25.5	3.4 Ap-p	5.8 Ap-p	7.5 Ap-p
3.3	16x31.5	4.1 Ap-p	7.0 Ap-p	9.1 Ap-p
4.7	16x35.5	4.5 Ap-p	7.8 Ap-p	10.0 Ap-p
6.8	16x35.5	4.6 Ap-p	8.0 Ap-p	10.4 Ap-p
10	16x35.5	4.9 Ap-p	8.6 Ap-p	11.1 Ap-p
15	18x40	5.4 Ap-p	9.5 Ap-p	12.2 Ap-p

DIMENSIONS

VB / Radial lead



SREC, KRE Series



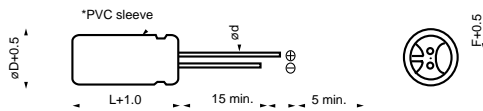
- Nominal case sizes, $\phi 3 \times 5$ 1 to $\phi 6.3 \times 5$ 1 mm
- Operating temperature range, SREC series: -40°C to $+85^{\circ}\text{C}$, KRE series: -55°C to $+105^{\circ}\text{C}$
- Designed for space-saving and high density insertion
- SREC is the code for specifying a solvent proof type of SRE series, and use SREC for Part Numbering System to order the solvent proof type. (Solvent proof type has pale green sleeve)
- SREC/KRE are solvent proof.
- Application: VTR, camera, car audio, mini-audio sets, OA related equipment and other industrial and commercial applications.

CHARACTERISTICS

Item / Series	SREC	KRE							
Operating Temperature range	$-40 \sim +85^{\circ}\text{C}$	$-55 \sim +105^{\circ}\text{C}$							
Capacitance Tolerance	$\pm 20\%$ (at 20°C .)								
Leakage current	0.01CV or $3\mu\text{A}$, whichever is greater. (After 2 minutes)								
tan δ	Rated Voltage (V)	4	6.3	10	16	25	35	50	
	SREC	0.37	0.26	0.22	0.18	0.16	0.14	0.12	
	KRE	0.30	*0.27	*0.23	*0.19	*0.19	*0.15	*0.11	
* For $\phi 3 \times 5$ 1 KRE, 0.02 shall be added to the above value (at 20°C 120 Hz)									
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 1,000 hours at maximum operating temperature. Capacitance change $\leq \pm 20\%$ of the initial value (+25 for KRE with $\phi 3$ and $\phi 3.5$ mm) tan $\delta \leq 200\%$ of the initial specified value Leakage current \leq The initial specified value								
Others	Satisfies characteristic W of JIC C5141								

DIMENSIONS

VB/Radial lead



*SRE: Non Solventproof: Black
 SRE: Solventproof (SREC): Pale Green
 KRE: Brown

CASE SIZES

μF	4	6.3	10	16	25	35	50	$\phi\text{D} \times \text{L}$ (mm)
0.1								3.5
0.15								3.5
0.22								3.5
0.33								3.5
0.47								3.5
0.68								3.5
1								3.5
1.5								3.5
2.2								3.5
3.3						3.5	3.5x5	4x5
4.7					3.5	3.5x5	4x5	5x5
6.8			3.5	3.5x5	4x5	5x5	6.3x5	6.3x5
10		3.5	3.5x5	3.5x5	5x5	5x5	6.3x5	6.3x5
15	3.5x5	3.5x5	4x5	5x5	6.3x5	6.3x5		
22	4x5	4x5	5x5	5x5	6.3x5	6.3x5		
33	•	5x5	5x5	6.3x5	6.3x5			
47	5x5	5x5	6.3x5	6.3x5				
68	6.3x5	6.3x5	6.3x5					
100	6.3x5	6.3x5						

SREC: 4X5
 KRE: 5X5

Maximum Ripple Current (mA RMS)

85°C, 120Hz

μF	4V	6.3V	10V	16V	25V	35V	50V
0.10							1.3(1.3)
0.15							2.0(2.0)
0.22							2.9(2.6)
0.33							3.5(3.2)
0.47							4.2(3.8)
0.68							5.1(4.6)
1							6.2(5.6)
1.5							7.5(6.9)
2.2						8.3(7.7)	10(10)
3.3					9.5(8.8)	11(11)	14(14)
4.7				10(9.4)	12(12)	15(15)	19(19)
6.8			11(11)	14(13)	16(16)	20(20)	24(24)
10		12(12)	15(14)	17(16)	23(23)	25(25)	29(29)
15	14(15)	17(16)	20(20)	26(25)	30(30)	33(33)	
22	19(21)	23(21)	29(27)	32(30)	37(37)	40(40)	
33	23(29)	32(30)	35(34)	42(40)	45(45)		
47	32(35)	38(36)	45(43)	50(48)			
68	41(45)	50(46)	54(52)				
100	50(55)	60(56)					

• () is of KRE ,at 105°C , 120Hz

- Load life, guaranteed with the rated ripple current applied
- Non-solvent proof. Solvent proof type is available upon request. (~250V)


CHARACTERISTICS

Item / Series	SMH					KMH				
Rated voltage range	6.3 to 450 V					6.3 to 450 V				
Operating Temperature range	6.3 to 100V: -40 to +85°C 160 to 450V: -25 to +85°C					6.3 to 100V: -40 to +105°C 160 to 450V: -25 to +105°C				
Capacitance Tolerance	+20% (M) (at 20°C, 120Hz)									
Leakage current (20%)	0.02CV (µA) or 3mA, whichever is smaller (after 5 minutes) Where, C: Nominal capacitance (µF) V: Rated working voltage (V)									
tan δ	Rated voltage(V)	6.3	10	16	25	35	50	63~100	160~250	315~450
	tan δ	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.10*	0.15
	* : 0.15max. for 35mm diameter (at 20°C, 120Hz)									
Low temperature characteristics	Impedance ratio at 120 Hz between the -25°C or -40°C value and 20°C value shall not exceed the values given below									
	Rated Voltage (V)	6.3~16	25	35	50,63	80,100	160~400	450		
	Z at -25°C/Z at +20°C	4	3	3	2	2	4	8		
	Z at -40°C/Z at +20°C	15	10	8	6	5	-	-		
Load life with the rated ripple current applied	After the capacitors are subjected to DC voltage with the rated ripple current applied for 2,000 hours at the maximum rated operating temperature, the following specifications shall be satisfied when the capacitors are restored to 20°C. The sum of DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitor Capacitance Change ≤±20% of the initial measured value tan δ ≤ 200% of the initial specified value Leakage current ≤ The initial specified value									
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them at maximum operating temperature for 1,000 hours without voltage applied. The rate working voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance Change ≤±20% of the initial measured value tan δ ≤ 150% of the initial specified value Leakage current ≤ The initial specified value									
Others	Satisfies characteristics W of JIS C 5141									

FREQUENCY MULTIPLIER SMH, KMH

Frequency / Rated Voltage	50Hz	120Hz	300Hz	1KHz	10KHz	100KHz
6.3~50V	0.95	1.00	1.03	1.05	1.08	1.08
63~100V	0.92	1.00	1.07	1.13	1.19	1.20
160~250V	0.81	1.00	1.17	1.32	1.45	1.50
315~450V	0.77	1.00	1.16	1.30	1.41	1.43

Ripple Current Multiplier
Temperature Multiplier

Ambient Temperature (C*)	65°	85	105
SMH-Multiplier	1.23	1.00	-
KMH-Multiplier		1.75	1.00

Note: For long life applications do not exceed rated ripple current specified at the maximum operating temperature or at lower temperatures.

STANDARD RATINGS

SMH

Size DxL (mm)	100V		160V		180V		200V		250V	
	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz
22x25	820	1.86	330	1.40	270	1.27	270	1.27	180	1.04
x30	1,200	2.09	470	1.73	390	1.58	330	1.45	270	1.31
x35	1,500	2.41	560	1.95	470	1.79	470	1.78	330	1.49
x40	1,800	2.71	680	2.21	560	2.00	560	2.00	390	1.67
x45	2,200	3.08	820	2.49	680	2.27	-	-	470	1.88
x50	-	-	1,000	2.82	820	2.55	680	2.33	-	-
25.4x25	1,200	2.10	470	1.74	390	1.58	390	1.58	270	1.32
x30	1,500	2.43	680	2.16	560	1.96	470	1.80	330	1.51
x35	1,800	2.75	820	2.45	680	2.23	560	2.03	470	1.86
x40	2,200	3.13	1,000	2.79	820	2.53	680	2.30	560	2.09
x45	2,700	3.57	1,200	3.15	1,000	2.87	820	2.60	-	-
x50	3,300	4.06	-	-	-	-	1,000	2.95	680	2.44
30x25	1,500	2.46	680	2.19	560	1.99	560	2.00	390	1.66
x30	2,200	3.09	820	2.50	820	2.50	680	2.28	470	1.89
x35	2,700	3.55	1,200	3.13	1,000	2.86	820	2.59	560	2.14
x40	3,300	4.05	-	-	1,200	3.23	1,000	2.95	680	2.43
x45	3,900	4.54	1,500	3.73	-	-	1,200	3.31	820	2.75
x50	4,700	5.13	1,800	4.20	1,500	3.83	-	-	1,000	3.31
35x25	2,200	3.14	1,000	2.80	820	2.53	680	2.31	560	2.06
x30	2,700	3.71	1,200	3.27	1,000	2.95	1,000	2.95	680	2.46
x35	3,900	4.49	1,500	3.69	1,200	3.31	1,200	3.31	820	2.77
x40	4,700	5.11	1,800	4.18	1,500	3.82	1,500	3.82	1,000	3.32
x45	5,600	5.75	2,200	4.78	1,800	4.32	1,800	4.32	1,200	3.53
x50	-	-	2,700	5.45	2,200	4.92	2,200	4.92	1,500	4.04

Size DxL (mm)	315V		350V		400V		450V	
	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz	Capacitance (µF)	Ripple Current (A rms) 85°C,120Hz
22x25	120	0.94	100	0.86	82	0.78	56	0.65
x30	150	1.11	120	0.99	100	0.90	82	0.82
x35	180	1.20	150	1.14	120	1.02	100	0.93
x40	220	1.41	180	1.28	150	1.16	120	1.04
x45	270	1.60	220	1.44	180	1.31	150	1.19
x50	330	1.82	270	1.64	220	1.49	-	-
25.4x25	150	1.10	120	0.99	100	0.90	82	0.82
x30	220	1.38	180	1.24	150	1.14	120	1.02
x35	270	1.59	220	1.44	180	1.30	150	1.19
x40	330	1.80	270	1.63	220	1.47	180	1.33
x45	390	2.01	-	-	270	1.67	-	-
x50	-	-	330	1.88	-	-	220	1.54
30x25	220	1.40	180	1.27	150	1.16	120	1.03
x30	270	1.59	220	1.44	180	1.44	150	1.19
x35	390	1.99	270	1.66	270	1.66	180	1.35
x40	470	2.27	390	2.06	330	1.90	220	1.55
x45	560	2.56	-	-	390	2.13	270	1.78
x50	-	-	470	2.40	-	-	330	2.01
35x25	330	1.80	270	1.63	220	1.47	180	1.33
x30	470	2.23	330	1.87	330	1.87	220	1.53
x35	560	2.49	470	2.33	390	2.08	270	1.73
x40	680	2.87	560	2.60	470	2.39	330	2.0
x45	820	3.25	680	2.96	560	2.69	390	2.24
x50	-	-	-	-	-	-	470	2.53

Ceiling Fan Capacitors



2 Wire					3 Wire				
Part#	Capacitance	Case dimensions(mm)			Part#	Capacitance	Case dimensions(mm)		
		W	H	T			W	H	T
CFC-1	1.0	32	17	10	CFC-2/4	2.0/4.0	32	17	10
CFC-2	2.0	32	19	12	CFC-2/5.5	2.0/5.5	32	19	12
CFC-3	3.0	32	21	14	CFC-3/6.5	3.0/6.5	32	21	14
CFC-4	4.0	38	26	15	CFC-3.5/1.5	3.5/1.5	38	26	15
CFC-5	5.0	38	26	15	CFC-5/8.2	5.0/8.2	38	26	15
CFC-6	6.0	38	27	17	CFC-6/14	6.0/14	38	27	17

Solid Tantalum Capacitors Radial

- Tough Plastic Case
- UL94V0 Flammability Rating
- Laser Marking Clarity and Permanence
- Low Cost
- Low DCL
- Low ESR & Impedance
- Temperature Stable
- Long Shelf life
- High Shock & Vibration
- Optional Reel packaging available

GENERAL SPECIFICATIONS

Operating Temperature:
-55°C to +125°C
(With proper derating)
Voltage Range:
6.3 to 50 WVDC @ 85°C
Reverse Voltage (Non-continuous):
15% of rated voltage @ 25°C
5% of rated voltage @ 85°C
1% of rated voltage @ 125°C
Capacitance Range:
.10µF to 68µF

Capacitance tolerance:
±10%, ±20%
(±5% by special order)
Capacitance Change from
Initial +25°C Value:
-10% @ -55°C
+10% @ +85°C
+12% @ +125°C
DC Leakage:
At +25°C -See table limit
At +85°C -10 x See table limit
At +125°C -12.5 x See table limit



TAN Series

Solid Tantalum Capacitors Axial

- Precision Molded
- Flame retardant
- Resistant to Shock & Vibration
- Tapered for Polarity Identification
- Taped and Reeled
- Highest CV per Case Size
- Long Shelf life
- Miniature Sizes

GENERAL SPECIFICATIONS

Operating Temperature:
-55°C to +125°C
(With proper derating)
Voltage Range: 35 to 50 WVDC @ 85°C
Reversed Voltage (Non-continuous):
15% of rated voltage @ 25°C
5% of rated voltage @ 85°C
1% of rated voltage @ 125°C
Capacitance Range:
.10µF to 47µF
Capacitance Tolerance:
±10% (±5% by special order)

Capacitance Change Maximum
-10% @ +20%
+10% @ +85°C
+12% @ +125°C



TAN Series

Multilayer Ceramic Capacitor

- Radial Leaded
- Conformally Coated
- Encapsulation consists of a moisture and shock resistant coating that meets UL94V-0
- Over 300 CV values available
- Applications:
Filtering, Bypass, Coupling

GENERAL SPECIFICATIONS

Voltage Range:
50, 100, 200 VDC
Capacitance Range:
10pF to 1µF
Temperature Coefficients:
COG(NPO), X7R, Z5U



MON Series
Available in Tape and Reel

Ceramic Disc 50 Volt

SPECIFICATIONS

- Operating temperature range: +10°C to 85°C (Z5U, Z5V)
- 25°C TO 85°C (Y5P)
- Rated working voltage: 50 VDC, 500 VDC
- Capacitance: Within the tolerance at 1 KHz, 1±0.2 Vrms. 25°C
- Test voltage: 2.5 of the rated voltage.
- Dissipation Factor (tan δ): •Insulation Resistance: 10,000 MΩ or 200MΩµF, whichever is the smaller
- Y5P,Z5U :tan δ ≤ 2.5%
- Z5V :tan δ ≤ 5%

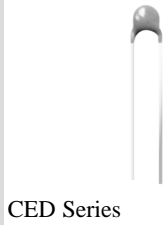
FEATURES:

- Large capacitance in small sizes
- Non linear temperature coefficient of capacitance



CED Series

Ceramic Disc High Voltage 1KV-2KV



CED Series

SPECIFICATIONS

- Operating Temperature range: +10°C to 85°C (Z5U, Z5V)
- 25°C TO 85°C (Y5P)
- Rated working voltage: 1 KV DC, 2 KV DC
- Capacitance: Within the tolerance at 1 KHz, 1±0.2 Vrms. 25°C
- Test voltage: 2 times of the rated voltage.
- Dissipation factor (tan δ) ≤2.5%
YP5, Z5U.....tan δ ≤2.5%
Z5V.....tan δ ≤5%
- Insulation resistance: 10,000 MΩμF or 200 MΩμF whichever is the smaller

Mylar Radial Series



MYL Series

- Radial leaded
- Wire leads crimped to provide Seating on printed circuit boards
- Non inductively wound
- 100-630 VDC
- Adaptable to all electronic circuit applications calling for bypass and coupling.

GENERAL SPECIFICATIONS

Operating Temperature:
100-630 VDC
-55°C to +125°C
Voltage range:
100 VDC to 630 VDC
Capacitance range:
0.001μF to 5.6μF
Capacitance tolerance:
±10%± 20%

Mylar Axial Series



MYL Series

- Axial leads
- Available Tape and Reel
- Tape wrapped with Epoxy End Fill
- Non inductively wound
- Flame Retardant polyester

GENERAL SPECIFICATIONS

Operating Temperature:
-55°C to +125°C
Voltage range:
100 VDC to 600 VDC
Capacitance range:
0.01μF to 10μF
Capacitance tolerance:
±5%, ±10%, ±20%

Dielectric Withstand:
1.6 x Vn applied for 2 sec.
at +25°C±5°C
Excellent choice for general purpose applications such as blocking, bypass, decoupling, smoothing, and some timing, energy storage discharge and arc suppression

Total Self Inductance (L):
1nH maximum per 1mm lead and capacitor length.

BoosterCap™ Capacitors



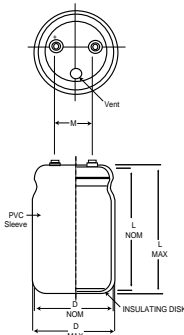
The BoosterCap™ Capacitor is designed for applications where instantaneous energy is a requirement. Typical applications are custom auto sound systems. With a capacitance value of 1 farad or .8 farad, these units, when installed in parallel with a storage battery, supply instantaneous current demanded by high power audio equipment.

Part Numbers

36DY105M020DJ2D
36DY804F020DJ2D

GENERAL SPECIFICATIONS

Rated Capacitance:
Part # 36DY105M020DJ2D 1 Farad
Part # 36DY804F020DJ2D .8 Farad
Operating Temp. Range -40°C to +95°C
Rated Working Voltage 20VDC
Capacitance Tolerance:
1 Farad ±20%
.8 Farad -10% to +50%
ESR at 120Hz, 25°C:
1 Farad .0034 ohms
.8 Farad .0039 ohms
DC Leakage Current at 20 VDC, 25°C:
1 Farad 18 (mA)
.8 Farad 18 (mA)
Ripple Current at 120Hz, 85°C:
1 Farad 50 Amps
.8 Farad 50 Amps
Terminals: Screw Inserts



Outline Dimensions:

Inches				
D NOM.	D MAX	L NOM.	L MAX	M
±.032		±.063		±.016
3.000	3.078	8.625	8.750	1.250
Millimeters				
D NOM.	D MAX	L NOM.	L MAX	M
±.82		±1.6		±0.4
76.20	78.18	219.1	222.3	31.75

Terminal Screws

Units supplied with 1/4-28 terminal screws

Type OPN, RPN AC Motor Run Capacitors

Oval and Round Can

All types have metal cases and four blade quick connect terminals with flash guards. Impregnating oil is biodegradable non-PCB. Always connect AC line to red or marked terminal and winding to other terminal. Letter suffix "R" indicates a resistor across terminals of capacitor. All other suffix letters indicate case size revisions. Allow 1/2 inch clearance above terminals for interrupter operation.

HIGHLIGHTS:

Capacitance Range: 1 to 10 μ F
Voltage: 236 to 660 VAC
Temperature Range: -55°C +70°C
Operating Frequency:
50 to 60 Hz
UL recognized: Yellow Card
Number E65270



Oval type

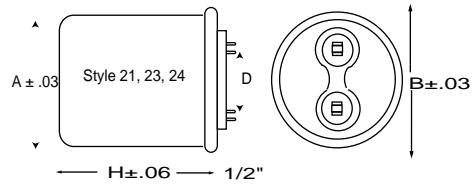
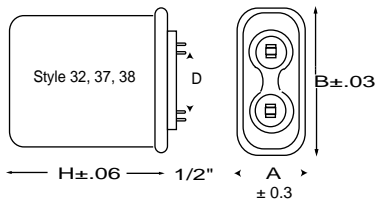
Cap μ F	VAC	Base Style	Hgt/inches	Cap.Tol	Catalog #	Cap μ F	VAC	Base Style	Hgt/inches	Cap.Tol	Catalog #
3	236	32	2 1/8	$\pm 10\%$	OPN336	1	660	32	2 5/8	$\pm 6\%$	OPN160
4	236	32	2 1/8	$\pm 10\%$	OPN436	2	660	32	2 5/8	$\pm 6\%$	OPN260
5	236	32	2 1/2	$\pm 10\%$	OPN536	3	660	37	2 5/8	$\pm 6\%$	OPN360
7.5	236	32	3 3/8	$\pm 10\%$	OPN7X36	4	660	37	2 5/8	$\pm 6\%$	OPN460
1	370	32	2 1/8	$\pm 10\%$	OPN170	5	660	37	2 5/8	$\pm 6\%$	OPN560
2	370	32	2 1/8	$\pm 10\%$	OPN270	6	660	37	2 5/8	$\pm 6\%$	OPN660
3	370	32	2 1/8	$\pm 10\%$	OPN370	7.5	660	37	2 5/8	$\pm 6\%$	OPN7X60
4	370	32	2 1/8	$\pm 10\%$	OPN470	8	660	37	2 5/8	$\pm 6\%$	OPN860
5	370	32	2 1/2	$\pm 10\%$	OPN570	10	660	37	3 1/8	$\pm 6\%$	OPN1060
6	370	32	2 7/8	$\pm 10\%$	OPN670	ROUND TYPE					
7.5	370	32	3 3/8	$\pm 10\%$	OPN7X570	3	330	23	2 3/8	$\pm 10\%$	RPN3303
10	370	32	4 1/8	$\pm 10\%$	OPN1070	4	330	23	2 3/8	$\pm 10\%$	RPN3304
1	440	32	2 1/8	$\pm 10\%$	OPN140	5	330	23	2 3/8	$\pm 10\%$	RPN3305
2	440	32	2 1/8	$\pm 10\%$	OPN240	6	330	23	2 3/8	$\pm 10\%$	RPN3306
3	440	32	2 1/2	$\pm 10\%$	OPN340	7	330	23	2 3/8	$\pm 10\%$	RPN3307
3.5	440	32	3	$\pm 10\%$	OPN3X40	8	330	23	2 3/8	$\pm 10\%$	RPN3308
4	440	32	3	$\pm 10\%$	OPN440	10	330	23	2 3/8	$\pm 10\%$	RPN3310
5	440	32	3 1/2	$\pm 10\%$	OPN540						
6	440	32	4	$\pm 10\%$	OPN640						
10	440	37	3 5/8	$\pm 10\%$	OPN1040						

OUTLINE DIMENSIONS (MPD, MPF, MSF, OPN, RPN) (Inches)

Flat Oval Containers						Round Containers					
Style	A	B	H	D	Industry Type	Style	A	B	H	D	Industry Type
32	1-5/16	2-5/32	•	13/16	1-1/4 F.O	21	1-3/4	1-7/8	•	13/16	1-3/4" Round
37	1-29/32	2-29/32	•	13/16	1-3/4 F.O	23	2	2-1/8	•	13/16	2" F.O
38	1-3 1/3	3-21/32	•	13/16	2 F.O	24	2-1/2	2-5/8	•	13/16	2-1/2" Round

* See rating tables for "H" Dimension

* See rating tables for "H" Dimension



Capacitor Kits

- All kits contain radial electrolytic capacitors.
- Kits range from 16 V to 450 V.
- Cap kits contain 85°C capacitors
- KME kits contain 105°C capacitors
- All kits are shipped from stock in plastic storage boxes

Capkit 16
16 Volt Values (39 pcs) 85°C

Capkit 50
50 Volt Values (51 pcs) 85°C

Capkit 100
100 Volt Values (30 pcs) 85°C

Capkit 160/250
160 Volt Values (12 pcs) 85°C
250 Volt Values (12 pcs) 85°C
Capkit 350/450
350 Volt Values (12 pcs) 85°C
450 Volt Values (9 pcs) 85°C
KME 16 Kit
16 Volt Values (39 pcs) 105°C

KME 50 Kit
50 Volt Values (33 pcs) 105°C

KME 100 Kit
100 Volt Values (21 pcs) 105°C

KME 160/250 Kit
160 Volt Values (10 pcs) 105°C
250 Volt Values (10 pcs) 105°C



Type PSU AC Motor Start Capacitors



Round Bakelite Case

The PSU motor start capacitor is an electrolytic device that can be used to provide the torque necessary to start AC motors and in other intermittent AC applications. Cases are of moisture and oil resistant molded plastic.

Equipped with 2 quick disconnect terminals. Mallory replacement motor start capacitors are designed in accordance with EIA RS-463, Type 2.

May be mounted by means of PL plastic end cap and HB metal snap-in bracket or VR clamp bracket (order separately)

HIGHLIGHTS

Capacitance range:

21 to 1536 μ F

Voltage: 110 to 330 VAC

Operating Frequency:

50 to 60 Hz.

Power Factor: 10% Max.

Temperature Range: -40°C to +65°C

Capacitors

Cap μ F	VAC	CASE CODE	CATALOG #	Cap μ F	VAC	CASE CODE	CATALOG #	Cap μ F	VAC	CASE CODE	CATALOG #
21-25	110/125	1	PSU2115	1175-1410	110/125	7	PSU117515	270-324	220-250	7	PSU27035A
25-30	110/125	1	PSU2515	1280-1536	110/125	7	PSU128015	21-25	330	1	PSU2130
30-36	110/125	1	PSU3015	21-25	165	1	PSU2165A	25-30	330	2	PSU2530
36-43	110/125	1	PSU3615	47-56	165	1	PSU4765A	30-36	330	2	PSU3030
43-52	110/125	1	PSU4315	53-64	165	1	PSU5365A	36-43	330	2	PSU3630
47-56	110/125	1	PSU4715	72-86	165	1	PSU7265A	43-52	330	2	PSU4330
53-64	110/125	1	PSU5315	88-106	165	2	PSU8865	47-56	330	4	PSU4730
72-86	110/125	1	PSU7215	108-130	165	2	PSU10865	53-64	330	4	PSU5330B
88-106	110/125	1	PSU8815	145-174	165	2	PSU14565	64-77	330	4	PSU6430
108-130	110/125	1	PSU10815	161-193	165	2	PSU16165	72-86	330	5	PSU7230B
124-149	110/125	1	PSU12415	189-227	165	2	PSU18965B	88-106	330	5	PSU8830A
130-156	110/125	1	PSU13015	216-259	165	4	PSU21665A	108-130	330	7	PSU10830B
145-174	110/125	1	PSU14515	233-280	165	3	PSU23365	124-149	330	8	PSU12430
161-193	110/125	1	PSU16115	270-324	165	3	PSU27065A	124-149	330	7	PSU12430A
189-227	110/125	1	PSU18915A	324-389	165	5	PSU32465	130-156	330	7	PSU13030
200-240	110/125	2	PSU20015	340-408	165	5	PSU34065	145-174	330	7	PSU14530A
216-259	110/125	2	PSU21615	378-454	165	5	PSU37865	161-193	330	8	PSU16130
233-280	110/125	2	PSU23315A	400-480	165	5	PSU40065	189-227	330	8	PSU18930
243-292	110/125	2	PSU24315A	430-516	165	5	PSU43065	216-259	330	8	PSU21630
270-324	110/125	2	PSU27015A	540-648	165	7	PSU54065				
300-360	110/125	4	PSU30015	21-25	220/250	1	PSU2135				
324-389	110/125	3	PSU32415A	25-30	220/250	1	PSU2535				
340-408	110/125	4	PSU34015	30-36	220/250	1	PSU3035				
378-454	110/125	4	PSU37815	36-43	220/250	1	PSU3635				
400-480	110/125	4	PSU40015	43-52	220/250	2	PSU4335B				
430-516	110/125	4	PSU43015A	47-56	220/250	2	PSU4735				
460-552	110/125	4	PSU46015A	53-64	220/250	2	PSU5335				
540-648	110/125	4	PSU54015A	64-77	220/250	2	PSU6435				
540-648	110/125	5	PSU54015B	72-86	220/250	4	PSU7235				
590-708	110/125	5	PSU59015A	88-106	220/250	4	PSU8835				
645-774	110/125	5	PSU64515	108-130	220/250	4	PSU10835A				
708-850	110/125	5	PSU70815	124-149	220/250	5	PSU12435				
720-864	110/125	5	PSU72015	130-156	220/250	5	PSU13035				
800-960	110/125	5	PSU80015	145-174	220/250	5	PSU14535				
815-978	110/125	5	PSU81515	161-193	220/250	7	PSU16135A				
829-995	110/125	5	PSU82915A	189-227	220/250	7	PSU18935A				
850-1020	110/125	5	PSU85015	216-259	220/250	7	PSU21635A				
1000-1200	110/125	7	PSU100015A	233-280	220/250	7	PSU23335A				
1020-1224	110/125	7	PSU102015	243-292	220/250	7	PSU24335				

PSU CASE SIZES

Case #	Diameter	Height
1	1 7/16	2 3/4
†2	1 7/16	3 3/8
3	1 7/16	4 3/8
†4	1 13/16	3 3/8
†5	1 13/16	4 3/8
6	2 1/16	3 3/8
†7	2 1/16	4 3/8
8	2 9/16	4 3/8

Computer Grade Capacitors



Voltage: 6.3 to 500 VDC

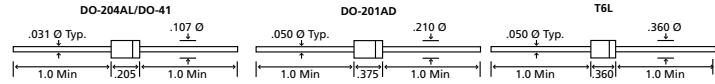
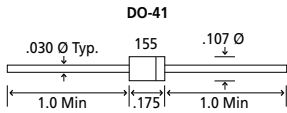
Capacitance Range: 100 μ F to 2.2F at +25°C, 120 Hz

Tolerance: -10% to +50%

Del: 4 to 6 weeks

Zener Diodes

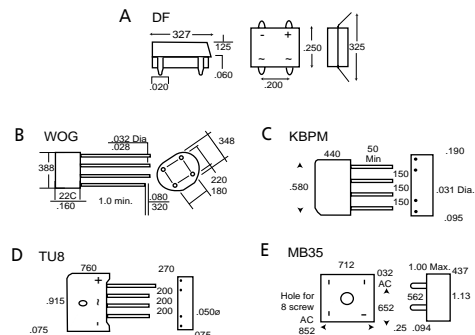
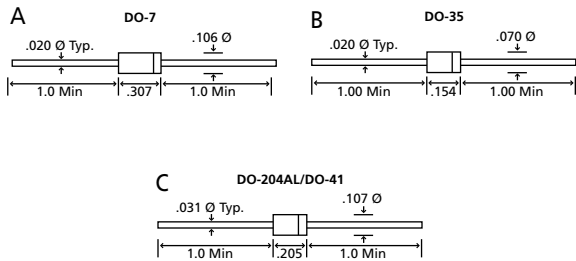
Rectifier Diodes



VOLTAGE	DOWPAK PART#	VOLTAGE	DOWPAK PART#	AMP	VOLTAGE	TYPE	PACK QTY	DOWPAK PART #	PACK QTY.	DOWPAK PART#
3.3	IN4728A	20	IN4747A	1	50	Si	10	IN4001	100	IN4001C
3.6	IN4729A	22	IN4748A	1	100	Si	10	IN4002	100	IN4002C
3.9	IN4730A	24	IN4749A	1	200	Si	10	IN4003	100	IN4003C
4.3	IN4731A	27	IN4750A	1	400	Si	10	IN4004	100	IN4004C
4.7	IN4732A	30	IN4751A	1	600	Si	10	IN4005	100	IN4005C
5.1	IN4733A	33	IN4752A	1	800	Si	10	IN4006	100	IN4006C
5.6	IN4734A	36	IN4753A	1	1000	Si	10	IN4007	100	IN4007C
6.2	IN4735A	39	IN4754A	3	50	Si	5	IN5400		
6.8	IN4736A	43	IN4755A	3	100	Si	5	IN4001		
7.5	IN4737A	47	IN4756A	3	200	Si	5	IN5402		
8.2	IN4738A	51	IN4757A	3	400	Si	5	IN5404		
9.1	IN4739A	56	IN4758A	3	600	Si	5	IN5406		
10	IN4740A	62	IN4759A	3	800	Si	5	IN5407		
11	IN4741A	68	IN4760A	3	1000	Si	5	IN5408		
12	IN4742A	75	IN4761A	6	50	Si	2	6A05		
13	IN4743A	82	IN4762A	6	200	Si	2	6A2		
15	IN4744A	91	IN4763A	6	400	Si	2	6A4		
16	IN4745A	100	IN4764A	6	1000	Si	2	6A10		
18	IN4746A									

Specialty Diodes

Bridge Rectifiers



AMP	VOLTAGE	DESCRIPTION	PACK QTY	DOWPAK PART #	DRWG REF	AMP	VOLTAGE	DOWPAK P/N PART #	DRWG REF
60v	5 MA	General Purpose (GE)	5	IN34	A	1.5	1000	N1411	A
100v	20 MA	Switch (Si)	20	IN914	B	1.5	1000	N1412	B
200v	1	Fast Recovery	10	IN4935	C	2	200	N1423	C
400v	1	Fast Recovery	10	IN4936	C	2	400	N1424	C
600v	1	Fast Recovery	10	IN4937	C	2	600	N1425	C
						2	1000	N1427	C
						4	200	N1432A	D
						4	400	N1433A	D
						4	600	N1434A	D
						8	200	N1437A	D
						8	400	N1438A	D
						8	600	N1439A	D
						15	200	N1442A	E
						15	400	N1443A	E
						15	600	N1444A	E
						25	200	N1454	E
						25	400	N1455	E
						25	600	N1456	E
						35	200	N1464	E
						35	400	N1465	E
						35	600	N1466	E
						35	1000	N1468	E

Diodes and Bridge Rectifiers

3 AG Normal Blow Fuses

Fast acting type for general circuit protection . Used generally for home TV, radio, amplifiers, etc.



Test Specifications

% of Rating / Blow Time	3AG 1/32	3AG 1/4	3AG 1 1/4	3AG 3 1/2
110%.....4 hr.max.	3AG 1/16	3AG 3/10	3AG 1 1/2	3AG 4
135%.....1 hr. max.	3AG 1/10	3AG 3/8	3AG 1 6/10	3AG 5
200%.....5 sec.max	3AG 1/8	3AG 1/2	3AG 1 3/4	3AG 6

Fuse Specification

1/4 in. x 1 1/4 in.	3AG 15/100	3AG 6/10	3AG 2	3AG 7
	3AG .175	3AG 3/4	3AG 2 1/4	3AG 8
	3AG 3/16	3AG 8/10	3AG 2 1/2	3AG 10
	3AG 2/10	3AG 1	3AG 3	

UL, CSA
1/32 Amp to 10 Amp 250 Volt

3 AG Normal-Blow Pig Tail Fuses

Fast acting type for general circuit protection . Used generally for home TV, radio, amplifiers, etc.



Test Specification

% of Rating / Blow time	3AGPT 1/16	3AGPT 1/2	3AGPT 1 1/2	3AGPT 4
110%.....4 hr.min.	3AGPT 1/10	3AGPT 6/10	3AGPT 1 6/10	3AGPT 5
135%.....1 hr.max	3AGPT 1/8	3AGPT 3/4	3AGPT 2	3AGPT 6
200%.....5 sec.min	3AGPT 2/10	3AGPT 8/10	3AGPT 2 1/2	3AGPT 7

Fuse Specifications

1/4 in. x 1 1/4 in	3AGPT 3/10	3AGPT 1	3AGPT 3	3AGPT 8
	3AGPT 3/8	3AGPT 1 1/4	3AGPT 3 1/2	3AGPT 10

UL, CSA
1/16 Amp to 10 Amp 250 Volt.

3 AG Slow-Blow Glass Tube Fuses

These fuses have a time lag characteristics to withstand heavy surges. Yet they will blow quickly on high overloads or short circuits. These fuses are designed for circuits in equipment having high inductive or capacitive surges, or heavy starting currents such as magnets, solenoids, motors, lamp circuits, etc.



Test Specifications

% of Rating / Blow time	3AGSB 1/100	3AGSB 3/8	3AGSB 1 6/10	3AGSB 6
110%.....4 hr.min.	3AGSB 1/32	3AGSB 4/10	3AGSB 1 8/10	3AGSB 6 1/4
135%.....1 hr.max	3AGSB 4/100	3AGSB 1/2	3AGSB 2	3AGSB 7
200%.....5 sec.max	3AGSB 1/16	3AGSB 6/10	3AGSB 2 1/4	3AGSB 8

Fuse Specifications

1/4 in. x 1 1/4 in
UL, CSA thru 8 Amp
1/100 Amp to 8 Amp 250 Volt. 10 Amp to 30 Amp 32 volt

	3AGSB 1/10	3AGSB 7/10	3AGSB 2 1/2	3AGSB 10
	3AGSB 1/8	3AGSB 3/4	3AGSB 2 8/10	3AGSB 12
	3AGSB .175	3AGSB 8/10	3AGSB 3	3AGSB 15
	3AGSB 3/16	3AGSB 1	3AGSB 3 2/10	3AGSB 20
	3AGSB 2/10	3AGSB 1 2/10	3AGSB 3 1/2	3AGSB 25
	3AGSB 1/4	3AGSB 1 1/4	3AGSB 4	3AGSB 30
	3AGSB 3/10	3AGSB 1 1/2	3AGSB 5	

SFE - 32 Volt Fuses

SFE Type for Automotive Circuits

32 Volt. UL Listed	SFE 4	SFE 7 1/2	SFE 14	SFE 30
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Test Specifications

% of Rating / Blow time	SFE 6	SFE 9	SFE 20
110%.....4 hr. min.			
135%.....1 hr. max			
200%.....10 sec. max.			

Fuse Diameter 1/4 in.



3 AG Slow-Blow Pig Tail Glass Tube Fuses

These fuses have a time lag characteristics to withstand heavy surges. Yet they will blow quickly on high overloads or short circuits. These fuses are designed for circuits in equipment having high inductive or capacitive surges, or heavy starting currents such as magnets, solenoids, motors, lamp circuits, etc.

Test Specifications

% of Rating / Blow Time	3AGSBPT 1/16	3AGSBPT 3/8	3AGSBPT 3 1/2
110%.....4 hr.min	3AGSBPT 1/10	3AGSBPT 8/10	3AGSBPT 4
135%.....1 hr. max	3AGSBPT 1/8	3AGSBPT 1	3AGSBPT 5
200%.....5 sec. min	3AGSBPT 15/100	3AGSBPT 1 2/10	3AGSBPT 6/14

Fuse Specification

1/4 in. x 1 1/4 in.	3AGSBPT 3/16	3AGSBPT 1 1/4	3AGSBPT 7
UL, CSA Thru 8 Amp	3AGSBPT 2/10	3AGSBPT 1 1/2	3AGSBPT 7 1/2
1/16 Amp to 8 Amp 250 Volt.	3AGSBPT 1/4	3AGSBPT 1 6/10	3AGSBPT 8
10 Amp to 30 Amp 32 volt	3AGSBPT 3/10	3AGSBPT 1 8/10	3AGSBPT 10
	3AGSBPT 3/8	3AGSBPT 2	3AGSBPT 12
	3AGSBPT 4/10	3AGSBPT 2 1/2	3AGSBPT 15
	3AGSBPT 1/2	3AGSBPT 2 8/10	3AGSBPT 20
	3AGSBPT 6/10	3AGSBPT 3	3AGSBPT 25
	3AGSBPT 7/10	3AGSBPT 3 2/10	3AGSBPT 30



3AB Normal-Blow Ceramic Tube Fuses

These are high interrupting capacity fuses for use on circuits capable of delivering currents of high amperage

Test Specifications

% of Rating / Blow Time	1/4 in. x 1 1/4 in.	3AB 1/8	3AB 1	3AB 6	3AB 12
110%.....4 hr.min.	UL thru 25 Amp	3AB 1/4	3AB 2	3AB 7	3AB 15
135%.....1 hr. max.	1/8 Amp to 20 amp 250 volt.	3AB 3/8	3AB 3	3AB 8	3AB 20
200%.....15 sec.max.	25 Amp to 30 Amp 125 Volt	3AB 1/2	3AB 4	3AB 9	3AB 25
(1/8 to 12 amp)		3AB 3/4	3AB 5	3AB 10	3AB 30
60 sec.max (15 to 30 Amp)					



3AB Slow Blow Ceramic-Fuses

These fuses are for circuits with inrush currents . For use with small appliances, instruments, electronic equipment, and microwaves.

Test Specifications

% of Rating / Blow Time	3ABSB 1/8	3ABSB 2	3ABSB 6 1/4	3ABSB 15
110%.....4 hr. min.	3ABSB 1/4	3ABSB 3	3ABSB 7	3ABSB 20
135%.....1 hr. max.	3ABSB 1/2	3ABSB 3 2/10	3ABSB 8	3ABSB 25
200%.....5 sec.max.	3ABSB 3/4	3ABSB 4	3ABSB 10	3ABSB 30
Fuse specifications	3ABSB 1	3ABSB 5	3ABSB 12	

1/4 in. x 1 1/4 in.

UL to 20 Amp

1/8 Amp to 20 Amp 250 Volt. 25 Amp to 30 Amp 125 Volt



8 AG Normal-Blow Fuses

These are normal blow fuses. Do not confuse with high-speed instrument fuses

Test Specifications

% of Rating / Blow time	8AG 1/16	8AG 3/4	8AG 3 1/4	8AG 8
110%.....4 hr.min.	8AG 1/8	8AG 1	8AG 4	8AG 10
135%..... 1 hr. max.	8AG 1/4	8AG 1 1/2	8AG 5	8AG 12
200%.....10 sec.max.	8AG 3/8	8AG 2	8AG 6	8AG 15
Fuse Specifications	8AG 1/2	8AG 3	8AG 7	8AG 20

1/4 in. x 1 in

1/16 Amp to 2 Amp UL,CSA. 2 1/2 Amp to 20 Amp 125 UL.

1/16 Amp to 2 Amp 250 Volt. 2 1/2 Amp to 5 Amp 125 Volt.

6 Amp to 20 Amp 32 Volt.



AGA- Fuses 1 AG

Automotive and general purpose fuses



Test Specifications

% of Rating / Blow time	AGA 1	AGA 3	AGA 7
110%.....4 hr. min	AGA 1 1/2	AGA 4	AGA 10
135%.....1 hr. max.	AGA 2	AGA 5	AGA 15
200%.....10 sec. max.	AGA 2 1/2	AGA 6	AGA 25
			AGA 30

Fuse Specifications

1/4 in.x 5/8 in.
1 Amp to 2-1/2 Amp 125 Volt. 3 Amp to 30 Amp 32 Volt, UL

Pico Fuses

Subminiature fuses used in circuits where space requirements are an important factor



Test Specifications

% of Rating / Blow time	PMF 1/16	PMF 3/4	PMF 2 1/2	PMF 5
110%.....4 hr.min	PMF 1/8	PMF 1	PMF 3	PMF 7
150%.....5 min. max.	PMF 1/4	PMF 1 1/4	PMF 3 1/2	PMF 10
200%.....5 sec. max	PMF 3/8	PMF 1 1/2	PMF 4	PMF 15

Fuse Specifications

1/16 Amp to 15 Amp 125 Volt

AGC Fuses

Medium acting fuses for use in amplifiers, automobiles, radios,etc.



Test Specifications

% of Rating / Blow time	AGC 12	AGC 25
110%.....4 hr. min	AGC 15	AGC 30
135%.....1 hr. max	AGC 20	AGC 35
200%.....10 sec. max.		

Fuse Specifications

1/4 in. x 1 1/4 in.
12 Amp to 35 Amp. 32 Volt

T Time Delay 5 x 20 mm Fuses

A time delay miniature fuse giving the American/Canadian designer a small European size fuse with UL & CSA approvals



Test Specifications

% of Rating / Blow time	T 1/16	T .315	T 1	T 3 1/2
110%.....4 hr.min.	T .063	T 4/10	T 1 1/4	T 4
135%.....1hr. max.	T .080	T 1/2	T 1 1/2	T 5
200%.....5 sec.max.	T 1/10	T 6/10	T 1 6/10	T 6
	T 1/8	T .630	T 2	T 6.30

Fuse Specifications

1/4 in. x 1 1/4 in.
1/16 Amp to 10 Amp 250 Volt

T .160	T 7/10	T 2 1/2	T 7
T 2/10	T 3/4	T 3	T 8
T 1/4	T 8/10	T 3.15	T 10

F Fast Acting 5 x 20 mm Fuses

A fast acting miniature fuse giving the American/Canadian designer a small European size fuse with UL & C. S.A. approvals.



Metric Values are I.E.C Approved.

Metric Values 250 Volt.

1/16 Amp to 3 Amp 250 Volt

3.15 Amp to 15 Amp 125 Volt

Metric Values	F 1/16	F .315	F 1 2/10	F 3 1/2
	F .063	F 4/10	F 1 1/4	F 4
	F .080	F 1/2	F 1 1/2	F 5
	F 1/10	F 6/10	F 1 6/10	F 6
	F 1/8	F .630	F 2	F 6.30
	F .160	F 7/10	F 2 1/2	F 7
	F 2/10	F 3/4	F 3	F 8
	F 1/4	F 8/10	F 3.15	F 10
	F 3/10	F 1		F 15

F Pig Tail Fast Acting 5 x 20 mm

A fast acting miniature fuse giving the American/Canadian designer a small European size fuse with UL & C. S.A. Metric Values are I.E.C Approved.

Metric Values 250 Volt.	F 1/4 PT	F 1 6/10PT	F 3 1/2 PT	F 10 PT
1/16 Amp to 3 Amp 250 Volt	F 1/2 PT	F 2 PT	F 4 PT	
3.15 Amp to 15 Amp 125 Volt	F 1 PT	F 2 1/2 PT	F 5 PT	
	F 1 1/2PT	F 3 PT	F 6 PT	



ATS Blade Type Automotive Fuse

Non time delay. transparent for visual inspection of element. Color coded for easy amperage identification. For automobiles and trucks.

Test Specifications

% of Rating / Blow time	ATS 3	ATS 5	ATS 10	ATS 20
110%.....4 hr.min.	ATS 4	ATS 7 1/2	ATS 15	ATS 25
135%.....1500 sec. max.				ATS 30
200%.....5 sec.max.				
300%.....08 sec. max.				
32 Volt. UL Listed				



ATM Blade Type Automotive Fuse

Non time delay. Transparent for visual inspection of element. Color coded for easy amperage identification. For automobiles and trucks. 32 Volt. UL listed.

Test Specifications

% of Rating / Blow time	ATM 2	ATM 4	ATM 10	ATM 20
110%.....Indefinitely	ATM 3	ATM 5	ATM 15	ATM 25
135%.....1500 sec. max.		ATM 7 1/2		ATM 30
200%.....5 sec.max.				
300%.....08 sec. max.				



Maxi Blade Type Automotive Fuse

Non time delay. Transparent for visual inspection of element. Color coded for easy amperage identification. For automobiles and trucks. 32 Volt. UL listed.

Test Specifications

% of Rating / Blow time	MAX 20	MAX 40	MAX 60
110%.....Indefinitely	MAX 30	MAX 50	
135%.....1500 sec. max.			
200%.....5 sec.max.			
300%.....08 sec. max			



FUSE BLOCKS

Fuse Block - Single

For 3AG or AGC Fuse

Part # 57-1

Quick-Connect / Solder Tabs.

Packaged 1 per bag



Fuse Block- Double

For 3AG or AGC Fuse

Part # 57-2

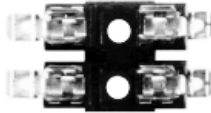
Quick-Connect / Solder Tabs.

Packaged 1 per bag





Fuse Block - Single
 For 5 x 20 mm Fuse
Part # 520-1
 1/4" Quick-Connect / Solder
 Packaged 1 per bag



Fuse Block - Single
 For 5 x 20 mm Fuse
Part # 520-2
 1/4" Quick-Connect / Solder
 Packaged 1 per bag

Fuse Holders



Fuse Holder Inline Type
 For all standard 1/4" Diam. fuses, No. 14 lead wire. For all automotive and electronic fuses from 5/8" to 1 1/4"
Part#: 44-14
 Packaged 1 per bag



Fuse Holder Inline Type
 For all standard 1/4" Diam. fuses, No. 18 lead wire. For all automotive and electronic fuses from 5/8" to 1 1/4"
Part#: 44-18
 Packaged 1 per bag



Fuse Holder Inline Screw Type Bakelite
 No. 14 wire
Part#: 44-15
 Packaged 1 per bag



Fuse Holder Screw Type
 For 5 x 20 mm fuse
Part#: 44-13
 Packaged 1 per bag



Fuse Holder Bayonet Type
 250 V 10A rating. AC 1500V Breakdown Voltage, panel mounting, 1/2" Diam. mounting hole.
 Fits all 1/4" x 1 1/4" fuses
Part#: 44-10
 Packaged 1 per bag



Fuse Holder Push Type
 250 V 10A rating. AC 1500V Breakdown Voltage, panel mounting, 1/2" Diam. mounting hole.
 Fits all 1/4" x 1 1/4" fuses
Part#: 44-11
 Packaged 1 per bag

Pig Tail Fuse Clips Spring Type

Saves time, eliminates the need for pig tail fuses that require repeated soldering and desoldering. Makes a permanent fuse holder ideal for printed circuit boards.

Part# 44-20

package 10 per bag



Fuse Clips S Style

For easy replacement of pig tail fuses. Snap over ends of old fuse, snap in new fuse

Part# 44-21

package 20 per bag



Fuse Clips

For 1/4" 3AG Type fuse standard hole mount earless

Part# 44-23

package 4 per bag



For 1/4" 3AG Type fuse PC board mounting, earless

Part# 44-24

package 4 per bag



For 1/4" 3AG Type fuse PC board mounting ear.

Part# 44-25

package 4 per bag



For 5 x 20mm Type fuse. PC mounting ear

Part# 44-27

package 4 per bag



Twin Fuse Clip-Insulated

For 1/4" x 1 1/4" fuses. Snap over blown fuse. Insert new fuse which rides piggyback. No cutting or soldering.

Part# 44-34

package 4 per bag



Universal Fuse Puller



For 3AG
and ATS Type Fuses

Part # 44-71
package 1 per bag

Fuse Holder & Cap



For ATM Mini Blade Auto Fuses. Will accept 2-30 Amp. mini blade fuses. 4" long # 12 lead wire

Part # ATM-CB (H)
package 1 per bag



For Maxi Blade Auto Fuses. Will accept 20-60 Amp. Maxi blade fuses. 5" # 6 lead wire

Part # MAXI-CB (H)
package 1 per bag

Fuse Holder



For ATS Standard Blade Auto Fuses. Will accept 3-30 Amp. blade fuses. 5" long # 12 lead wire

Part # ATS-CB (H)
package 1 per bag

Fuse Tap-On Kit

The Seneca fuse Tap-on Kit is designed to make it easy to add a circuit to the new flat automotive fuseblock. Pick the circuit or fuse that is to be used and slide leg of the fuse and insert the fuse and the Tap-on into the fuseblock. Put the Tap-on on the hot side of the fuse and use an external fuse and fuseholder to protect the new circuit. Put the Tap-on on the cold side "protected side" of the fuse and the fuse will protect your new circuit. When installed, a quarter inch tab will protrude above the fuseblock. Onto this tab place the fully insulated female push-on terminal. After installation is complete, bend the Tap-on flat to the fuseblock to save space.

Tap-on Kit:
For Blade Type Fuses.



Part #
44-40 (18-22 Gauge Wire)
44-41 (12-14 Gauge Wire)
44-42 (12-10 Gauge Wire)

Tap-On Kit:
For Glass Fuses



Part #
44-40R (18-22 Gauge Wire)
44-41R (12-14 Gauge Wire)
44-42R (12-10 Gauge Wire)

Tap-On Kit:
For ATM fuses
Part # MFT-1

Fuse Cross Reference

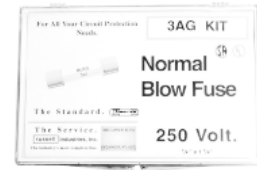
Seneca	Bussman	Littlefuse	Seneca	Bussman	Littlefuse
3AG	AGC	312	ATM	ATM	-
-	-	-	MAXI	MAXI	-
-	-	-	-	-	257
AGC	AGC	311	SFE	SFE	307
3AGPT	GJV	318	AGA	AGA	301
3AGSB	MDL	313	57-1	S58202-01	357001
3AGSBPT	MDV	315	57-2	S58202-02	357002
F	GMA	217	520-1	2000-1	
-	GDB	235	520-2	2000-2	
T	GMC	218	44-10	HKP	342012
-	GDC	239	44-15	HRK	150145
3AB	ABC	314	44-23	5681-15	101002
3ABSB	MDA	326	44-24	1A1120-10	102078
8AG	AGX	362	44-25	1A1907-06	102071
PMF	MCR	275	44-27	1A3399-10	111501
-	-	251	44-34	3434	350150
ATS	ATC	ATO	44-13	-	345623
44-71	FPC				

FUSE KITS 3AG KIT

3AG Fuse Kit

Contains 1 tin (5 fuses) each of the following

3 AG 1/2	3AG 1
3AG 1 1/2	3AG 2
3AG 2 1/2	3AG 3
3AG 3 1/2	3AG 4
3AG 5	3AG 7
3AG 8	3AG 10



FPT Kit

F Pigtail Kit

Contains 1 tin (5 fuses) each of the following

FPT 1/2	FPT 1
FPT 1-1/2	FPT 1-6/10
FPT 2	FPT 2-1/2
FPT 3	FPT 3-1/2
FPT 4	FPT 5
FPT 6	FPT 10



ATS & MAX Kit

Standard & Maxi Blade Auto Fuse Kit

(5 fuses)

ATS 5	ATS 7-1/2
ATS 10	ATS 15
ATS 20	ATS 25
	ATS-30 (1 fuse)
MAX 20	MAX 30
MAX 40	MAX 50
	MAX 60

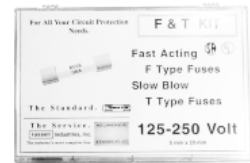


F & T Kit

F & T Fuse Kit

Contains 1 tin (5 fuses) each of the following

F 1	F 1-6/10
F 2	F 3
F 3.15	F 4
F 5	T 1
T 2	T 3
T 4	T 5

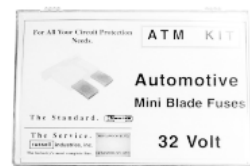


ATM Kit

Mini Blade Auto Fuse Kit

5 fuses each Bulk)

ATM 2	ATM 3
ATM 4	ATM 5
ATM 7-1/2	ATM 10
ATM 15	ATM 25
	(10 fuses each Bulk)
ATM 20	ATM 30



Ceramic Fuse Kit

Microwave Oven Fuse Kit

Contains 1 tin (5 fuses) each of the following

3AB 10	3AB 15
3AB 20	3AB 25
3AB 30	3ABSB 8
3ABSB10	3ABSB 12
3ABSB15	3ABSB 20
3ABSB 25	3ABSB 30



Dowpack Assortments



Dowpack Assortments



Part#	Description	Spect.	Quantity / Pieces
HO507K	Round Plastic Spacers Gray CPVC RMS 11	Hole Size: #4 & 6 Lengths: 1/4", 3/8", 1/2", 3/4", 1"	72 pcs.
HO508K	Round Plastic Spacers Gray CPVC RMS 11	Hole Size: #8 & 10 Lengths: 1/4", 3/8", 1/2", 3/4", 1"	72 pcs.
HO517K	Hex Plastic Standoffs Gray CPVC RMS 11	Self tapping screw sizes: #4 , 6, & 8 Lengths: 1/2", 5/8", 3/4", 1"	76 pcs.
HO522K	Stick on Bumpers Resilient Polyurethane	Round: .44", .50", .63", .75", .88" Heights: .14", .20, .31", .38", .40" Square: .50" to .81" Height: .12", .23", .30"	48 pcs.
HO524K	Vinyl Grommets Black Flexible Vinyl	I.D: 1/8", 5/32", 3/16", 7/32", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" Hole Dia.: .19", .25", .31", 35", 44", .50", 69", .75", 1.0"	56 pcs.
HO527K	Nylon Insulating Bushings 6/6 Nylon .250", .375"	Screw Sizes: #4, 6, 8, 10, 1/4" Lengths: .046", .054", .093", .156",	100 pcs.
HO530K	Nylon Machine Screws 6/6 Nylon	4-40 1/4", 1/2", 3/4" & Nuts 6-32 1/4", 1/2", 3/4" & Nuts 8-32 1/4", 1/2", 3/4" & Nuts 10-32 1/2", 1" & Nuts 1/4-20 1/2", 1" & Nuts	130 pcs.
HO535K	Steel Machine Screws Plated	4-40 1/4", 1/2", 3/4", 1" & Nuts 6-32 1/4", 1/2", 3/4", 1" & Nuts	300 pcs.
HO536K	Steel Machine Screws Plated	8-32 1/4", 1/2", 3/4", 1" & Nuts 10-32 1/4", 1/2", 3/4", 1" & Nuts	200 pcs.
HO539K	Self-Tapping Screws Plated Steel	# 4 3/8", 1/2" # 6 1/4", 3/8", 1/2", 1" # 8 3/8", 1/2", 3/4", 1"	200 pcs.
HO540K	Nylon Cable Clamps 6/6 Nylon	Cable Diameters: 1/8", 3/16", 1/4", 5/16", 3/8" 7/16", 1/2", 5/8", 3/4", 1"	58 pcs.
HO541K	Aluminum Cable Clamps 5052H-32 Alloy	Cable Diameters: 1/8", 3/16", 1/4", 5/16", 3/8" 7/16", 1/2", 5/8", 9/16"	62 pcs.
HO542K	Ring Crimp Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 22-18 AWG (Red) Stud Sizes: 2", 4", 6", 8", 10"	90 pcs.
HO543K	Ring Crimp Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 16-14 AWG (Blue) Stud Sizes: 4", 6", 8", 10", 1/4"	90 pcs.
HO544K	Ring Crimp Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 12-10 AWG (Yellow) Stud Sizes: 10", 1/4", 5/16", 3/8", 1/2"	70 pcs.
HO545K	Spade Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 22-18 AWG (Red) Stud Sizes: #4, 6, 8, 10	75 pcs.
HO546K	Spade Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 16-14 AWG (Blue) Stud Sizes: #4, 6, 8, 10, 1/4"	75 pcs.
HO547K	Spade Terminals Vinyl Insulated & Non Insulated	Wire Sizes: 12-10 AWG (Yellow) Stud Sizes: #6, 8, 10, 1/4"	75 pcs.
HO553K	Quick Slide Connectors Vinyl Insulated & Non Insulated Slide Width: .250"	Wire Sizes: 22-18 AWG (Red) 16-14 AWG (Blue)	72 pcs.
HO554K	Snap Plug Connectors Vinyl Insulated & Non Insulated	Wire Sizes: 22-18 AWG (Red) 16-14 AWG (Blue) Diameters: .156" & .180" Male & Female	42 pcs.
HO557K	Crimp Connectors Quick Slide and Butt	Wire Sizes: 22-18, 16-14, 12-10 Slide Width: .250"	80 pcs.
HO562K	Circuit Board Supports 6/6 Nylon	Heights: 1/4", 3/8", 1/2", 3/4", 1-1/8" #8: Stud with Nut #6: Self Strapping Screw	40 pcs.
HO571K	Nylon Snap Rivets Reusable	Hole Sizes: .116", .156", .196" 10 Thickness's: .079", .295"	100 pcs.
HO575K	Clips & Clamps #1 Adhesive Back	U & Locking types 1/8" thru 3/4" dia.	35 pcs.
HO576K	Clips & Clamps #2 Adhesive Back	Single & Double Types 1/8" thru 1/2" dia.	38 pcs.
HO577K	Clips & Clamps #3 Adhesive Back	C & Flat Cable Types 1/8" & 3/4" dia.	40 pcs.

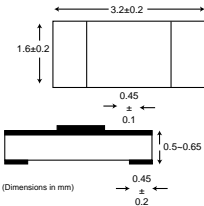
Surface Mount Resistors

Characteristics

Temperature Range	-55°C~+125°C
Temperature coefficient	Room temperature
Temperature cycling	-55°C~+125°C
Short time overload	Rated voltage x 2.5,5 seconds
Humidity load life	40°C RH 90~95%
Load life	70°C
Vibration	Low frequency, 3 directions 2 hrs. per each direction
Solderability	230°C, 3 seconds
Resistance to soldering heat	260°C, 10 seconds
Termination Adhesion	500g

Limits

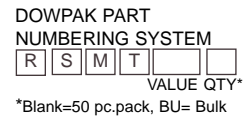
Requirements
4.7<R<100±500ppm/°C
100<R<1M±250ppm/°C
±(1.0% + 0.1Ω) Max
±(2.0% + 0.1Ω)Max
±(3.0% + 0.1Ω)Max
±(3.0% + 0.1Ω)Max
±(1.0% + 0.1Ω)Max
90% Min. coverage
±(2.5% + 0.1Ω)Max
±(1% + 0.1Ω)Max



- Wave or flow solderable
- High purity alumina substrate
- Excellent high frequency characteristics
- Wrap around termination
- Inner electrode protection
- ±5 tolerance
- 1/8 watt

TABLE OF VALUES

0	20	43	91	180	360	680	1.3K	2.7	5.1K	10K	20K	39K	75K	150K	300K	560K
10	22	47	100	200	390	750	1.5K	3K	5.6K	11K	22K	43K	82K	160K	330K	620K
11	24	51	110	220	430	820	1.6K	3.3K	6.2K	12K	24K	47K	91K	180K	360K	680K
12	27	56	120	240	470	910	1.8K	3.6K	6.8K	13K	27K	51K	100K	200K	390K	750K
13	30	62	130	270	510	1K	2K	3.9K	7.5K	15K	30K	56K	110K	220K	430K	820K
15	33	68	150	300	560	1.1K	2.2K	4.3K	8.2K	16K	33K	62K	120K	240K	470K	910K
16	36	75	160	330	620	1.2K	2.4K	4.7K	9.1K	18K	36K	68K	130K	270K	510K	1M
18	39	82														



*Blank=50 pc.pack, BU= Bulk

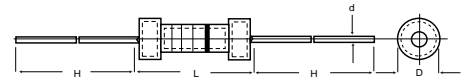
Carbon Filmed Fixed 1/8 Watt, 1/4 Watt, 1/2 Watt

Characteristics

Operating temperature range	-55°C-+155°C
Current	Range 1Ω-91kΩ
Noise	μV/V 0.3
Moisture	>100KΩ
Resistance	<100KΩ
Load Life	>100KΩ
	<100KΩ
Short time overload	±(0.75% + 0.05Ω)
Temp.cycling	±(0.5% + 0.05Ω)
Resistance to soldering heat	±(0.5% + 0.05Ω)

Limits

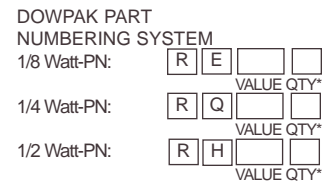
100KΩ-910kΩ	1MΩ-3.3MΩ
0.5	1.0
±5%	
±(3% + 0.05Ω)	
±3%	
±(2% + 0.05Ω)	
±(0.5% + 0.05Ω)	
±(0.5% + 0.05Ω)	



- High quality performance at economical prices
- ±5% tolerance
- Available in 10, 100, 1000 pc.packs

TABLE OF VALUES IN Ω

1.0	2.7	6.8	33	82	220	560	1.5K	3.6K	9.1K	24K	62K	160K	430K	1.1M	3M	7.5M
1.1	3.0	7.5	36	91	240	620	1.6K	3.9K	10K	27K	68K	180K	470K	1.2M	3.3M	8.2M
1.2	3.3	8.2	39	100	270	680	1.8K	4.3K	11K	30K	75K	200K	510K	1.3M	3.6M	9.1M
1.3	3.6	9.1	43	110	300	750	2K	4.7K	12K	33K	82K	220K	560K	1.5M	3.9M	10M
1.5	3.9	10	47	120	330	820	2.2K	5.1K	13K	36K	91K	240K	620K	1.6M	4.3M	
1.6	4.3	20	51	130	360	910	2.4K	5.6K	15K	39K	100K	270K	680K	1.8M	4.7M	
1.8	4.7	22	56	150	390	1K	2.7K	6.2K	16K	43K	110K	300K	750K	2M	5.1M	
2.0	5.1	24	62	160	430	1.1K	3K	6.8K	18K	47K	120K	330K	820K	2.2M	5.6M	
2.2	5.6	27	68	180	470	1.2K	3.2K	7.5K	20K	51K	130K	360K	910K	2.4M	6.2M	
2.4	6.2	30	75	200	510	1.3K	3.3K	8.2K	22K	56K	150K	390K	1M	2.7M	6.8M	

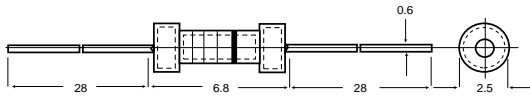


*Blank=10 pack, C=100 pack, M=1000 pack.

WATTAGE	L MAX	D MAX	d+.02-0.05	H+3
1/8W	4.2	2.0	0.5	28
1/4W	6.8	2.5	0.6	28
1/2W	10	3.5	0.6	28

(dimensions in mm)

Metal Film Fixed 1/4 Watt



- Epoxy coated
- ±1% tolerance
- Temperature coefficient±50ppm
- EIA standard color coding
- Available in 10, 100, 1000 pc.packs

DOWPAK PART NUMBERING SYSTEM

1/4 Watt-PN: R Q M
 VALUE QTY*

*Blank=10 pack,C=100 pack,
 M=1000 pack

Characteristics

Power Rating	1/4W
Max working voltage	250
Max overload voltage	500
Resistance values (Ω) min.-max.	10~1M
Temperature coefficient	±50°C
Load life (70°C)	±(1.0% + 0.05Ω)
Moisture resistance	±(1.5% + 0.05Ω)
Low Temperature Operation (-65°C)	±(0.5% + 0.05Ω)
Temperature cycling (-55°C to +165°C)	±(0.5% + 0.05Ω)
Effect of soldering	±(0.5% + 0.05Ω)
Terminal Strength	±(0.2% + 0.05Ω)
Dielectric withstanding	±(0.5% + 0.05Ω)
Tolerance	±1%
Operating temperature range	-55°C to +155°C

Limits

Resistors

TABLE OF VALUES IN Ω

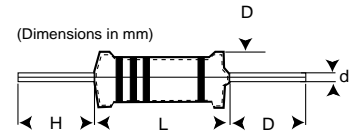
10	24	51.1	118	274	576	1.37K	3.24K	7.15K	16.9K	37.4K	82.5K	200K	442K
10.2	24.3	52.3	120	280	590	1.4K	3.3K	7.32K	17.4K	38.3K	84.5K	205K	453K
10.5	24.7	53.6	121	287	604	1.43K	3.32K	7.5K	17.8K	39K	86.8K	210K	454K
10.7	24.9	54.9	124	294	619	1.47K	3.4K	7.68K	18K	39.2K	88.7K	215K	470K
11	25.5	56	127	300	620	1.5K	3.48K	6.87K	18.2K	40.2K	90.9K	220K	475K
11.3	26.1	56.2	130	301	634	1.54K	3.57K	8.06K	18.7K	41.2K	91K	221K	487K
11.5	26.7	57.6	133	309	649	1.58K	3.6K	8.2K	19.1K	42.2K	93.1K	226K	499K
11.8	27	59	137	316	665	1.6K	3.65K	8.25K	19.6K	43K	95.3K	232K	511K
12	27.4	60.4	140	324	680	1.62K	3.74K	8.45K	20K	43.2K	97.6K	237K	523K
12.1	28	61.9	143	330	681	1.65K	3.83K	8.66K	20.5K	44.2K	100K	240K	536K
12.4	28.7	62	147	332	698	1.74K	3.9K	8.8K	21K	45.3K	102K	243K	549K
12.7	29.4	63.4	150	340	715	1.78K	3.92K	8.87K	21.5K	46.4K	105K	249K	566K
13	30	64.9	154	348	732	1.8K	4.02K	9.09K	22K	47K	107K	255K	604K
13.3	30.1	66.5	158	350	750	1.82K	4.12K	9.1K	22.1K	47.5K	110K	261K	619K
13.7	30.9	68	160	357	768	1.87K	4.22K	9.31K	22.6K	48.7K	113K	267K	620K
14	31.6	68.1	162	360	787	1.91K	4.32K	9.53K	23.2K	49.9K	115K	270K	634K
14.3	32.4	69.8	165	365	806	1.96K	4.42K	9.76K	23.7K	51K	118K	274K	649K
14.7	33	71.5	169	374	820	2K	4.53K	10K	24K	51.1K	120K	280K	665K
15	33.2	73.2	174	383	825	2.05K	4.64K	10.2K	24.3K	52.3K	121K	287K	680K
15.4	34	75	178	390	845	2.1K	4.7K	10.5K	24.9K	53.6K	124K	294K	681K
15.8	34.8	75.5	180	392	866	2.15K	4.75K	10.7K	25.5K	54.9K	127K	300K	698K
16	35.7	76.8	182	402	887	2.2K	4.87K	11K	26.1K	56K	130K	301K	715K
16.2	36	78.7	187	412	909	2.21K	4.99K	11.3K	26.7K	56.2K	133K	309K	732K
16.5	36.5	80.6	191	422	910	2.26K	5.1K	11.5K	27K	57.6K	137K	316K	750K
16.9	37.4	82	196	430	931	2.32K	5.11K	11.8K	27.4K	59K	140K	324K	768K
17.4	38.3	82.5	200	432	953	2.37K	5.23K	12K	28K	60.4K	143K	330K	787
17.8	39	84.5	205	442	976	2.4K	5.36K	12.1K	28.7K	61.9K	147K	332K	806K
18	39.2	86.6	210	453	1K	2.43K	5.49K	12.4K	29.4K	62K	150K	340K	820K
18.2	40.2	88.7	215	464	1.02K	2.49K	5.6K	12.7K	30K	63.4K	154K	348K	825K
18.7	41.2	90.9	220	470	1.05K	2.55K	5.62K	13K	30.1K	64.9K	158K	357K	845K
19.1	42.2	91	221	475	1.07K	2.61K	5.76K	13.3K	30.9K	66.5K	160K	360K	866K
19.6	43	93.1	226	487	1.1K	2.67K	5.9K	13.7K	31.6K	68K	162K	365K	887K
20	43.2	95.3	232	499	1.13K	2.7K	6.04K	14K	32.4K	68.1K	165K	374K	909K
20.5	44.2	97.6	237	510	1.15K	2.74K	6.19K	14.3K	33K	69.8K	169K	383K	910K
21	45.3	100	240	511	1.18K	2.8K	6.2K	14.7K	33.2K	71.5K	174K	390K	931K
21.5	46.4	102	243	523	1.2K	2.87K	6.34K	15K	33.6K	73.2K	178K	392K	953K
22	47	105	249	536	1.21K	2.94K	6.49K	15.4K	34K	75K	180K	402K	976K
22.1	47.5	107	255	549	1.24K	3.0K	6.65K	15.8K	34.8K	76.8K	182K	42K	1.0M
22.6	48.7	110	261	560	1.27K	3.01K	6.8K	16K	35.7K	78.7K	187K	422K	
23.2	49.9	113	267	562	1.3K	3.09K	6.81K	16.2K	36K	80.6K	191K	430K	
23.7	51	115	270	565	1.33K	3.16K	6.98K	16.5K	36.5K	82K	196K	432K	

**Metal Oxide Power
1 Watt, 2 Watt**

Characteristics

Operating Temperature range
 Temperature coefficient
 Short time overload
 Temperature cycling
 Soldering Effect
 Vibration
 Moisture resistance
 Load life (1000 hrs)
 Power rating @ 70°C
 Maximum working voltage @ 70°C
 Maximum overload voltage @ 70°C
 Maximum pulse voltage @ 70°C

Limits
 -55~+200°C (Derated over 70°C)
 ±350 ppm/°C
 $\Delta R \leq \pm(1\% + 0.05\Omega)$
 $\Delta R \leq \pm(1\% + 0.05\Omega)$
 $\Delta R \leq \pm(1\% + 0.05\Omega)$
 $\Delta R \leq \pm(1\% + 0.05\Omega)$
 $\Delta R \leq \pm(5\% + 0.10\Omega)$
 $\Delta R \leq \pm(70^\circ\text{C}, 1000 \text{ hrs.})$



- Flame retardant
- High purity ceramic core
- ±5% tolerance

		1W	2W
Resistance range	±5% (J) Tol.	1Ω-100ΩK	1Ω-100ΩK
	±2% (G) Tol.	10Ω-100ΩK	10Ω-100ΩK
Resistance value availability		E-24	E-24
Axial taping availability		No	No

**DOWPAK PART
 NUMBERING SYSTEM**
 1 Watt-PN:

R	1	W	M		
VALUE			QTY*		

 2 Watt-PN:

R	2	W	M		
VALUE			QTY*		

* Blank=5 pack, C=100 pack, M=1000 pack
 ** Blank=4 pack, C=100 pack, M=1000 pack

TABLE OF VALUES IN Ω

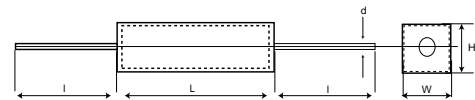
0.47	1.0	2.4	5.6	13	33	75	180	430	1.0K	2.4K	5.6K	13K	33K	75K	180K	430K
0.5	1.1	2.7	6.2	15	36	82	200	470	1.1K	2.7K	6.2K	15K	36K	82K	200K	470K
0.51	1.2	3.0	6.8	16	39	91	220	510	1.2K	3.0K	6.8K	16K	39K	91K	220K	510K
0.56	1.3	3.3	7.5	18	43	100	240	560	1.3K	3.3K	7.5K	18K	43K	100K	240K	560K
0.62	1.5	3.6	8.2	20	47	110	270	620	1.5K	3.6K	8.2K	20K	47K	110K	270K	620K
0.68	1.6	3.9	9.1	22	51	120	300	680	1.6K	3.9K	9.1K	22K	51K	120K	300K	680K
0.75	1.8	4.3	10	24	56	130	330	750	1.8K	4.3K	10K	24K	56K	130K	330K	750K
0.82	2.0	4.7	11	27	62	150	360	820	2.0K	4.7K	11K	27K	62K	150K	360K	820K
0.91	2.2	5.1	12	30	68	160	390	910	2.2K	5.1K	12K	30K	68K	160K	390K	910K
																1.0M

**Ceramic Power
5 Watt, 10 Watt**

Item

Characteristics

Tolerance ±5%
 Wet load life ±3%
 Load Life ±5%
 Short time overload ±2%
 Temperature coefficient ±250 ppm/°C
 Effect of soldering ±1%
 Dielectric withstanding 1KV±2%
 Insulation resistance 100 MΩ



WATT	L	W	H	I	d
5W	22±1.5	10±1.0	9.0±1.0	35±3.0	0.8±0.1
10W	48±1.5	10±1.0	9.0±1.0	35±3.0	0.8±0.1

- High Temperature Stability
- Ceramic Flame Retardant Package

**DOWPAK PART
 NUMBERING SYSTEM**
 5 Watt-PN:

R	5	W		
VALUE			QTY*	

 10 Watt-PN:

R	10	W		
VALUE			QTY*	

*Blank= 2 pack, C=100 pack

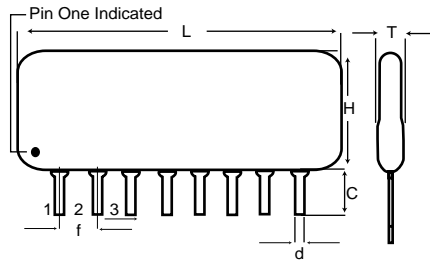
Resistance Range (Ω)

WATTS	WIRE WOUND	METAL OXIDE
5W	0.1-100	10-30K
10W	0.1-560	50-69K

TABLE OF VALUES IN Ω

0.1	0.47	0.82	1.6	3.3	5.1	10	20	36	56	110	200	350	510	820	1.6K	3.3K
0.15	0.5	0.91	1.8	3.6	5.6	11	22	39	62	120	220	360	560	910	1.8K	3.9K
0.22	0.51	1.0	2.0	3.9	6.2	12	24	40	68	125	240	390	600	1K	2K	5K
0.27	0.56	1.1	2.2	4.0	6.8	13	25	43	75	130	250	400	620	1.1K	2.2K	10K
0.3K	0.58	1.2	2.4	4.3	7.5	15	27	47	82	150	270	430	680	1.2K	2.4K	20K
0.39	0.62	1.3	2.7	4.7	8.2	16	30	50	91	160	300	470	750	1.3K	2.7K	25K
0.43	0.68	1.5	3.0	5.0	9.1	18	33	51	100	180	330	500	800	1.5K	3K	

Resistor Networks-SIP



Item	Characteristics
Operating temperature range	-55°C~+125°C
Temperature coefficient range	±100 ppm 50 ohm~2.2M ohm
Rating ambient temperature	±250 ppm <50 or>2.2M ohm
Resistance range	+70°C
Wattage/element	10Ω-2.2MΩ
Maximum working voltage	100V-0.125W, 200V-0.25W
Resistance tolerance	100V, 200V 2%

DOWPAK PART NUMBERING SYSTEM

6 Pin PN 6 -

#OF *VALUE QTY

RESISTORS

=3

=5

8 Pin PN 8 -

#OF *VALUE QTY

RESISTORS

=4

=7

10 Pin PN 10 -

#OF *VALUE QTY

RESISTORS

=5

=9

- High density packaging
- High reliability with RuO2 paste
- ±2% tolerance

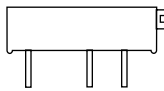
SERIES		L	H(MAX)		T	C	d		f
COMM	ISOL.	TYPE	MAX	100V	200V	(MAX)	±0.5	±0.05	±0.2
SIP56	SIP36	6 Pin	15.3	5.08	8	2.5	3.5	0.5	2.54
SIP78	SIP48	8 Pin	20.4	5.08	8	2.5	3.5	0.5	2.54
SIP910	SIP510	10 Pin	25.4	5.08	8	2.5	3.5	0.5	2.54

Dimensions in mm

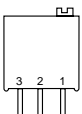
Resistor Network Values

22	56	100	330	680	1.5K	4.7K	8.2K	22K	56K	100K	330K	680K
33	68	150	470	820	2.2K	5.6K	10K	33K	68K	150K	470K	1M
47	82	220	560	1K	3.3K	6.8K	15K	47K	82K	220K	560K	

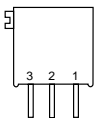
Trimmer Potentiometers



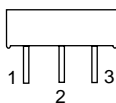
- 3/4" rectangular multi-turn
- Cermet
- 20 turns, nominal
- ±10% tolerance
- Horizontal adjust



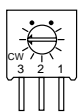
- 3/8" square multi-turn
- Cermet
- 25 turns, nominal
- ±10% tolerance
- Vertical adjust



- 3/8" square multi-turn
- Cermet
- 25 turns, nominal
- ±10% tolerance
- Horizontal adjust



- 3/8" square single-turn
- Cermet
- Single-turn
- ±10% tolerance
- Vertical adjust



- 3/8" square single-turn
- Cermet
- Single-turn
- ±10% tolerance
- Horizontal adjust

DOWPAK PART NUMBERING SYSTEM

4 3 -

VALUE

1 pc.per pack

DOWPAK PART NUMBERING SYSTEM

6 4 V -

VALUE

1 pc.per pack

DOWPAK PART NUMBERING SYSTEM

6 4 H -

VALUE

1 pc.per pack

DOWPAK PART NUMBERING SYSTEM

6 3 V -

VALUE

1 pc.per pack

DOWPAK PART NUMBERING SYSTEM

6 3 H -

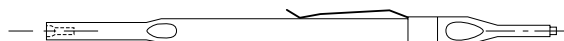
VALUE

1 pc.per pack

Value Table Ω

10	50	200	1K	5K	20K	100K	250K	1M
20	100	500	2K	10K	25K	200K	500K	2M

Trimmer Adjustment Tool Part #RT8





Cable Ties & Mounts

Standard Cable Ties

Part #	Length	Width	Bundle Dia.	Tensile Strength
WTN-10H-C	4	.10	7/10	18
WTN-20H-C	5 1/2	.14	1 3/8	40
WTN-30H-C	7 1/2	.19	1 7/10	50
WTN-40H-C	7 7/8	.10	2	18
WTN-50H-C	7 7/8	.14	2	40
WTN-60H-C	11 4/5	.19	3	50
WTN-70H-C	14 1/2	.19	4	50
WTB-10H-C	4	.10	7/10	18
WTB-20H-C	5 1/2	.14	1 3/8	40
WTB-30H-C	7 1/2	.19	1 7/10	50
WTB-40H-C	7 7/8	.10	2	18
WTB-50H-C	7 7/8	.14	2	40
WTB-60H-C	11 4/5	.19	3	50
WTB-70H-C	14 1/2	.19	4	50



Natural-WTN
UV Black-WTB

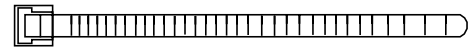
Screwdown Cable Ties

Part #	Length	Width	Bundle Dia.	Tensile Strength
WTS-10H-C	4 5/16	.10	7/10	18
WTS-20H-C	5 9/10	.14	1 1/4	40
WTS-30H-C	7 7/8	.19	2	50
WTS-40H-C	11 4/5	.19	3	50
WTS-50H-C	8 15/32	.30	2	120



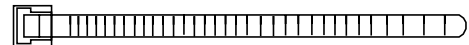
Heavy Duty Cable Ties

Part #	Length	Width	Bundle Dia.	Tensile Strength
WTH-10H-C	7 7/8	.30	2	120



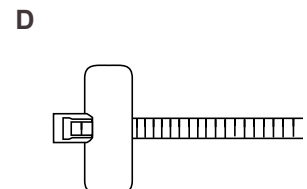
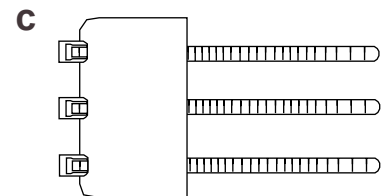
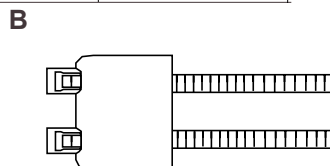
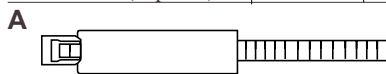
Releasable Cable Ties

Part #	Length	Width	Bundle Dia.	Tensile Strength
WTR-10H-C	5 1/2	.14	1 3/8	40
WTR-20H-C	7 1/8	.19	2	50
WTR-30H-C	11 4/5	.19	3	50



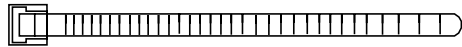
Marker Ties

Part#	Length	Width	Max Bundle Dia.	Tensile Strength
WTI-10H-C(single D)	4 5/16	.10	7/10	18
WTI-20H-C(single A)	7 1/2	.19	1 7/10	50
WTI-30H-C(single A)	13 3/8	.19	3 1/3	50
WTI-40H-C(double B)	7 1/2	.19	1 7/10	50
WTI-50H-C(triple C)	7 1/2	.19	1 7/10	50



- All Measurements are in inches.
- UL recognized.
- Cable Ties and Clamps are 6/6 nylon.
- Non corrosive materials.
- Self-locking one piece construction.
- Standard pack on Wire Ties and Mounts:
100 pieces per pack. (1000 pcs. packs available on request).

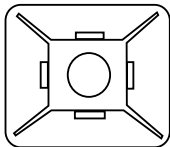
Fluorescent Standard Cable Ties



- Green-WTG
- Orange-WTO
- Blue-WTA
- Yellow-WTY
- Pink-WTP

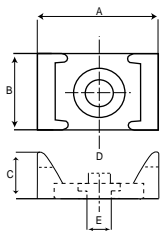
Part #	Length	Width	Max. Bundle Dia.	Tensile Strength
WTP-10H-C	4	.10	7/10	18
WTP-40H-C	7 7/8	.10	2	18
WTP-60H-C	11 4/5	.19	3	50
WTO-10H-C	4	.10	7/10	18
WTO-40H-C	7 7/8	.10	2	18
WTO-60H-C	11 4/5	.19	3	50
WTG-10H-C	4	.10	7/10	18
WTG-40H-C	7 7/8	.10	2	18
WTG-60H-C	11 4/5	.19	3	50
WTA-10H-C	4	.10	7/10	18
WTA-40H-C	7 7/8	.10	2	18
WTA-60H-C	11 4/5	.19	3	50
WTY-10H-C	4	.10	7/10	18
WTY-40H-C	7 7/8	.10	2	18
WTY-60H-C	11 4/5	.19	3	50

Adhesive Mounts



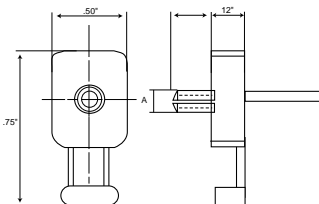
Part#	DIMENSIONS
WTM-10H-C	3/4" x 3/4"
WTM-20H-C	1.1" x 1.1"

Tie Mounts



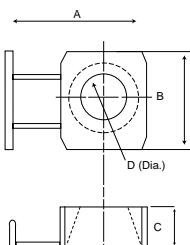
Part #	Mounting Method	DIMENSION				
		A	B	C	D	E
WTM-60H-C	#6 Screw	.585	.375	.270	.150	.280
WTM-70H-C	#8 Screw	.585	.375	.270	.180	.320
WTM-80H-C	#10 Screw	.825	.625	.380	.200	.390

Knock-in Low Profile Mounts



Part #	Rec. Hole Size	A
WTM-50	.169	.180

Screw Applied Low Profile Mounts



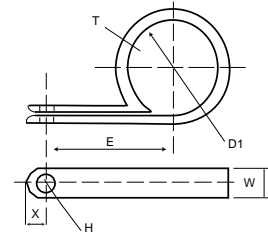
Part #	Mounting Method	DIMENSIONS			
		A	B	C	D
WTM-30H-C	#5 Screw	.40	.32	.10	.137
WTM-40H-C	#8 Screw	.75	.50	.12	.180



Cable Ties & Mounts

Plain Edge Cable Clamps

Part #	DIMENSIONS					
	D1	E	T	W	H	X
CCN-18H-C	.125	.343	.050	.375	.170	.218
CCN-14H-C	.250	.421	.050	.375	.170	.218
CCN-38H-C	.375	.464	.050	.375	.170	.218
CCW-14H-C	.250	.437	.060	.500	.203	.218
CCW-38H-C	.375	.500	.060	.500	.203	.218
CCW-12H-C	.500	.553	.060	.500	.203	.218
CCW-58H-C	.625	.625	.060	.500	.203	.218
CCW-34H-C	.750	.699	.060	.500	.203	.218
CCW-78H-C	.875	.795	.060	.500	.203	.218
CCW-1H-C	1.000	.825	.060	.500	.203	.218



Cable Clamps are now available in Black.
 Part Number example:
 CCN-18BH-C

Cable Tie Gun

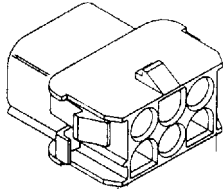
Description: Heavy Duty tool for use with 18-50 pound ties. Automatic cut-off and adjustable tensioning for dependable use in assembly applications.
 Part# WTG-2



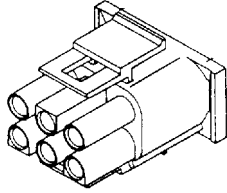
Cable Ties & Mounts

Universal Power Connectors

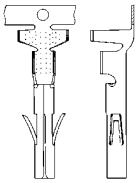
.084" Power Connectors



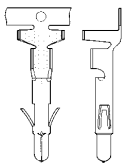
Receptacle



Plug



Female



Male

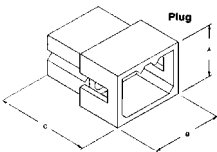
DOWPAK PN	CIRCUITS	BERG PN	AMP PN
B5100	2	Rec. 67295-001 Plug 66480-014	Rec. 1-480699-0 Plug 1-480698-0
B5101	3	Rec. 66484-011 Plug 66480-011	Rec. 1-480701-0 Plug 1-480700-0
B5102	4	Rec. 66484-001 Plug 66480-001	Rec. 1-480703-0 Plug 1-480702-0
B5103	6	Rec. 67293-001 Plug 67294-001	Rec. 1-480705-0 Plug 1-480704-0
B5104	9	Rec. 67187-001 Plug 67188-001	Rec. 1-480707-0 Plug 1-480706-0
B5105	12	Rec. 67187-004 Plug 67188-004	Rec. 1-480709-0 Plug 1-480708-0
B5106	15	Rec. 67187-007 Plug 67188-007	Rec. 1-480711-0 Plug 1-480710-0

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Low contact mating force
- Panel mount or free hanging
- UL94V-2
- Packaged in sets. Receptacle, plug and contact assemblies

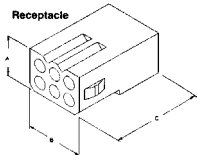
DOWPAK PN	DIA.	BERG PN	AMP PN.	WIRE SIZE	INSULATION DIA	PACK. QTY.
B5110	.084	76148-002 Female	350551-1	20-14 AWG	.130-.200	20 pcs
B5112	.084	76150-002 Female	350689-1	24-18 AWG	.040-.100	20 pcs
B5113	.084	76147-002 Male	350552-1	20-14 AWG	.130-.200	20 pcs
B5115	.084	76149-002 Male	350690-1	24-18 AWG	.40-.100	20 pcs

Molex Pin & Socket Connectors

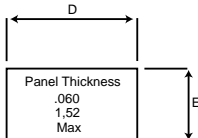
.062" Power Connectors



Plug



Receptacle



Mounting Hole Detail

DOWPAK PN	CIRCUITS	MOLEX NO.		A	B	C	D	E
B5120	1	Receptacle	03-06-1011	.19	N/A	.78	N/A	N/A
		Plug	03-06-2011	.30	N/A	.75	N/A	N/A
B5121	2	Receptacle	03-06-1022	.34	.19	.81	.505	.265
		Plug	03-06-2022	.44	.30	.78	.609	.318
B5122	3	Receptacle	03-06-1031	.48	.19	.78	.650	.265
		Plug	03-06-2033	.59	.30	.75	.754	.318
B5123 (Inline)	4	Receptacle	03-06-1041	.63	.19	.78	.785	.260
		Plug	03-06-2041	.73	.29	.75	.865	.312
B5124 (Square)	4	Receptacle	03-06-1043	.34	.34	.77	.506	.400
		Plug	03-06-2043	.44	.44	.77	.615	.465
B5125	5	Receptacle	03-06-1055	.78	.19	.78	.940	.265
		Plug	03-06-2054	.89	.31	.75	1.044	.318
B5126	6	Receptacle	03-06-1061	.34	.49	.78	.552	.505
		Plug	03-06-2062	.45	.60	.75	.615	.607
B5127	8	Receptacle	03-06-1081	.23	1.50	.80	N/A	N/A
		Plug	03-06-2081	.31	1.60	.75	N/A	N/A
B5128	9	Receptacle	03-06-1091	.49	.49	.78	.650	.552
		Plug	03-06-2091	.59	.59	.75	.752	.615
B5129	12	Receptacle	03-06-1121	.63	.49	.78	.795	.563
		Plug	03-06-2121	.74	.59	.75	.903	.614
B5130	15	Receptacle	03-06-1151	.77	.49	.78	.930	.569
		Plug	03-06-2151	.87	.59	.75	1.032	.620
B5131	24	Receptacle	03-06-1241	.92	.63	.75	1.079	.715
		Plug	03-06-2241	1.02	.74	.75	1.182	.765
B5132	36	Receptacle	03-06-1361	1.51	.69	.78	1.677	.707
		Plug	03-06-2361	1.62	.80	.75	1.795	.825

- Up to 5 amperes per circuit except where noted
- 250 Volt rating

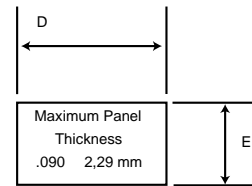
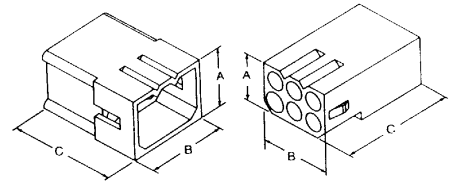
- Friction Lock
- Panel Mount or free hanging

- UL approved
- CSA approved

Molex Pin & Socket Connectors .093" Power Connector

DOWPAK PN	CIRCUITS	MOLEX NO.		A	B	C	D	E
B5150*	1	Receptacle	03-09-1014	N/A	.31	1.86	N/A	N/A
		Plug	03-09-2014	N/A	.44	2.25	N/A	N/A
B5151	1	Receptacle	03-09-1011	N/A	.23	1.03	N/A	N/A
		Plug	03-09-2011	N/A	.36	1.00	N/A	N/A
B5152	2	Receptacle	03-09-1027	.54	.25	1.02	.725	.312
		Plug	03-09-2021	.64	.35	1.00	.80	.375
B5154	3	Receptacle	03-09-1031	.67	.24	1.01	.830	.312
		Plug	03-09-2031	.77	.34	1.00	.933	.375
B5155 (inline 9amp)	4	Receptacle	03-09-1041	.87	.24	1.03	1.038	3.12
		Plug	03-09-2041	.54	.54	1.02	.555	.695
B5156 (square 9amp)	4	Receptacle	03-09-1040	.43	.43	1.03	.500	.600
		Plug	03-09-2041	.54	.54	1.02	.555	.695
B5159 (9amp)	5	Receptacle	03-09-1052	1.07	.24	1.00	N/A	N/A
		Plug	03-09-2052	1.18	.34	1.00	N/A	N/A
B5161 (9amp)	6	Receptacle	03-09-1061	.43	.63	1.02	.678	.600
		Plug	03-09-2061	.54	.73	1.00	.750	.695
B5162 (9amp)	9	Receptacle	03-09-1091	.67	.63	1.03	.828	.725
		Plug	03-09-2091	.755	.73	1.00	.937	.660
B5163 (7.5amp)	12	Receptacle	03-09-1125	.87	.63	1.02	1.05	.725
		Plug	03-09-2122	.98	.74	.98	1.155	.760
B5164 (7.5amp)	15	Receptacle	03-09-1154	1.07	.63	1.02	1.240	.725
		Plug	03-09-2152	1.17	.74	.98	1.343	.760

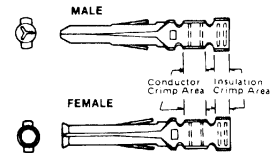
*Tested at 5kv with no dielectric breakdown



- Up to 12 amperes per circuit except where noted
- 250 Volt rating
- Friction lock
- UL approved
- CSA approved

Molex Terminals .062" Terminals

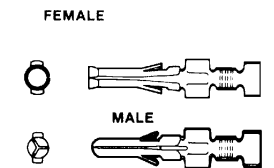
DOWPAK PN	DIAMETER	MOLEX NO.	WIRE SIZE	INSULATION DIAMETER	PACK QTY
B5135	.062	Female 02-06-1103	18-24	.060/.120	16 pcs
B5135A	.062	Female 02-06-1103	18-24	.060/.120	100 pcs
B5136	.062	Female 02-06-1132	24-30	.040/.090	16 pcs
B5136A	.062	Female 02-06-1132	24-30	.040/.090	100 pcs
B5139	.062	Male 02-06-2103	18-24	.060/.120	100 pcs
B5139A	.062	Male 02-06-1103	18-24	.060/.120	16 pcs
B5140	.062	Male 02-06-2132	24-30	.040/.090	16 pcs
B5140A	.062	Male 02-06-2132	18-24	.060/.120	100 pcs



- Standard brass .010" tin plated

.093" Terminals

DOWPAK PN	DIAMETER	MOLEX NO.	WIRE SIZE	INSULATION DIAMETER	PACK QTY
B5166	.093	Female 02-09-1104	14-20	.065/.160	12 pcs
B5166A	.093	Female 02-09-1104	14-20	.065/.160	100 pcs
B5167	.093	Female 02-09-2118	18-22	.060/.120	12 pcs
B5167A	.093	Female 02-09-2118	18-22	.060/.120	100 pcs
B5169	.093	Male 02-09-2103	14-20	.065/.160	12 pcs
B5169A	.093	Male 02-09-2103	14-20	.065/.160	100 pcs
B5170	.093	Male 02-09-2118	18-22	.060/.120	12 pcs
B5170A	.093	Male 02-09-2118	18-22	.060/.120	100 pcs



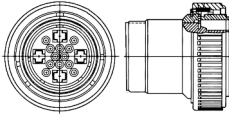
- Standard brass .010" tin plated

CPC Circular Plastic Connectors

Connectors are UL recognized and designed for uses such as Boats, Aircraft, Automotive, Instrumentation, Computer/Peripheral Equipment and many other uses. All plastic, lightweight with high performance characteristics. Advanced features include: built-in pin and socket protection; thread assist coupling with positive detent locking; 5 key polarization to provide proper connection mating.

Connectors are available in 4, 9, 16, 24 and 37 pin configurations for panel mountings or for free mounting applications.

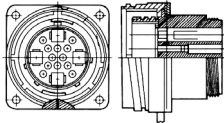
Free Hanging Plug (contacts included)



AMP PART#	PART #	NO. OF CONTACTS
206060-1	FHP 4	4
206708-1	FHP 9	9
206037-1	FHP 16	16
206837-1	FHP 24	24
206150-1	FHP 37	37

Plug mates with the panel mount or free hanging socket assemblies. Each plug is furnished with female crimp type sockets that accepts 22-18 AWG . Accepts cable clamp to protect wire harness assembly

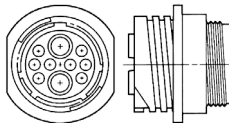
Panel Mount Socket (contacts included)



AMP PART #	PART #	NO. OF CONTACTS
206061-1	PMS 4	4
206705-1	PMS 9	9
206036-1	PMS 16	16
206838-1	PMS 24	24
206151-1	PMS 37	37

Panel or chassis mount circular plastic connectors are ideal for permanent installations. When mated, contacts are completely enclosed to reduce shorts and shocks. Requires a through the panel access hole. Maximum panel thickness is limited to 1/8". Each socket furnish with crimp type pins that accepts 22-18 AWG. Accepts cable wire if required.

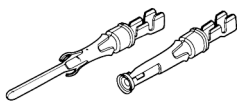
Free Hanging Socket (contacts included)



AMP PART#	PART #	NO. OF CONTACTS
206153-1	FHS 4	4
206705-2	FHS 9	9
206036-3	FHS 16	16
206838-2	FHS 24	24
206151-2	FHS 37	37

Where equipment requires removal or repositioning , free hanging circular plastic connector should be used. Made of high impact materials to withstand the shock. Contacts are enclosed to prevent damage when not connected. Each socket is furnished with male crimp type pins that accepts 22-18 AWG. Accepts cable clamp to protect wire harness assembly.

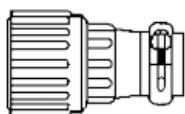
Crimp Contacts



AMP PART #	PART #	QTY/ DESCRIPTION	WIRE SIZE	PKG
66592-1	B5200	SOCKET CONTACT (CRIMP)	22-18	25
66592-1	B5201	SOCKET CONTACT (CRIMP)	22-18	100
66591-1	B5205	PIN CONTACT (CRIMP)	22-18	25
66591-1	B5206	PIN CONTACT (CRIMP)	22-18	100
66590-1	B5209	SOCKET CONTACT (CRIMP)	18-16	25
66590-1	B5210	SOCKET CONTACT (CRIMP)	18-16	100
66589-1	B5213	PIN CONTACT (CRIMP)	18-16	25
66589-1	B5214	PIN CONTACT (CRIMP)	18-16	100

Crimp type pin and socket contacts require the use of a crimp tool that will accept any wire size from 22 to 16 AWG.

Cable Clamps



AMP PART #	PART NO	MATES WITH SOCKET
206062-1	CC 4	4
206966-1	CC 9	9
206070-1	CC 16	16
206138-1	CC 24	24+37

Cable clamps prevent excessive strain on cable or wire. Should be applied wherever free hanging or panel mount connectors require mechanical and electrical protection and integrity of the circuit.



Polyolefin Tubing

Conforms to MIL-I-23053B/5

Class 1 & 2

AMS-3636B Colors, AMS-3637B Clear

- Shrink 50% (2:1 ratio) with only 5% longitudinal shrinkage.
- Fewer Sizes covering more applications.
- Operating temp. range: -55°C to 135°C.
- Stock colors: Black, White, Red, Yellow, Blue, Green, and Clear.



To order a specific color add suffix () Shown to part number

- (B) Black
- (C) Clear
- (R) Red
- (A) Blue
- (W) White
- (Y) Yellow
- (G) Green

Other colors are available on special order

Hug-P is an all-purpose Polyolefin extruded tubing that is simple to use and provides a tight mechanical bond. HUG-P is an irradiated, thermally stable, modified polyolefin base product. HUG-P Clear may be used so that jacketed, printed components or cable data is clearly visible and inspection of insulated components, cables or terminations is simplified.

The tubing is supplied in an expanded form and easily slips over the object to be covered. When a temperature of approximately 275°F (135°C) is applied, it immediately returns to its predetermined size (approximately one-half smaller) and forms a permanent tight fitting mechanical bond, HUG-P tubing will not cold flow or melt but retains form stability throughout its temperature range. No radioactivity exists in or on the material and it will not emit radiation. Longitudinal shrinkage is 5% maximum when completely recovered.

Controlled shrinkage to the correct predetermined size takes places within seven seconds at 225°F to 255°F. Shrinkage will start at 235°F, but at somewhat slower rate. When using an oven, temperature may range from 235°F to 300°F. Prolonged exposure to these temperatures will not affect the physical or electrical properties of HUG-P shrinkable tubing. HUG-P Clear Tubing remains transparent over its entire operation range of -55°C to 135°C.

Flammability: Although HUG-P Clear is a high temperature material, it is flammable and will burn. However, when the tubing is shrunk over non-flammable or flame resistant components, such as connectors, terminals and wire, the entire assembly will not support combustion.

1 Foot Lengths

Part # HUG-A-36V (PVC) 36 pcs. Asst. Diam. Black & Clear Diam: 1/16", 3/32", 1/8", 3/16", 1/4", 3/8"

Part # HUG-A-36P (Polyolefin) 36 pcs. Asst. Diam. 6 asst. colors Diam: 1/16", 3/32", 1/8", 3/16", 1/4", 3/8"

MSP Series Mini Spools				CSP Series 100' Spools			
Part #	Expanded ID	Recovered ID	Feet Per Spool	Part #	Expanded ID	Recovered ID	Feet Per Spool
HUG-116-MSP()	.063	.031	55'	HUG-116-CSP()	.063	.031	100'
HUG-332-MSP()	.093	.046	55'	HUG-332-CSP()	.093	.046	100'
HUG-18-MSP()	.125	.063	50'	HUG-18-CSP()	.125	.063	100'
HUG-316-MSP()	.187	.093	50'	HUG-316-CSP()	.187	.093	100'
HUG-14-MSP()	.250	.125	40'	HUG-14-CSP()	.250	.125	100'
HUG-38-MSP()	.375	.187	25'	HUG-38-CSP()	.375	.187	100'
HUG-12-MSP()	.500	.250	25'	HUG-12-CSP()	.500	.250	100'
HUG-34-MSP()	.750	.375	20'	HUG-34-CSP()	.750	.375	100'

Four Foot Lengths

Part #	Size	Min. ID Before Shrinkage	Recovered ID Shrinkage	Recovered Nom. Wall Thickness
HUG-364-4P()	3/64	.0469	.0234	.0156
HUG-116-4P()	1/16	.063	.031	.017
HUG-332-4P()	3/32	.093	.046	.020
HUG-18-4P()	1/8	.125	.062	.020
HUG-316-4P()	3/16	.187	.093	.020
HUG-14-4P()	1/4	.250	.125	.025
HUG-38-4P()	3/8	.375	.187	.025
HUG-12-4P()	1/2	.500	.250	.025
HUG-34-4P()	3/4	.750	.375	.030
HUG-1-4P()	1	1.000	.500	.035
HUG-112-4P()	1 1/2	1.500	.750	.040
HUG-2-4P()	2	2.000	1.000	.045
HUG-3-4P()	3	3.000	1.500	.050
HUG-4-4P()	4	4.000	2.00	.050

PVC (Vinyl) Tubing



Conforms to MIL-I-23053/2

Conforms to MIL-I-631D

- Non- Irradiated
- Operating Temperature: -20°C to 105°C
- Shrink 50% (2:1 ratio)
- Colors: Black and Clear
- Standard put-ups: 100', 500' and 1.000'
- Other Colors available on special order

HUG-VL is a thin wall, flexible tubing manufactured from high temperature PVC compounds with a continuous duty rating of 105°C. As supplied in its expanded state it will shrink to approximately 1/2 its diameter when subjected to heat of 200°F. Because of its "plastic memory" HUG-VL is able to be expanded and will remain in its expanded state without irradiation. When heated it will return to its original extruded diameter. HUG-VL is resistant to ozone, sunlight, oil, moisture, fungus and has self extinguishing flame characteristics. It will meet or exceed the applicable portions of MIL I-631D. Since HUG-VL is not irradiated it maintains all the excellent characteristics of PVC making it an all-purpose shrinkable tubing at an extremely economical cost. Longitudinal shrinkage is approximately 20% in the largest sizes tending to reduce the smaller sizes.

Heat Shrinkable Tape



Substrate	Low Density Polyethylene
Thickness	.006 Mills
Application Temp	0°F to 176°F
Size	3/4" x 108 ft. and 3/4" x 25 ft.
Abrasion Resistance	Excellent
Adhesive	Acrylic Pressure Sensitive
Tensile	10 Lbs/inch width
Adhesion to Steel	45 oz/inch width
Colors	Black & Clear.

HUG-25TB	(3/4" Black x 25 ft)
HUG-108TB	(3/4" Black x 108 ft)
HUG-108TC	(3/4" Clear x 108 ft)

DUB Series Tubing

Heat Shrinkable Dual Encapsulating
Adhesive Polyolefin

Wallshrink ≈33%(≈3:1 ratio)

Dub Series is a flexible, radiation crosslinked, heat shrinkable, dual-wall, adhesive coated polyolefin material that is rated for continuous operation at 125°C. As DUB series shrink, the inner adhesive liner melts and flows to seal and encapsulate components or splices contained within.

Standard colors of DUB series are Black (Class 1) and Clear (Class 2). The black material is flame retardant and conforms to UL 224 VW-1 requirements.

The unique clear material may be used when encapsulation and see-through inspection is required. Clear is not flame retardant. The adhesive bond develops excellent reel strength, depending upon substrate material composition.

Also available in
packages of 6' pieces

DUB Series

Part#	Size	Minimum Expansion	Maximum Recovered	Nominal Recovered Wall	Part#	Size	Number of Pieces
HUG-18-4DUB	1/8"	.125	.023	.038	HUG-18-DWH	1/8"	8
HUG-316-4DUB	3/16"	.187	.063	.043	HUG-316-DWH	3/16"	8
HUG-14-4DUB	1/4"	.250	.080	.047	HUG-14-DWH	1/4"	6
HUG-38-4DUB	3/8"	.375	.120	.050	HUG-38-DWH	3/8"	6
HUG-12-4DUB	1/2"	.500	.157	.055	HUG-12-DWH	1/2"	6
HUG-34-4DUB	3/4"	.750	.230	.075	HUG-34-DWH	3/4"	4
HUG-1-4DUB	1"	1.000	.320	.100	HUG-1-DWH	1"	4
HUG-112-4DUB	1-1/2"	1.500	.530	.100			
HUG-2-4DUB	2"	2.000	.800	.100			

Specification Values

Property/Units	Test Method	Value	
		Class 1	Class 2
PHYSICAL			
Tensile, psi, min	ASTM D638	1500	1500
Elongation,%min	ASTM D638	200	200
Flow of inner wall	MIL-I-23053	Pass	Pass
Specific gravity,max	ASTM D792, Method A	1.3	1.2
Heat Resistance,% E,min	168 hrs. @ 175°C	No dripping, flowing or cracking of outer wall	
Heat Shock	4 hrs. @ 250°C	No dripping, flowing or cracking of outer wall	
Secan Modulus	ASTM D882	1.5 x 10 ⁴	1.8 x 10 ⁴
Longitudinal change,% max	MIL-I23053	10%	10%
Low Temp. brittleness	ASTM D746	No cracking	No cracking
	Procedure B (-55°C)		
ELECTRICAL			
Dielectric Strength,volts/mil,min	ASTM D876	500	500
Volume resistivity, ohms-cm,min	ASTM D257	10 ¹⁴	10 ¹⁵
Dielectric constant, max	ASTM D150	3.1	3.1
Voltage withstand	ASTM D149	2500	2500
CHEMICAL*			
Water Absorption, %, max	ASTM D750 (procedure A)	0.5	0.5
Corrosion (copper contact)	ASTM D2671	Non-corrosive	Non-corrosive
Flammability*	UL VW-1	Pass	Not flame retarded
		Note: Adhesive Lineris not flame retarded)	
		Self extinguishes	
Fluid resistance	24 hrs @ 23°C		
Tensile, psi, min		1000	1000
Dielectric strength, volt/mil, min		400	400
MIL-H-5606 Hydraulic			
MIL-T-5624 JP4			
MIL-L-7808 Lube Oil			
SS-S-550 5% NaCl			
MIL-A-8243 De-ice fluid			
Fungus resistance	ASTM G21	Non-nutrient	Non-nutrient
Shrink Temp, nominal		125°C	125°C

*Typical values will normally exceed specification limits which are based on UL224 standards and MIL-I-23053/4, Class 3

Specification Reference

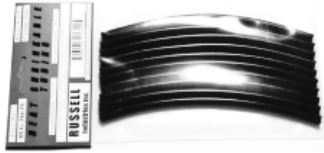
Russell	Military	AMS	Underwriters Lab
DUB series	MIL-I-23053/4	3634	UL 224 105°C VW-1
Class 1	Class 3		E78695 (Colors only)

1" Lengths- 100 pieces to the Package



Part #	Color	Part#	Color	Expanded Diameter	Diameter When shrunk
HUG-364	Black	HUG-364C	Clear	3/64	3/128
HUG-116	Black	HUG-116C	Clear	1/16	1/32
HUG-332	Black	HUG-332C	Clear	3/32	3/64
HUG-18	Black	HUG-18C	Clear	1/18	1/16
HUG-316	Black	HUG-316C	Clear	3/16	3/32
HUG-14	Black	HUG-14C	Clear	1/4	1/8
HUG-38	Black	HUG-38C	Clear	3/8	3/16
HUG-12	Black	HUG-12C	Clear	1/2	1/4
HUG-34	Black	HUG-34C	Clear	3/4	3/8
HUG-1	Black	HUG-1C	Clear	1	1/2

6" Lengths-10 Pieces (5 feet total)



Part #	Color	Part#	Color	Expanded Diameter	Diameter When shrunk
HUG-116-5V	Black	HUG-116-5VC	Clear	1/16	1/32
HUG-332-5V	Black	HUG-332-5VC	Clear	3/32	3/64
HUG-18-5V	Black	HUG-18-5VC	Clear	1/8	1/16
HUG-316-5V	Black	HUG-316-5VC	Clear	3/16	3/32
HUG-14-5V	Black	HUG-14-5VC	Clear	1/4	1/8
HUG-38-5V	Black	HUG-38-5VC	Clear	3/8	3/16
HUG-12-5V	Black	HUG-12-5VC	Clear	1/2	1/4
HUG-A-5V	Black	HUG-A-5VC	Clear	Assorted Diameters	

6" Lengths-8 Pieces



Part #	Color	Expanded Diameter	Diameter When shrunk
HUG-116-PAK	Red, Blue, White, Yellow, Green	1/16	1/32
HUG-332-PAK	Red, Blue, White, Yellow, Green	3/32	3/64
HUG-18-PAK	Red, Blue, White, Yellow, Green	1/8	1/16
HUG-316-PAK	Red, Blue, White, Yellow, Green	3/16	3/32
HUG-14-PAK	Red, Blue, White, Yellow, Green	1/4	1/8
HUG-38-PAK	Red, Blue, White, Yellow, Green	3/8	3/16
HUG-12-PAK	Red, Blue, White, Yellow, Green	1/2	1/4

10' Lengths-1 Piece (10 foot Hanks)



Part #	Color	Part#	Color	Expanded Diameter	Diameter When shrunk
HUG-116-10V	Black	HUG-116-10VC	Clear	1/16	1/32
HUG-332-10V	Black	HUG-332-10VC	Clear	3/32	3/64
HUG-18-10V	Black	HUG-18-10VC	Clear	1/8	1/16
HUG-316-10V	Black	HUG-316-10VC	Clear	3/16	3/32
HUG-14-10V	Black	HUG-14-10VC	Clear	1/4	1/8
HUG-38-10V	Black	HUG-38-10VC	Clear	3/8	3/16
HUG-12-10V	Black	HUG-12-10VC	Clear	1/2	1/4

S= Solderless Terminals and Connectors

CLASSIFICATION:

- A= Butt-Connector
- B= Block Spade
- C= Closed End Connector
- D= Male Slip-on Quick Disconnect
- F= Flanged Block Spade
- G= Piggy Back
- H= Hooks
- J= 3 way Connectors
- K= 4 way Connectors
- L= Bullet Connector
- M= Double Male
- P= Pin Connector
- Q= Female Slip-on Quick Disconnect
- R= Ring Tongue
- S= Bullet Receptacle
- T= Self Stripping Quick Splice
- W= Wire Nuts
- Z= Female Flag Slip-on

INSULATION:

- I=Insulated
- O=Non-Insulated
- F= Fully-Insulated

Screw Size - Tab Size Snap Diam.

2=#2	095=.095"
4=#4	106=.106"
6=#6	110=.110"
8=#8	135=.135"
10=#10	187=.187"
14= 1/4"	150=.150"
516= 5/16"	157=.157"
38= 3/8"	250=.250"
075= .075"	400=.400"

Wire Range

- A= 26-22
- B= 22-18
- C= 16-14
- E= 8
- F= 6

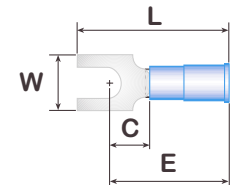
Packaging

- H=Header
- H-C= 100 pack
- H-25= 25 pack

Solderless Terminals

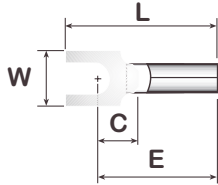
Flanged Block Spade Vinyl Insulated Butted Seam

Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness
SIF-4BH		4	.29	.19	.83	.68	.030
SIF-6BH	22-	6	.30	.25	.85	.70	.030
SIF-8BH	18	8	.30	.25	.85	.70	.030
SIF-10BH	Red	10	.30	.25	.85	.70	.030
SIF-4CH		4	.29	.19	.83	.68	.030
SIF-6CH	16-	6	.30	.25	.85	.70	.030
SIF-8CH	14	8	.30	.25	.85	.70	.030
SIF-10CH	Blue	10	.30	.25	.85	.70	.030
SIF-6DH	12-10	6	.32	.29	1.03	.84	.040
SIF-8DH	Yellow	8	.32	.29	1.03	.84	.040
SIF-10DH		10	.32	.29	1.03	.84	.040



Flanged Block Spade

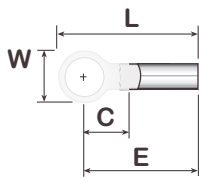
Non-Insulated Butted Seam



Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness
SOF-6BH	22-18	6	.030	.25	.65	.50	.030
SOF-8BH		8	.030	.25	.65	.50	.030
SOF-10BH		10	.030	.25	.65	.50	.030
SOF-6CH	16-14	6	.030	.25	.65	.50	.030
SOF-8CH		8	.030	.25	.65	.50	.030
SOF-10CH		10	.030	.25	.65	.50	.030

Ring Tongue

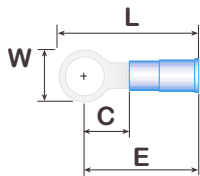
Non-Insulated Butted Seam



Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness
SOR-2AH	26-22	2	.14	.11	.32	.23	.020
SOR-4AH		4	.20	.21	.46	.33	.020
SOR-8AH		8	.25	.26	.54	.39	.020
SOR-10AH		10	.25	.27	.54	.39	.020
SOR-6BH	22-18	6	.25	.23	.60	.48	.030
SOR-8BH		8	.31	.33	.74	.58	.030
SOR-10BH		10	.31	.33	.74	.58	.030
SOR-6CH	16-	6	.25	.23	.60	.48	.030
SOR-8CH		8	.31	.33	.74	.58	.030
SOR-10CH		10	.33	.29	.70	.54	.030

Ring Tongue Vinyl

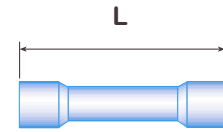
Insulated Butted Seam



Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness	
SIR-4AH	26-22	4	.20	.21	.60	.49	.020	
SIR-6AH		6	.20	.21	.60	.49	.020	
SIR-8AH		8	.25	.27	.68	.55	.020	
SIR-4BH	22-18	4	.25	.23	.80	.68	.030	
SIR-6BH		6	.25	.23	.80	.68	.030	
SIR-8BH		8	.31	.33	.94	.78	.030	
SIR-10BH	Red	10	.31	.33	.94	.78	.030	
SIR-14BH		1/4"	.47	.40	1.09	.85	.030	
SIR-516BH		5/16"	.47	.40	1.09	.85	.030	
SIR-38BH	Blue	3/8"	.57	.40	1.14	.85	.030	
SIR-4CH		16-14	4	.25	.23	.80	.68	.030
SIR-6CH			6	.25	.23	.80	.68	.030
SIR-8CH	8		.31	.33	.94	.78	.030	
SIR-10CH	Blue	10	.33	.29	.90	.74	.030	
SIR-14CH		1/4"	.47	.40	1.09	.85	.030	
SIR-516CH		5/16"	.47	.40	1.09	.85	.030	
SIR-38CH	Yellow	3/8"	.57	.40	1.14	.85	.030	
SIR-6DH		12-	6	.38	.29	1.03	.84	.040
SIR-8DH			8	.38	.29	1.03	.84	.040
SIR-10DH		10	10	.38	.29	1.03	.84	.040
SIR-14DH			1/4"	.54	.44	1.26	.99	.040
SIR-516DH		5/16"	.54	.44	1.26	.99	.040	
SIR-38DH	3/8"	.54	.44	1.26	.99	.040		

Butt Connector Vinyl Insulated Butted Seam

Part No.	Wire Range (AWG)	L	Thickness	Barrel Length	ID	Max. Insul. Dia
SFA-075BH	22-18 Red	1.00	.030	.25	.075	.145
SFA-095CH	16-14 Blue	1.00	.030	.25	.095	.175
SFA-135DH	12-10 Yellow	1.02	.040	.25	.135	.255



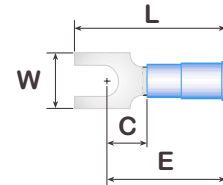
Butt Connector Non-Insulated Seamless

Part No.	Wire Range (AWG)	L	Thickness	Barrel Length	ID
SOA-075BH	22-18	.63	.032	.28	.075
SOA-095CH	16-14	.66	.030	.30	.095
SOA-135DH	12-10	.81	.040	.38	.135



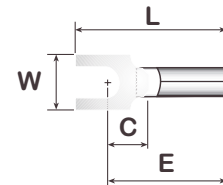
Block Spade Vinyl Insulated Butted Seam

Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness
SIB-4BH	22-18 Red	4	.25	.25	.85	.70	.030
SIB-6BH		6	.30	.25	.85	.70	.030
SIB-8BH		8	.30	.25	.85	.70	.030
SIB-10BH		10	.30	.25	.85	.70	.030
SIB-14BH		1/4"	.47	.43	1.03	.70	.030
SIB-4CH	16-14 Blue	4	.25	.25	.85	.70	.030
SIB-6CH		6	.30	.25	.85	.70	.030
SIB-8CH		8	.30	.25	.85	.70	.030
SIB-10CH		10	.30	.25	.85	.70	.030
SIB-14CH		1/4"	.47	.43	1.03	.70	.030
SIB-6DH	12-10 Yellow	6	.32	.29	1.03	.84	.040
SIB-8DH		8	.32	.29	1.03	.84	.040
SIB-10DH		10	.32	.29	1.03	.84	.040
SIB-14DH		1/4"	.53	.48	1.28	.84	.040
SIB-516DH		5/16"	.53	.48	1.28	.84	.040

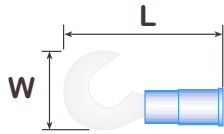


Block Spade Non-Insulated Butted Seam

Part No.	Wire Range (AWG)	Stud Size	W	C	L	E	Thickness
SOB-6BH	22-18	6	.30	.25	.65	.50	.030
SOB-8BH		8	.30	.25	.65	.50	.030
SOB-10BH		10	.30	.25	.65	.50	.030
SOB-6CH	16-14	6	.30	.25	.65	.50	.030
SOB-8CH		8	.30	.25	.65	.50	.030
SOB-10CH		10	.30	.25	.65	.50	.030



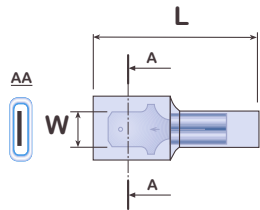
Hooks Vinyl Insulated Butted Seam



Part No.	Wire Range (AWG)	Stud Size	W	L
SIH-6BH	22-18	6	.25	.80
SIH-8BH	22-18	8	.31	.94
SIH-10BH	22-18	10	.31	.94
SIH-8CH	16-14	8	.31	.94
SIH-10CH	16-14	10	.33	.90
SIH-10DH	12-10	10	.38	1.03

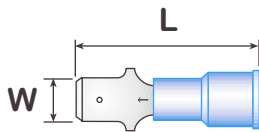
Male Slip-ons (Quick Disconnects)

Fully Insulated Butted Seam



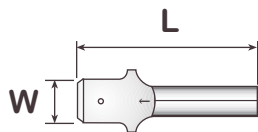
Part No.	Wire Range (AWG)	W	Thickness	L	Barrel Length	Barrel ID	Max Insul. Dia
SFD-250BH	22-18 Red	.250	.032	.95	.25	.071	.145
SFD-250CH	16-14 Blue	.250	.032	.95	.25	.091	.175
SFD-250DH	12-10 Yellow	.250	.032	1.05	.25	.150	.255

Vinyl Insulated Butted Seam



Part No.	Wire Range (AWG)	W	Thickness	L	Barrel Length	Barrel ID	Max Insul. Dia
SID-110BH	22-18 Red	.110	.020	.80	.19	.075	.145
SID-187BH		.187	.020	.79	.25	.080	.145
SID-250BH		.250	.032	.93	.25	.071	.145
SID-110CH	16-14 Blue	.110	.020	.80	.19	.075	.145
SID-187CH		.187	.020	.79	.25	.080	.145
SID-250CH		.250	.032	.93	.25	.091	.175
SID-250DH	12-10 Yellow	.250	.032	1.05	.25	.140	.255

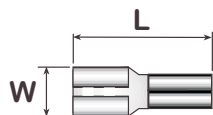
Non-Insulated Butted Seam



Part No.	Wire Range (AWG)	W	Thickness	L	Barrel Length	Barrel ID
SOD-187BH	22-18 Red	.187	.020	.59	.25	.080
SOD-250BH	18 Red	.250	.032	.73	.25	.071
SOD-187CH	16-14 Blue	.187	.020	.59	.25	.080
SOD-250CH	14 Blue	.250	.032	.73	.25	.091
SOD-250DH	12-10 Yellow	.250	.032	.75	.25	.150

Female Slip-ons (Quick Disconnects)

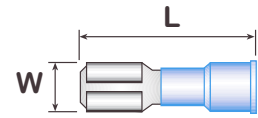
Non-Insulated Butted Seam



Part No.	Wire Range (AWG)	W	Thickness	L	Barrel Length	Barrel ID
SOQ-250BH	22-18 Red	.250	.032	.66	.25	.080
SOQ-250CH	16-14 Blue	.250	.032	.66	.25	.080
SOQ-250DH	12-10 Yellow	.250	.032	.86	.25	.080

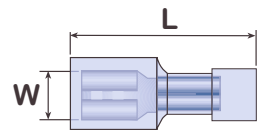
Vinyl Insulated Butted Seam

Part No.	Wire Range (AWG)	W	Thickness	L	Barrel		Max Insul. Dia
					Length	ID	
SIQ-110BH	22-	.110	.016	.80	.19	.075	.145
SIQ-187BH	18	.187	.020	.80	.25	.080	.145
SIQ-250BH	Red	.250	.032	.86	.25	.080	.145
SIQ-110CH	16-	.110	.016	.80	.19	.075	.145
SIQ-187CH	14	.187	.020	.80	.25	.080	.145
SIQ-250CH	Blue	.250	.032	.86	.25	.080	.145
SIQ-250DH	12-10 Yellow	.250	.032	.96	.25	.140	.255



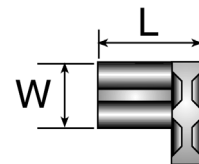
Fully Insulated Butted Seam

Wire Part No.	Range (AWG)	W	Thickness	L	Barrel		Max Insul. Dia
					Length	ID	
SFQ-110BH	22-	.110	.016	.69	.12	.035	.093
SFQ-187BH	18	.187	.020	.81	.25	.080	.145
SFQ-250BH	Red	.250	.032	.89	.25	.080	.145
SFQ-187CH	14-16	.187	.020	.81	.25	.080	.145
SFQ-250CH	Blue	.250	.032	.89	.25	.080	.145
SFQ-250DH	12-10 Yellow	.250	.032	.99	.25	.140	.255



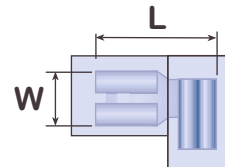
Flag Non-Insulated Butted Seam

Part No.	Wire Range (AWG)	W	Thickness	L	Barrel	
					Length	ID
SOZ-250BH	22-18	.250	.032	.50	.25	.075
SOZ-250CH	16-14	.250	.032	.51	.25	.095
SOZ-250DH	12-10	.250	.032	.61	.25	.175



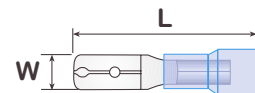
Flag Insulated Butted Seam

Part No.	Wire Range (AWG)	W	Thickness	L	Barrel		Max Insul. Dia
					Length	ID	
SIZ-250CH	16-14	.250	.042	.51	.25	.095	.145



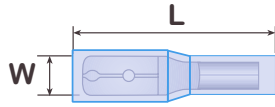
Bullet Plugs (Male) Insulated Butted Seam Vinyl

Part No.	Wire Range (AWG)	W	Thickness	L
SIL-157CH	16-14	.157	.018	.91
SIL-187CH	16-14	.187	.018	.96



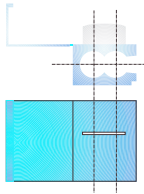
Bullet Receptacles (Female)

Fully Insulated



Part No.	Wire Range (AWG)	Male Plug Dia.	Thickness	L	W
SFS-157BH	22-18	.157	.016	.90	.18
SFS-157CH	16-14	.157	.016	.90	.18
SFS-187CH	16-14	.187	.016	.94	.21
SFL-157H	Double Bull Receptacle	.157	.030	2.12	

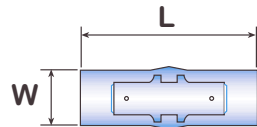
Self-Stripping (Quick Splice)



Part No.	Wire Range (AWG)	Color
SFT-1814H	18-14	Blue
SFT-1210H	12-10	Yellow
SFT-1814BH	18-14	Black
SFT-1814CH	18-14	Tan
SFT-2218H	22-18	Red
SFT-2218BH	22-18	Red
SFT-1614H	16-14	Blue

Double Male

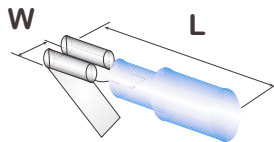
(Quick Slide Insulated Vinyl)



Part No.	W	Thickness	L
SFM-250H	.250	.030	2.12

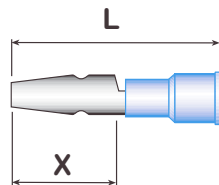
Multi Stack Disconnect

(Insulated Butted Seam Vinyl)



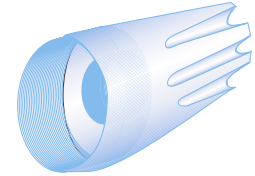
Part No.	Wire Range (AWG)	W	Thickness	L	Length	Barrel ID	Max Insul. Dia
SIG-250BH	22-18 Red	.250	.030	.85	.25	.075	.145
SIG-250CH	16-14 Blue	.250	.030	.85	.25	.095	.175

Wire Pins



Part No.	Wire Range (AWG)	X	L	Thickness
SIP-075BH	22-18	.41	.98	.032
SIP-075CH	16-14	.41	.98	.032
SIP-106DH	22-18	.41	.98	.032

Wire Nuts



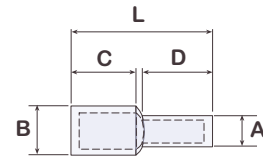
Part No.	Wire Range (AWG)
SIW-BH	22-18
SIW-CH	20-16
SIW-DH	22-14
SIW-CCH	14-10
SIW-DDH	22-18

Wing Wire Nuts



Part No.	Wire Range (AWG)
SIW-1812H	18-12
SIW-1412H	14-12
SIW-1210H	12-10
SIW-1206H	12-6

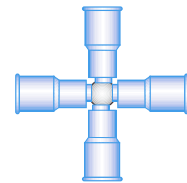
Closed End Connector



Part No.	Wire Range (AWG)	A	B	C	D	L
SFC-075BH	22-14	.10	.28	.19	.32	.67
SFC-150CH	12-10	.16	.40	.27	.32	.79
SFC-400DH	18-10	.22	.49	.38	.44	1.06

4 Way Connectors

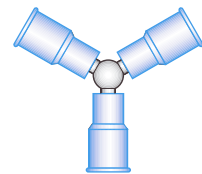
(Vinyl Insulated)



Part No.	Wire Range (AWG)	Stud Size
SIK-BH	22-18	10
SIK-CH	16-14	10
SIK-DH	12-10	10

3 Way Connectors

(Vinyl Insulated)



Part No.	Wire Range (AWG)	Stud Size
SIJ-BH	22-18	10
SIJ-CH	16-14	10
SIJ-DH	12-10	10

Assorted Insulated

*Terminals & Connectors

Part# SI-AH 8 pcs.

Part# SI-2AH 6 pcs.

Part# SO-AH 16 pcs.

*Same size as assorted

Assorted Non-Insulated

*Terminals & Connectors

Crimpers

Part# CRT-1H



•A compact, high quality tool designed to handle the six most common electrical wiring functions. Made of .125" heat-treated carbon steel for maximum durability. It handles a variety of terminal and connector styles, insulated and non-insulated, over a range of 22-10 AWG

Features:

- 1) Anvil-type wire cutter
- 2) Crimp dies for # 22-10AWG insulated terminals, connectors and closed end connectors
- 3) Cut-off dies for mild steel and non-ferrous screws.
- 4) Crimp dies for #22-10AWG non-insulated terminals and connectors.
- 5) Wire stripping stations
- 6) Crimp die for 7 and 8 ignition parts
- 7) Cushioned, vinyl grips

Part# CRT-2

Crimper/Wire Stripper:



- Automatically strips wires AWG 10-26.
- Crimps open barrel terminals.
- Cushion grips makes crimping easy.
- Cuts wires
- Crimps insulated, non-insulated and auto ignition terminals

Solderless Terminal Kits



SRK-1: Butt & Bullet connectors, Wire Nuts, Bullet receptacles, Closed End Connectors.

SRK-2: Block Spade, Ring Tongues, Butt Connectors

SRK-3: Male Disconnects, Female Disconnects, Flag Connectors, Butt Connectors.

12 Different types in each kit. Each kit has 20 of each part#. 240 Assorted terminals per kit.

Heatshrink Butt Connector



- Designed to protect from corrosive environment such as: water, chemical, salt, spray, exhaust, fumes, and moisture.
- Dual-wall insulator consists of outer wall polyolefin and inner wall hot melt glue. This will make the connection complete.
- Hot melt adhesive insulator holds up under steam or vibration.

Part#	Wire Range	Color
SHT-075B	22-18	Red
SHT-095C	16-14	Blue
SHT-135D	12-10	Yellow

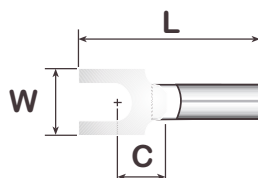
6 & 8 AWG Non-Insulated

(Butt Connector)



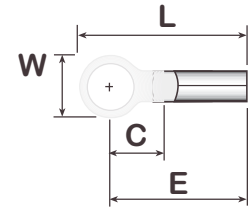
Part#	AWG	L	OD	ID
SOA-8EH	8	.885	.280	.202
SOA-6FH	6	1.08	.350	.250

Block Spade



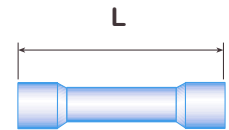
Part#	AWG	Stud Size	L	W	C
SOB-14EH	8	1/4"	.950	.440	.260
SOB-14FH	6	1/4"	1.08	.440	.260

Ring Tongue



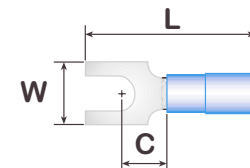
Part#	AWG	Stud Size	L	W	C	E
SOR-10EH	8	10	.825	.395	.208	.630
SOR-14EH	8	1/4"	.885	.440	.255	.660
SOR-516EH	8	5/16"	1.05	.554	.335	.770
SOR-38EH	8	3/8"	1.15	.585	.420	.885
SOR-14FH	6	1/4"	1.09	.470	.252	.840
SOR-516FH	6	5/16"	1.09	.510	.335	.814
SOR-38FH	6	3/8"	1.30	.710	.415	.940

Insulated Butt Connector



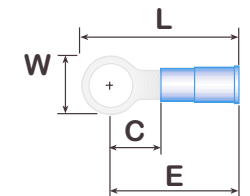
Part#	AWG	L	OD	ID
SFA-8EH	8	.885	.280	.202
SFA-6FH	6	1.08	.350	.250

Block Spade



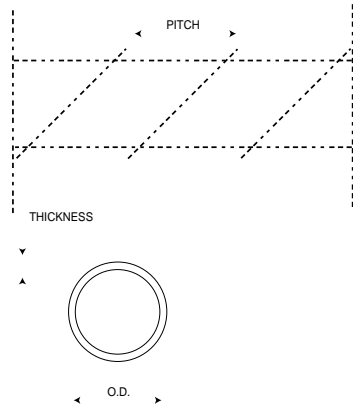
Part#	AWG	Stud Size	L	W	C
SIB-14EH	8	1/4"	.950	.440	.260
SIB-14FH	6	1/4"	1.08	.440	.260

Ring Tongue



Part#	AWG	Stud Size	L	W	C	E
SIR-10EH	8	10	.825	.395	.208	.630
SIR-14EH	8	1/4"	.885	.440	.255	.660
SIR-516EH	8	5/16"	1.05	.554	.335	.770
SIR-38EH	8	3/8"	1.15	.585	.420	.885
SIR-14FH	6	1/4"	1.09	.470	.252	.840
SIR-516FH	6	5/16"	1.09	.510	.335	.814
SIR-38FH	6	3/8"	1.30	.710	.415	.940

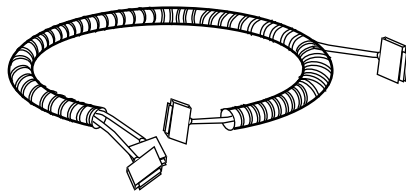
Spiral Wrap Tubing



- For Protection of Bundles from .063" to 7"
- Install gapped for greater flexibility or butted for maximum abrasion resistance, insulation and rigidity
- Available in Natural and UV Black Polyethylene also available in assorted colors per request
- Outside Diameter sizes from 1/8" to 1"
- B=Black, N=Natural, and CSP=100ft Spool

Part #	O.D.	Pitch	Wall Thickness	Min/Max Bundle Range
SPWR-18-CSPB	1/8"	.210 inch	.035 inch	.063 inch to .500 inch
SPWR-18-CSPN	1/8"	.210 inch	.035 inch	.063 inch to .500 inch
SPWR-14-CSPB	1/4"	.375 inch	.045 inch	.188 inch to 2.00 inch
SPWR-14-CSPN	1/4"	.375 inch	.045 inch	.188 inch to 2.00 inch
SPWR-38-CSPB	3/8"	.438 inch	.052 inch	.313 inch to 3.00 inch
SPWR-38-CSPN	3/8"	.438 inch	.052 inch	.313 inch to 3.00 inch
SPWR-12-CSPB	1/2"	.563 inch	.062 inch	.375 inch to 4.00 inch
SPWR-12-CSPN	1/2"	.563 inch	.062 inch	.375 inch to 4.00 inch
SPWR-34-CSPB	3/4"	.750 inch	.065 inch	.750 inch to 5.00 inch
SPWR-34-CSPN	3/4"	.750 inch	.065 inch	.750 inch to 5.00 inch
SPWR-1-CSPB	1"	1.110 inch	.070 inch	1.00 inch to 7.00 inch
SPWR-1-CSPN	1"	1.110 inch	.070 inch	1.00 inch to 7.00 inch

Split Loom Tubing



FEATURES:

- Economical
- Abrasion resistance
- Slit full length-permits break-outs
- Easy assembly, fast on, fast off
- Resistance to gasoline, oil & other chemicals
- Durable
- Lightweight

Part#	Diameter
FXLM 14	1/4"
FXLM 38	3/8"
FXLM 12	1/2"
FXLM 58	5/8"
FXLM 34	3/4"
FXLM 1	1"
FXLM 112	1-1/2"

ECONOMICAL, HIGHLY FLEXIBLE SPLIT LOOM FOR QUICK WIRING AND HARNESS PROTECTION:

This flexible polyethylene loom material permits easy fast installations and protection of harness and cable assemblies. The loom is slit full length so that it slides over the completed wire assembly easily, but closes after installation to protect the wire bundle. The slit allows for the wires to break out at any point along the cable length for custom installations.

The loom is durable and light weight. The convoluted surface provides heavy duty protection of cables and hoses from abrasion and damage in all types of automotive, marine and industrial applications.

Available in Black Polyethylene 1/4", 3/8", 1/2", 5/8", 3/4", and 1" Diameters.

Standard Velcro Wire Ties

Part#	Length	Width	Average Shear (PSI)
WTHL-5B	5"	3/4"	23
WTHL-5W	5"	3/4"	23
WTHL-8B	8"	3/4"	23
WTHL-8W	8"	3/4"	23
WTHL-12B	12"	3/4"	23
WTHL-12W	12"	3/4"	23
WTHL-18B	18"	3/4"	23
WTHL-18W	18"	3/4"	23

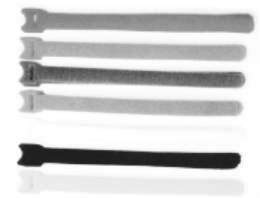


B=BLACK

W=WHITE

Colored Velcro Wire Ties

Part#	Length	Width	Average Shear (PSI)
WTHL-5R	5"	3/4"	23
WTHL-5G	5"	3/4"	23
WTHL-5A	5"	3/4"	23
WTHL-5O	5"	3/4"	23
WTHL-5Y	5"	3/4"	23
WTHL-8R	8"	3/4"	23
WTHL-8G	8"	3/4"	23
WTHL-8A	8"	3/4"	23
WTHL-8O	8"	3/4"	23
WTHL-8Y	8"	3/4"	23



R=RED, A=BLUE, G=GREEN, O=ORANGE, Y=YELLOW.

Flame Retardant Wire Ties

Velcro Wire ties (WTFR)-A flame retardant version of standard wire tie. This product meets UL requirements for a rating of 94-V2 and also meets requirements for a for FAR 25.853 A/B

Part#	Length	Width	Average Shear (PSI)
WTFR-5B	5"	3/4"	29
WTFR-5MA	5"	3/4"	29
WTFR-8B	8"	3/4"	29
WTFR-8MA	8"	3/4"	29

B=BLACK,

MA=MEDIUM BLUE

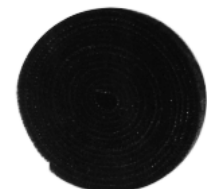
Adhesive Backed Hook & Loop Strips

Part#	Length	Width	Average Shear (PSI)
WHLS-1B	1"	1"	23
WHLS-1W	1"	1"	23
WHLS-6B	6"	1"	23
WHLS-6W	6"	1"	23



One Wrap Hook & Loop Strap

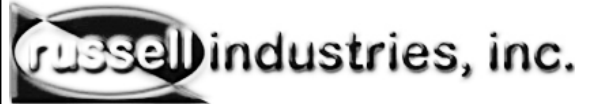
Part#	Length	Width	Average Shear (PSI)
WHLS-60B	60"	1"	23
WHLS-60W	60"	1"	23



B=BLACK

W=WHITE

Zip Tape Wire Markers



Mity Mark® "Hand Held" Wire Marker Dispenser



Part #	Description	Specification
KMM 0-9	Mity Mark Dispenser loaded with 10 rolls of tape, legends 0-9 tape is .250" wide, 96" long, pre-cut into 1.250" markers	Molded Polypropylene, "Hand sized", 1 1/4" x 1 1/2" x 4 1/2", beltloop, holds 10 rolls of tape, choice of 5 colors, Red Orange, Yellow, Green, Blue- Specify.
DMM	Empty Mity Mark Dispenser Refill Rolls	
TMM	Refill tape rolls for Mity Mark Dispenser, Box of 10 refill rolls. .250 x 96" long	Tape is made of DuPont Tyvek® acrylic adhesive oil, water, abrasion resistant, -40 F to 250 F. Legends available: 0 thru 99 A thru Z, NEMA colors, special legends upon req.
STMM	Single Refill Tape Roll for Mity Mark Dispenser. 1 single roll, 1 legend	

Point of Sale Displays



Part #	Description	Specification
DPI10D	Dispenser Display Kit, designed to install on wall or pegboard, contains 10 each loaded Mity Mark Dispensers	Heavy duty molded white polypropylene, over-all size 6" by 19", colors: red, orange, yellow, green, blue.
TD20B	Refill tape roll display, hang on wall or pegboard, contains 20 boxes of 10 rolls Total 200 rolls per display	Molded white polypropylene, measures 12" x 19", any combination of legends or tapes
PR38D	Wall display contains 10 loaded Mity Mark displays, 10 boxes refill tapes, 12 booklets (Tyvek), 6 Rite & Wrap Dispensers.	Molded white polypropylene, mounts on wall or rack, measures 22" x 20"

Wire Marking Booklets



Part #	Description	Specification
ZTB	3 3/8" x 5 3/4" booklet contains 10 pages of pre-cut wire markers in a wide range of legends. Markers are .250" wide 1.250" long, plus terminal markers.	Tyvek®: DuPont Tyvek, acrylic adhesive oil, water, abrasion resistant service temperature -40 F to +250 F. Cloth*: Vinyl Cloth, rubberized adhesive oil, water, abrasion resistant service temperature -40 F to +250 F.
	Legends	
ZTB-1	0 Thru 9	Tyvek-Cloth
ZTB-2	A to Z, 0 to 15, +, -, /	Tyvek-Cloth
ZTB-3	1 Thru 45	Tyvek-Cloth
ZTB-4	1, 2, 3	Tyvek-Cloth
ZTB-5	A, B, C	Tyvek-Cloth
ZTB-6	T1, T2, T3	Tyvek-Cloth
ZTB-7	L1, L2, L3	Tyvek-Cloth
ZTB-8	46 thru 90	Tyvek-Cloth
ZTB-9	10 NEMA Colors	Tyvek-Cloth
ZTB-10	+, -, AC, DC, POS, NEG, GND, NEUT, SPARE, BLANK	Tyvek-Cloth
ZTB-20	Circuit breaker markers for residential use (3 sets)	Tyvek
ZTB-21	Circuit breaker markers for residential use (1 set)	Tyvek

Please specify material type (Tyvek or Cloth)

Write-on Cable Marker



Part #	Description	Specification
	Rite & Wrap II is a pocket size dispenser which contains a roll of pre-cut, self-laminating markers on a silicone release liner. The dispenser is designed so that the user can write on the marker with pen or pencil then eject it from the dispenser and wrap it around the cable. The transparent portion of the marker wraps around itself to protect the identifying mark from abrasion and smearing.	Rite & Wrap Markers are made of .004" thick clear vinyl film, acrylic adhesive, F service temperature -40 to +200 F.
	Marker Size	Markers/Dispenser
RW13	.750" x 3.0"	90
RW16	.750" x 6.0"	40
RW51	.750" x 1.250"	300
RW52	.750" x 1.875"	150
	The 3" x 6" Rite & Wrap contains 10 pages of pre-cut, self laminating markers on silicone release paper. The booklet fits easily in a shirt pocket. The user can write on the marker, peel it from the booklet page, and wrap it around the cable. The transparent portion of the marker wraps around itself to protect the identifying mark from abrasion and smearing.	Rite & Wrap Markers are made of .044" thick clear vinyl film, acrylic adhesive, F service temperature -40 to +200 F.
	Marker Size	Markers/Booklet
RWB60	1" x 2 1/2"	60
RWB30	1" x 5"	30
RWB30/15	1" x 2 1/2"	30
RW52	1" x 5"	15

Zip Tape Wire Markers

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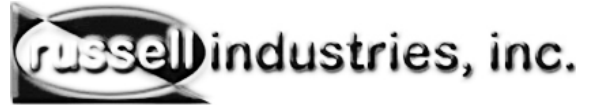
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