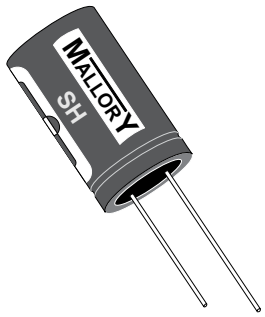
Type SH 105 ºC Radial Leaded Aluminum Electrolytic Capacitors

2000 Hour Long Life, Aluminum Electrolytic



Type SH is a radial leaded aluminum electrolytic capacitor with a +105 ºC, 2000 hour long life rating. The SH is a high reliability product and is ideal for high quality applications that require long life in high temperatures environments.

Highlights

- +105 ºC
- 2000 hours - long life
- High reliability
- Available in T&R and ammo pack

Specifications

RoHS Compliant

Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

Capacitance Range: 1.0 to 4700 µF

Voltage Range: 6.3 to 450 Vdc

Capacitance Tolerance: ±20%

Operating Temperature Range: –40 ºC to +105 ºC (–25 ºC for 160 to 450 Vdc)

DC Leakage Current: After 2 minutes, 25 ºC at rated voltage

6.3 to 100 Vdc

I = .01CV + 3 µA Max

≥ 160 Vdc after voltage applied for 3 minutes

I = .03CV + 10 µA Max

C = Capacitance in (µF)

V = Rated voltage

I = Leakage current in µA

Dissipation Factor @ 120 Hz, +25 ºC:

WV (V)	6.3	10	16	25	35	50	63	100	160-250	400-450
DF(%)	26	22	18	16	14	12	10	10	15	20

Above 1000 µF, the value of DF (%) is increased 2% for every additional 1000 µF

Ripple Multipliers for Frequency and Temperature:

Rated WVDC	Ripple Multipliers			
	60Hz	120Hz	1kHz	10kHz
6 to 25	0.80	1.0	1.1	1.2
35 to 100	0.75	1.0	1.3	1.4
160 to 450	0.70	1.0	1.4	1.6

Ambient Temperature	Ripple Multiplier
+105 ºC	1.00
+85 ºC	1.50
+70 ºC	1.80

Load Life Test: Apply Rated WVDC for 2000 hours at +105 ºC

Capacitance change within 20% of initial value

DF not to exceed 200% of initial requirement

DC Leakage current meets initial limits

Shelf Life: 1000 hrs @105 ºC with no voltage applied

Cap change within 20% of initial value

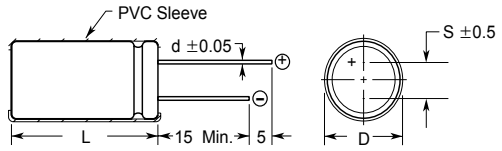
DF ≤ 200% of initial requirements

DC leakage current meets initial requirement

Type SH 105 ºC Radial Leaded Aluminum Electrolytic Capacitors

Outline Drawing

Outline Dimensions
(Millimeters)



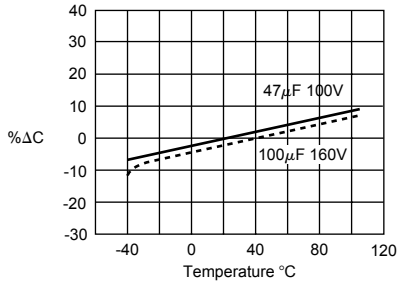
Case vented on diameters 6.3 and greater

Vinyl sleeve adds .5 Max. to diameter and 2.0 Max. to length

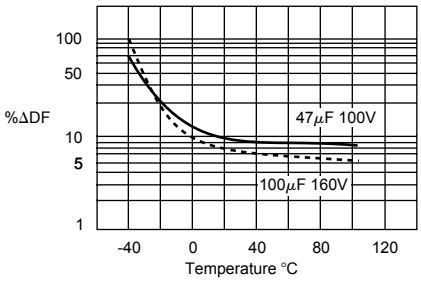
Part Numbering System

SH	100	M	100	S	T
Type	Capacitance (µF)	Capacitance Tolerance (%)	Rated Voltage (Vdc)	Packaging	Lead Configuration
SH	1R0 = 1	K = ±10	6R3 = 6.3	A = Tape & Ammo	1 = Lead cut
	100 = 10	M = ±20	010 = 10	E = Different Characteristic	2 = Lead form
	101 = 100		100 = 100	R = Tape & Reel	4 = Lead crimp & cut (form)
	102 = 1000			S = Standard	T = Standard

Temperature Characteristics

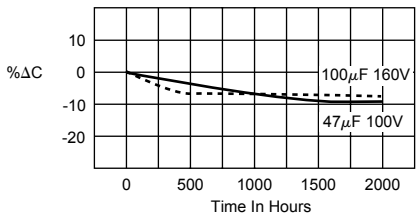


Capacitance Change Ratio

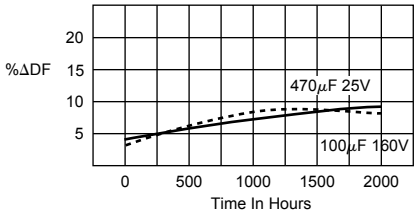


Dissipation Factor Change

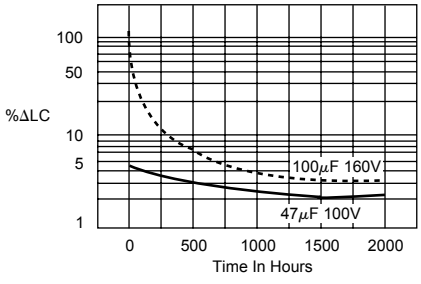
Load Life Characteristics



Capacitance Change Ratio



Dissipation Factor Change



Leakage Current Change

Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

Ratings

Capacitance (uF)	Catalog Part Number	ESR 120 Hz/+25°C (ohms)	Max Ripple Current 120 Hz/ +105°C (ma)	Size in. (mm)							
				Diameter (D)		Length (L)		Lead Space (S)		Lead dia. (d)	
6.3 Vdc (8 Volts Surge)											
47	SH470M6R3ST	7.34	65	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
100	SH101M6R3ST	3.45	100	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
220	SH221M6R3ST	1.57	165	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
330	SH331M6R3ST	1.04	200	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
470	SH471M6R3ST	0.73	280	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
1000	SH102M6R3ST	0.34	470	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
2200	SH222M6R3ST	0.17	930	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
3300	SH332M6R3ST	0.12	1100	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
4700	SH472M6R3ST	0.09	1320	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
10 Vdc (13 Volts Surge)											
47	SH470M010ST	6.21	75	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
100	SH101M010ST	2.92	110	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
220	SH221M010ST	1.33	180	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
330	SH331M010ST	0.88	255	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
470	SH471M010ST	0.62	305	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
1000	SH102M010ST	0.29	570	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
2200	SH222M010ST	0.14	1010	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
3300	SH332M010ST	0.10	1220	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
4700	SH472M010ST	0.08	1410	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
16 Vdc (20 Volts Surge)											
33	SH330M016ST	7.23	70	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
47	SH470M016ST	5.08	85	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
100	SH101M016ST	2.39	135	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
220	SH221M016ST	1.09	235	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
330	SH331M016ST	0.72	285	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
470	SH471M016ST	0.51	395	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
1000	SH102M016ST	0.24	700	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
2200	SH222M016ST	0.12	1150	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
3300	SH332M016ST	0.09	1350	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
4700	SH472M016ST	0.07	1560	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
25 Vdc (32 Volts Surge)											
10	SH100M025ST	21.22	39	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
22	SH220M025ST	9.65	60	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
33	SH330M025ST	6.43	75	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
47	SH470M025ST	4.52	90	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
100	SH101M025ST	2.12	145	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
220	SH221M025ST	0.96	250	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
330	SH331M025ST	0.64	355	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
470	SH471M025ST	0.45	470	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
1000	SH102M025ST	0.21	855	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
2200	SH222M025ST	0.11	1230	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
3300	SH332M025ST	0.08	1450	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
4700	SH472M025ST	0.06	1690	0.709	(18.0)	1.40	(36.0)	0.295	(7.5)	0.031	(0.8)

Type SH 105 ºC Radial Leaded Aluminum Electrolytic Capacitors

Ratings

Capacitance (uF)	Catalog Part Number	ESR 120 Hz/+25°C (ohms)	Max Ripple Current 120 Hz/ +105°C (ma)	Size in. (mm)							
				Diameter (D)		Length (L)		Lead Space (S)		Lead dia. (d)	
35 Vdc (44 Volts Surge)											
10	SH100M035ST	18.57	40	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
22	SH220M035ST	8.44	65	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
33	SH330M035ST	5.63	85	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
47	SH470M035ST	3.95	115	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
100	SH101M035ST	1.86	190	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
220	SH221M035ST	0.84	315	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
330	SH331M035ST	0.56	440	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
470	SH471M035ST	0.40	580	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
1000	SH102M035ST	0.19	995	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
2200	SH222M035ST	0.10	1450	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
3300	SH332M035ST	0.07	1660	0.709	(18.0)	1.40	(36.0)	0.295	(7.5)	0.031	(0.8)
50 Vdc (63 Volts Surge)											
1	SH010M050ST	159.15	12	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
2.2	SH2R2M050ST	72.34	18	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
3.3	SH3R3M050ST	48.23	25	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
4.7	SH4R7M050ST	33.86	30	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
10	SH100M050ST	15.92	50	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
22	SH220M050ST	7.23	75	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
33	SH330M050ST	4.82	105	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
47	SH470M050ST	3.39	125	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
100	SH101M050ST	1.59	210	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
220	SH221M050ST	0.72	400	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
330	SH331M050ST	0.48	535	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
470	SH471M050ST	0.34	730	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
1000	SH102M050ST	0.16	1110	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
2200	SH222M050ST	0.08	1530	0.709	(18.0)	1.40	(36.0)	0.295	(7.5)	0.031	(0.8)
63 Vdc (79 Volts Surge)											
4.7	SH4R7M063ST	28.22	34	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
10	SH100M063ST	13.26	55	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
22	SH220M063ST	6.03	90	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
33	SH330M063ST	4.02	110	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
47	SH470M063ST	2.82	155	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
100	SH101M063ST	1.33	260	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
220	SH221M063ST	0.60	460	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
330	SH331M063ST	0.40	650	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
470	SH471M063ST	0.28	800	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
1000	SH102M063ST	0.13	1200	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
100 Vdc (125 Volts Surge)											
1	SH010M100ST	132.63	15	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
2.2	SH2R2M100ST	60.29	22	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
3.3	SH3R3M100ST	40.19	29	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
4.7	SH4R7M100ST	28.22	37	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
10	SH100M100ST	13.26	65	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
22	SH220M100ST	6.03	115	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)

Type SH 105 ºC Radial Leaded Aluminum Electrolytic Capacitors

Ratings

Capacitance (uF)	Catalog Part Number	ESR 120 Hz/+25°C (ohms)	Max Ripple Current 120 Hz/ +105°C (ma)	Size in. (mm)							
				Diameter (D)		Length (L)		Lead Space (S)		Lead dia. (d)	
100 Vdc (125 Volts Surge)											
33	SH330M100ST	4.02	160	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
47	SH470M100ST	2.82	210	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
100	SH101M100ST	1.33	385	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
220	SH221M100ST	0.60	590	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
330	SH331M100ST	0.40	720	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
470	SH471M100ST	0.28	875	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
***160 Vdc (200 Volts Surge)**											
1	SH010M160ST	198.94	17	0.197	(5.0)	0.433	(11.0)	0.079	(2.0)	0.020	(0.5)
2.2	SH2R2M160ST	90.43	25	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
3.3	SH3R3M160ST	60.29	36	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
4.7	SH4R7M160ST	42.33	43	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
10	SH100M160ST	19.89	70	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
22	SH220M160ST	9.04	130	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
33	SH330M160ST	6.03	180	0.512	(13.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
47	SH470M160ST	4.23	270	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
100	SH101M160ST	1.99	330	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
***200 Vdc (250 Volts Surge)**											
1	SH010M200ST	198.94	17	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
2.2	SH2R2M200ST	90.43	25	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
3.3	SH3R3M200ST	60.29	36	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
4.7	SH4R7M200ST	42.33	50	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
10	SH100M200ST	19.89	80	0.394	(10.0)	0.630	(16.0)	0.197	(5.0)	0.024	(0.6)
22	SH220M200ST	9.04	140	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
33	SH330M200ST	6.03	190	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
47	SH470M200ST	4.23	220	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
100	SH101M200ST	1.99	335	0.630	(16.0)	1.26	(32.0)	0.295	(7.5)	0.031	(0.8)
***250 Vdc (300 Volts Surge)**											
1	SH010M250ST	198.94	17	0.248	(6.3)	0.433	(11.0)	0.098	(2.5)	0.020	(0.5)
2.2	SH2R2M250ST	90.43	29	0.315	(8.0)	0.433	(11.0)	0.138	(3.5)	0.024	(0.6)
3.3	SH3R3M250ST	60.29	42	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
4.7	SH4R7M250ST	42.33	50	0.394	(10.0)	0.492	(12.5)	0.197	(5.0)	0.024	(0.6)
10	SH100M250ST	19.89	88	0.394	(10.0)	0.787	(20.0)	0.197	(5.0)	0.024	(0.6)
22	SH220M250ST	9.04	155	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
33	SH330M250ST	6.03	190	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)
47	SH470M250ST	4.23	230	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
100	SH101M250ST	1.99	340	0.709	(18.0)	1.40	(36.0)	0.295	(7.5)	0.031	(0.8)
***400 Vdc (450 Volts Surge)**											
22	SH220M400ST	12.06	110	0.630	(16.0)	0.984	(25.0)	0.295	(7.5)	0.031	(0.8)
***450 Vdc (500 Volts Surge)**											
10	SH100M450ST	26.53	80	0.512	(13.0)	0.984	(25.0)	0.197	(5.0)	0.024	(0.6)

* Over 160 Vdc the ripple is measured at 85 ºC

Type SH 105 ºC Radial Leaded Aluminum Electrolytic Capacitors

Taping & Packaging

Fig. 1 - Formed Taping

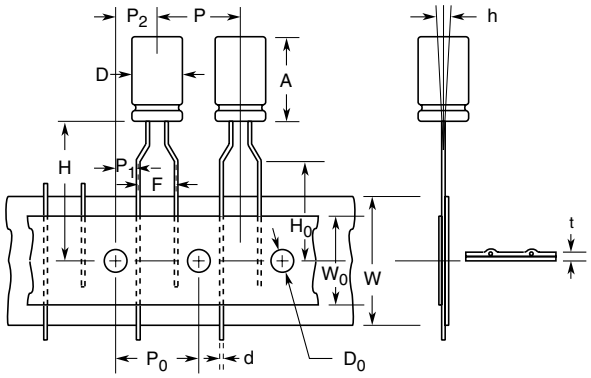


Fig. 2 - Straight Taping (5Φ, 6.3Φ, 8Φ)

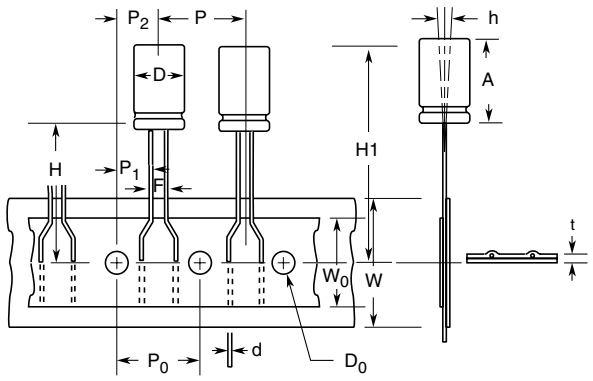


Fig. 3- Straight Taping (Under 10Φ, 12Φ, 13Φ)

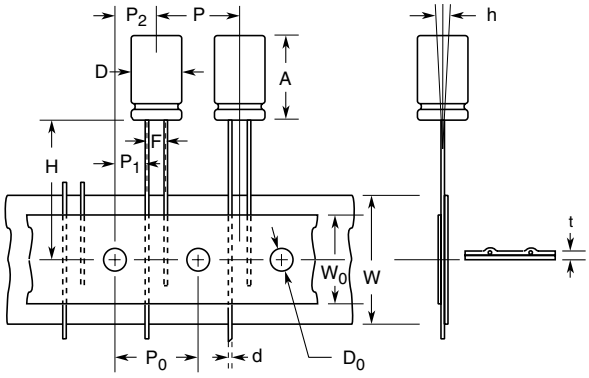
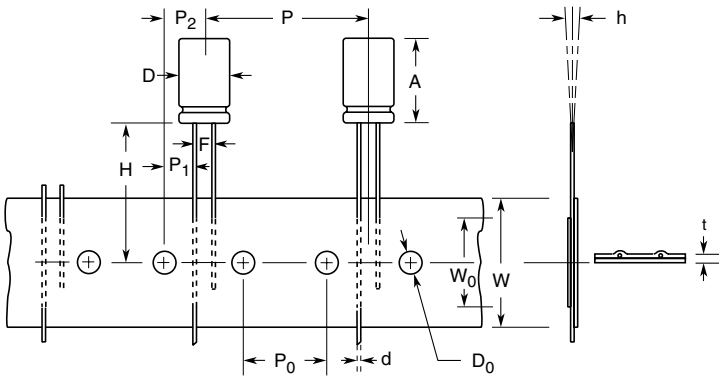


Fig. 4- Straight Taping (16Φ, 18Φ)

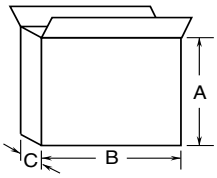


Standard Lead Spacing of Taped Components is 5mm
Other Lead Spacing is Available by Special Order

Code	D	A	d	P	P_0	P_1	P_2	F	W	W_0	H	H_0	D_0	t	ih	Fig.
Tolerance	0.5	1.0	±0.05	±1.0	±0.2	±0.7	±1.3	+0.8 -0.2	±0.5	Min.	±0.75	±0.5	±0.2	±0.2	Max.	
Item	4 ~ 6.3	7.0	0.45	12.7	12.7	3.85	6.35	5.0	18.0	12.5	18.5	16.0	4.0	0.7	2.0	1
	5 ~ 8	12.5	0.5	12.7	12.7	3.85	6.35	5.0	18.0	12.5	18.5	16.0	4.0	0.7	2.0	
	5, 6.3	12.5	0.5	12.7	12.7	5.1	6.35	2.5	18.0	12.5	18.5	——	4.0	0.7	2.0	2
	8	12.5	0.5	12.7	12.7	4.6	6.35	3.5	18.0	12.5	18.5	——	4.0	0.7	2.0	
	10	21.0	0.6	12.7	12.7	3.85	6.35	5.0	18.0	12.5	18.5	——	4.0	0.7	2.0	3
	12, 13	26.0	0.6	15.0	15.0	5.0	7.5	5.0	18.0	12.5	18.5	——	4.0	0.7	2.0	
	16, 18	26.0	0.8	30.0	15.0	3.75	7.5	7.5	18.0	12.5	18.0	——	4.0	0.7	2.0	4

Capacitor Diameter D (mm)	Ammo Pack Box Dimensions (mm)			Quantity Per Ammo Pack Box
	A±5	B Max	C±3	
4	250	340	54	3000
5	250	340	54	2,000
6.3	290	340	54	2,000
8	250	340	54	1,000
10 (12 L)	290	340	54	600
10 (16 L)	350	340	59	600
10 (20 L)	340	340	71	600
12, 13	340	340	71	400
16	340	340	71	300

Ammo Pack



Ammo Pack boxes are shipped 5 to the outer packing carton

Tape And Reel Quantities

Case Diameter D (mm)	Reel Width	Reel Qty. (Pcs.)
4	44	1500
5	44	1200
6	44	1000
8	44	800
10 (12L)	44	600
10 (16L)	50	600
12, 13	-	-
16		

Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.