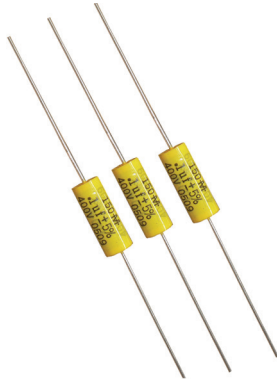


Type 150 Axial Leaded Metallized Polyester

Flame Retardant Wrap and Fill Axial Leaded Capacitors



The Type 150 series axial lead metallized polyester non inductive capacitors are available in bulk or on tape and reel for automatic insertion. Type 150 is a general purpose capacitor for use in blocking, bypass, decoupling, smoothing and some timing applications.

Highlights

- Available on tape and reel or bulk
- Epoxy end fill meets UL94V-0
- Non inductively wound
- Flame retardant outer wrap meets UL510
- Non polar

Specifications

Capacitance Range	0.001 μF to 10.0 μF																																																									
Capacitance Tolerance	±5%, ±10%, ±20%																																																									
Rated Voltage	63 to 1000 Vdc																																																									
Operating Temperature Range	−55 °C to +125 °C (derate linearly to 50% rated voltage at 125 °C)																																																									
Maximum DC Leakage Current	After 2 minutes, with rated voltage at +20 °C 6.3 to 100 Vdc I = .01CV or 3 μA Max (whichever is greater) ≥ 160 Vdc after 3 min, with rated voltage at +20 °C I = .03CV or 10 μA Max (whichever is greater) C = Capacitance in (μF) V = Rated voltage I = Leakage current in μA																																																									
Dielectric Withstand Voltage	1.6 x rated voltage for 2 s @ +25 °C ±5 °C																																																									
Dissipation Factor @ 120 Hz, +25 °C	tgδ x 10−4 at +25 °C ±5 °C <table><tr><th>kHz</th><th>C ≤0.1 μF</th><th>0.1 μF < C ≤1 μF</th><th>C >1 μF</th></tr><tr><td>1</td><td>80</td><td>80</td><td>100</td></tr><tr><td>10</td><td>150</td><td>150</td><td>—</td></tr><tr><td>100</td><td>250</td><td>—</td><td>—</td></tr></table>				kHz	C ≤0.1 μF	0.1 μF < C ≤1 μF	C >1 μF	1	80	80	100	10	150	150	—	100	250	—	—																																						
kHz	C ≤0.1 μF	0.1 μF < C ≤1 μF	C >1 μF																																																							
1	80	80	100																																																							
10	150	150	—																																																							
100	250	—	—																																																							
Insulation Resistance	10,000 MΩ x μF, 30,000 MΩ Min.																																																									
Self Inductance	1 nH max. per 1 mm lead and body length																																																									
Life Test Damp Heat Test Soldering Long Term Storage Stability	1000 hrs @ 85 °C 1.25 x Vn 95% RH @ +45 °C for 21 days 260 °C ±5 °C for 10 s ±1 s ΔC/C ≤ ±3% after 2 years																																																									
Maximum Pulse Rise Time dv/dt and Pulse Characteristic (Wo)	<table><tr><th rowspan="2">V/n</th><th colspan="4">L Max</th></tr><tr><th>16.5</th><th>19 - 20.5</th><th>26.5 - 5.28</th><th>31.5 - 33</th></tr><tr><td rowspan="2">50 - 63</td><td>4</td><td>2</td><td>1.5</td><td>1</td></tr><tr><td>504</td><td>252</td><td>189</td><td>126</td></tr><tr><td rowspan="2">100</td><td>5</td><td>3</td><td>2</td><td>1</td></tr><tr><td>1,000</td><td>600</td><td>400</td><td>300</td></tr><tr><td rowspan="2">250</td><td>10</td><td>7</td><td>4</td><td>2.5</td></tr><tr><td>5,000</td><td>3,500</td><td>2,000</td><td>1,250</td></tr><tr><td rowspan="2">400</td><td>13.5</td><td>10</td><td>6.5</td><td>4</td></tr><tr><td>10,800</td><td>8,000</td><td>5,200</td><td>3,200</td></tr><tr><td rowspan="2">630</td><td>20</td><td>15</td><td>10</td><td>6</td></tr><tr><td>25,200</td><td>18,900</td><td>12,600</td><td>7,500</td></tr></table>				V/n	L Max				16.5	19 - 20.5	26.5 - 5.28	31.5 - 33	50 - 63	4	2	1.5	1	504	252	189	126	100	5	3	2	1	1,000	600	400	300	250	10	7	4	2.5	5,000	3,500	2,000	1,250	400	13.5	10	6.5	4	10,800	8,000	5,200	3,200	630	20	15	10	6	25,200	18,900	12,600	7,500
V/n	L Max																																																									
	16.5	19 - 20.5	26.5 - 5.28	31.5 - 33																																																						
50 - 63	4	2	1.5	1																																																						
	504	252	189	126																																																						
100	5	3	2	1																																																						
	1,000	600	400	300																																																						
250	10	7	4	2.5																																																						
	5,000	3,500	2,000	1,250																																																						
400	13.5	10	6.5	4																																																						
	10,800	8,000	5,200	3,200																																																						
630	20	15	10	6																																																						
	25,200	18,900	12,600	7,500																																																						

Regulatory Information

Type 150 Axial Leaded Metallized Polyester

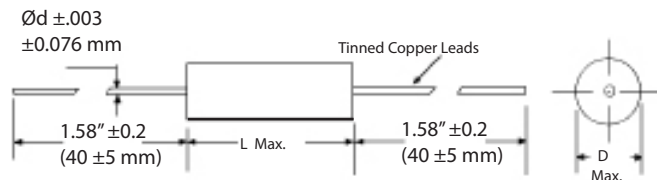
Tape and Reel Specifications

Outline Drawing

L Max (Body Length)		Lead Spacing		Distance Between Reel Flanges		Class
Inches	mm	Inches	mm	Inches	mm	
≤.433	≤11	2.06	52.4	3	75	1
.551 - .808	14 - 20.5	2.5	63.6	3.4	86	2
≥1.03	≥26	2.87	73	3.7	95	3

^Add class number (1, 2, or 3) to catalog number to indicate tape and reel

Diameter		Quantity per Reel
Inches	mm	
0.197	5	3,000
.236 thru .256	6.0 thru 6.5	1,200
0.276	7	1,100
.315 thru .346	8 thru 8.5	800
.354 thru .413	9 thru 10.5	500
.433 thru .512	11 thru 13	300
.551 thru .571	14 thru 14.5	200
>.571	>14.5	Not available



Ratings

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
63 Vdc							
150154*63AA^	0.150	0.197	0.433	0.024	5.0	11.0	0.6
150154*63BB^	0.150	0.236	0.650	0.024	6.0	16.5	0.6
150184*63AA^	0.180	0.197	0.433	0.024	5.0	11.0	0.6
150184*63BB^	0.180	0.236	0.650	0.024	6.0	16.5	0.6
150224*63BB^	0.220	0.236	0.650	0.024	6.0	16.5	0.6
150274*63BB^	0.270	0.236	0.650	0.024	6.0	16.5	0.6
150334*63BB^	0.330	0.236	0.650	0.024	6.0	16.5	0.6
150394*63CB^	0.390	0.256	0.650	0.024	6.5	16.5	0.6
150474*63DB^	0.470	0.276	0.650	0.024	7.0	16.5	0.6
150564*63DB^	0.560	0.276	0.650	0.024	7.0	16.5	0.6
150684*63DC^	0.680	0.276	0.807	0.024	7.0	20.5	0.6
150824*63EC^	0.820	0.315	0.807	0.031	8.0	20.5	0.8
150105*63EC^	1.000	0.315	0.807	0.031	8.0	20.5	0.8
150155*63HC^	1.500	0.374	0.807	0.031	9.5	20.5	0.8
150225*63HE^	2.200	0.374	1.102	0.031	9.5	28.0	0.8
150335*63KE^	3.300	0.433	1.102	0.031	11.0	28.0	0.8
150475*63ME^	4.700	0.492	1.102	0.031	12.5	28.0	0.8
150685*63QF^	6.800	0.571	1.299	0.031	14.5	33.0	0.8
150106*63TF^	10.000	0.610	1.299	0.031	15.5	33.0	0.8
100 Vdc							
150683*100AA^	0.068	0.197	0.433	0.024	5.0	11.0	0.6
150683*100BB^	0.068	0.236	0.650	0.024	6.0	16.5	0.6
150823*100AA^	0.082	0.197	0.433	0.024	5.0	11.0	0.6
150823*100BB^	0.082	0.236	0.650	0.024	6.0	16.5	0.6
150104*100AA^	0.100	0.197	0.433	0.024	5.0	11.0	0.6
150104*100BB^	0.100	0.236	0.650	0.024	6.0	16.5	0.6
150124*100BB^	0.120	0.236	0.650	0.024	6.0	16.5	0.6
150154*100BB^	0.150	0.236	0.650	0.024	6.0	16.5	0.6
150184*100CB^	0.180	0.256	0.650	0.024	6.5	16.5	0.6
150224*100CB^	0.220	0.256	0.650	0.024	6.5	16.5	0.6

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
150274*100CB^	0.270	0.256	0.650	0.024	6.5	16.5	0.6
150334*100EB^	0.330	0.315	0.650	0.031	8.0	16.5	0.8
150394*100EB^	0.390	0.315	0.650	0.031	8.0	16.5	0.8
150474*100DC^	0.470	0.276	0.807	0.031	7.0	20.5	0.8
150564*100EC^	0.560	0.315	0.807	0.031	8.0	20.5	0.8
150684*100FC^	0.680	0.335	0.807	0.031	8.5	20.5	0.8
150824*100HC^	0.820	0.374	0.807	0.031	9.5	20.5	0.8
150105*100IC^	1.000	0.394	0.807	0.031	10.0	20.5	0.8
100 Vdc							
150155*100IE^	1.500	0.394	1.102	0.031	10.0	28.0	0.8
150225*100LE^	2.200	0.453	1.102	0.031	11.5	28.0	0.8
150335*100PE^	3.300	0.531	1.102	0.031	13.5	28.0	0.8
150475*100RF^	4.700	0.591	1.299	0.031	15.0	33.0	0.8
150685*100WF^	6.800	0.689	1.299	0.031	17.5	33.0	0.8
150106*100YF^	10.000	0.807	1.299	0.031	20.5	33.0	0.8
250 Vdc							
150123*250AA^	0.012	0.197	0.433	0.024	5.0	11.0	0.6
150123*250BB^	0.012	0.236	0.650	0.024	6.0	16.5	0.6
150153*250AA^	0.015	0.197	0.433	0.024	5.0	11.0	0.6
150153*250BB^	0.015	0.236	0.650	0.024	6.0	16.5	0.6
150183*250AA^	0.018	0.197	0.433	0.024	5.0	11.0	0.6
150183*250BB^	0.018	0.236	0.650	0.024	6.0	16.5	0.6
150223*250AA^	0.022	0.197	0.433	0.024	5.0	11.0	0.6
150223*250BB^	0.022	0.236	0.650	0.024	6.0	16.5	0.6
150273*250AA^	0.027	0.197	0.433	0.024	5.0	11.0	0.6
150273*250BB^	0.027	0.236	0.650	0.024	6.0	16.5	0.6

* Indicates capacitance tolerance

^If ordering tape and reel,

J = ±5%, K = ±10%, M = ±20%

insert 1, 2, or 3.

See tape & reel specifications to determine which class applies.

Part Number highlighted in yellow, available until stock is depleted.

Replacement part number with "BB" case size.

Part Number highlighted in green - OBSOLETE

Part number highlighted in light yellow, available until stock is depleted, no replacement

Type 150 Axial Leaded Metallized Polyester

Catalog Part Number	Cap (μ F)	Inches Max			Millimeters Max		
		D	L	$\varnothing$ d	D	L	$\varnothing$ d
250 Vdc							
150333*250AA^	0.0330	0.197	0.433	0.024	5.0	11.0	0.6
150333*250BB^	0.0330	0.236	0.650	0.024	6.0	16.5	0.6
150393*250AA^	0.0390	0.197	0.433	0.024	5.0	11.0	0.6
150393*250BB^	0.0390	0.236	0.650	0.024	6.0	16.5	0.6
150473*250AA^	0.0470	0.197	0.433	0.024	5.0	11.0	0.6
150473*250BB^	0.0470	0.236	0.650	0.024	6.0	16.5	0.6
150563*250AA^	0.0560	0.197	0.433	0.024	5.0	11.0	0.6
150563*250BB^	0.0560	0.236	0.650	0.024	6.0	16.5	0.6
150683*250BB^	0.0680	0.236	0.650	0.024	6.0	16.5	0.6
150823*250BB^	0.0820	0.236	0.650	0.024	6.0	16.5	0.6
150104*250CB^	0.1000	0.256	0.650	0.024	6.5	16.5	0.6
150124*250DB^	0.1200	0.276	0.650	0.024	7.0	16.5	0.6
150154*250EB^	0.1500	0.315	0.650	0.031	8.0	16.5	0.8
150184*250EB^	0.1800	0.315	0.650	0.031	8.0	16.5	0.8
150224*250FB^	0.2200	0.335	0.650	0.031	8.5	16.5	0.8
150274*250EC^	0.2700	0.315	0.807	0.031	8.0	20.5	0.8
150334*250FC^	0.3300	0.335	0.807	0.031	8.5	20.5	0.8
150394*250GC^	0.3900	0.354	0.807	0.031	9.0	20.5	0.8
150474*250HC^	0.4700	0.374	0.807	0.031	9.5	20.5	0.8
150564*250IC^	0.5600	0.394	0.807	0.031	10.0	20.5	0.8
150684*250GE^	0.6800	0.354	1.102	0.031	9.0	28.0	0.8
150824*250HE^	0.8200	0.374	1.102	0.031	9.5	28.0	0.8
150105*250JE^	1.0000	0.413	1.102	0.031	10.5	28.0	0.8
150155*250ME^	1.5000	0.492	1.102	0.031	12.5	28.0	0.8
150225*250PF^	2.2000	0.531	1.299	0.031	13.5	33.0	0.8
150335*250TF^	3.3000	0.610	1.299	0.031	15.5	33.0	0.8
150475*250XF^	4.7000	0.728	1.299	0.031	18.5	33.0	0.8
150685*250ZF^	6.8000	0.845	1.299	0.031	21.5	33.0	0.8
400 Vdc							
150822*400AA^	0.0082	0.197	0.433	0.024	5.0	11.0	0.6
150822*400BB^	0.0082	0.236	0.650	0.024	6.0	16.5	0.6
150103*400AA^	0.0100	0.197	0.433	0.024	5.0	11.0	0.6
150103*400BB^	0.0100	0.236	0.650	0.024	6.0	16.5	0.6
150123*400AA^	0.0120	0.197	0.433	0.024	5.0	11.0	0.6
150123*400BB^	0.0120	0.236	0.650	0.024	6.0	16.5	0.6
150153*400BB^	0.0150	0.236	0.650	0.024	6.0	16.5	0.6
150183*400BB^	0.0180	0.236	0.650	0.024	6.0	16.5	0.6
150223*400BB^	0.0220	0.236	0.650	0.024	6.0	16.5	0.6
150273*400BB^	0.0270	0.236	0.650	0.024	6.0	16.5	0.6
150333*400BB^	0.0330	0.236	0.650	0.024	6.0	16.5	0.6
150393*400CB^	0.0390	0.256	0.650	0.024	6.5	16.5	0.6
150473*400DB^	0.0470	0.276	0.650	0.024	7.0	16.5	0.6
150563*400EB^	0.0560	0.315	0.650	0.024	8.0	16.5	0.6

Catalog Part Number	Cap (μ F)	Inches Max			Millimeters Max		
		D	L	$\varnothing$ d	D	L	$\varnothing$ d
150683*400DC^	0.0680	0.276	0.807	0.024	7.0	20.5	0.6
150823*400EC^	0.0820	0.315	0.807	0.031	8.0	20.5	0.8
150104*400EC^	0.1000	0.315	0.807	0.031	8.0	20.5	0.8
150124*400EC^	0.1200	0.315	0.807	0.031	8.0	20.5	0.8
150154*400GC^	0.1500	0.354	0.807	0.031	9.0	20.5	0.8
150184*400EE^	0.1800	0.315	1.102	0.031	8.0	28.0	0.8
150224*400FE^	0.2200	0.335	1.102	0.031	8.5	28.0	0.8
150274*400GE^	0.2700	0.354	1.102	0.031	9.0	28.0	0.8
150334*400IE^	0.3300	0.394	1.102	0.031	10.0	28.0	0.8
150394*400JE^	0.3900	0.413	1.102	0.031	10.5	28.0	0.8
150474*400LF^	0.4700	0.453	1.299	0.031	11.5	33.0	0.8
150564*400LF^	0.5600	0.453	1.299	0.031	11.5	33.0	0.8
150684*400MF^	0.6800	0.492	1.299	0.031	12.5	33.0	0.8
150824*400PF^	0.8200	0.531	1.299	0.031	13.5	33.0	0.8
150105*400QF^	1.0000	0.571	1.299	0.031	14.5	33.0	0.8
150155*400WF^	1.5000	0.689	1.299	0.031	17.5	33.0	0.8
150225*400YF^	2.2000	0.807	1.299	0.031	20.5	33.0	0.8
630 Vdc							
150102*630AA^	0.0010	0.197	0.433	0.024	5.0	11.0	0.6
150102*630BB^	0.0010	0.236	0.650	0.024	6.0	16.5	0.6
150122*630AA^	0.0012	0.197	0.433	0.024	5.0	11.0	0.6
150122*630BB^	0.0012	0.236	0.650	0.024	6.0	16.5	0.6
150152*630AA^	0.0015	0.197	0.433	0.024	5.5	11.0	0.6
150152*630BB^	0.0015	0.236	0.650	0.024	6.0	16.5	0.6
150182*630AA^	0.0018	0.197	0.433	0.024	5.5	11.0	0.6
150182*630BB^	0.0018	0.236	0.650	0.024	6.0	16.5	0.6
150222*630AA^	0.0022	0.197	0.433	0.024	5.5	11.0	0.6
150222*630BB^	0.0022	0.236	0.650	0.024	6.0	16.5	0.6
150272*630AA^	0.0027	0.197	0.433	0.024	5.5	11.0	0.6
150272*630BB^	0.0027	0.236	0.650	0.024	6.0	16.5	0.6
150332*630AA^	0.0033	0.197	0.433	0.024	5.5	11.0	0.6
150332*630BB^	0.0033	0.236	0.650	0.024	6.0	16.5	0.6
150392*630AA^	0.0039	0.197	0.433	0.024	5.5	11.0	0.6
150392*630BB^	0.0039	0.236	0.650	0.024	6.0	16.5	0.6
150472*630AA^	0.0047	0.197	0.433	0.024	5.5	11.0	0.6
150472*630BB^	0.0047	0.236	0.650	0.024	6.0	16.5	0.6
150562*630AA^	0.0056	0.197	0.433	0.024	5.5	11.0	0.6
150562*630BB^	0.0056	0.236	0.650	0.024	6.0	16.5	0.6

* Indicates capacitance tolerance

^If ordering tape and reel,

J = $\pm 5\%$, K = $\pm 10\%$, M = $\pm 20\%$

insert 1, 2, or 3.

See tape & reel specifications to determine which class applies.

Part Number highlighted in yellow, available until stock is depleted.

Replacement part number with "BB" case size.

Part Number highlighted in green - OBSOLETE

Part number highlighted in light yellow, available until stock is depleted, no replacement

Type 150 Axial Leaded Metallized Polyester

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
630 Vdc							
150682*630AA^	0.0068	0.197	0.433	0.024	5.5	11.0	0.6
150682*630BB^	0.0068	0.236	0.650	0.024	6.0	16.5	0.6
150822*630BB^	0.0082	0.236	0.650	0.024	6.0	16.5	0.6
150103*630BB^	0.0100	0.236	0.650	0.024	6.0	16.5	0.6
150123*630BB^	0.0120	0.236	0.650	0.024	6.0	16.5	0.6
150153*630BB^	0.0150	0.236	0.650	0.024	6.0	16.5	0.6
150183*630CB^	0.0180	0.256	0.650	0.024	6.5	16.5	0.6
150223*630DB^	0.0220	0.276	0.650	0.024	7.0	16.5	0.6
150273*630CC^	0.0270	0.256	0.807	0.024	6.5	20.5	0.6
150333*630EC^	0.0330	0.315	0.807	0.031	8.0	20.5	0.8
150393*630EC^	0.0390	0.315	0.807	0.031	8.0	20.5	0.8
150473*630EC^	0.0470	0.315	0.807	0.031	8.0	20.5	0.8
150563*630FC^	0.0560	0.335	0.807	0.031	8.5	20.5	0.8
150683*630GC^	0.0680	0.354	0.807	0.031	9.0	20.5	0.8
150823*630HC^	0.0820	0.374	0.807	0.031	9.5	20.5	0.8
150104*630FE^	0.1000	0.335	1.102	0.031	8.5	28.0	0.8
150124*630GE^	0.1200	0.354	1.102	0.031	9.0	28.0	0.8
150154*630IE^	0.1500	0.394	1.102	0.031	10.0	28.0	0.8
150184*630JE^	0.1800	0.413	1.102	0.031	10.5	28.0	0.8
150224*630LE^	0.2200	0.453	1.102	0.031	11.5	28.0	0.8
150274*630ME^	0.2700	0.492	1.102	0.031	12.5	28.0	0.8
150334*630NF^	0.3300	0.512	1.299	0.031	13.0	33.0	0.8
150394*630QF^	0.3900	0.571	1.299	0.031	14.5	33.0	0.8
150474*630RF^	0.4700	0.591	1.299	0.031	15.0	33.0	0.8
150564*630TF^	0.5600	0.610	1.299	0.031	15.5	33.0	0.8
150684*630WF^	0.6800	0.689	1.299	0.031	17.5	33.0	0.8
150824*630XF^	0.8200	0.728	1.299	0.031	18.5	33.0	0.8
150105*630YF^	1.0000	0.807	1.299	0.031	20.5	33.0	0.8

Catalog Part Number	Cap (µF)	Inches Max			Millimeters Max		
		D	L	Ød	D	L	Ød
1000 Vdc							
150102*1000CB^	0.0010	0.256	0.650	0.024	6.5	16.5	0.6
150152*1000CB^	0.0015	0.256	0.650	0.024	6.5	16.5	0.6
150222*1000CB^	0.0022	0.256	0.650	0.024	6.5	16.5	0.6
150332*1000CB^	0.0033	0.256	0.650	0.024	6.5	16.5	0.6
150472*1000DB^	0.0047	0.276	0.650	0.024	7.0	16.5	0.6
150682*1000EB^	0.0068	0.315	0.650	0.031	8.0	16.5	0.8
150103*1000DC^	0.0100	0.276	0.807	0.024	7.0	20.5	0.6
150153*1000FC^	0.0150	0.335	0.807	0.031	8.5	20.5	0.8
150223*1000HC^	0.0220	0.374	0.807	0.031	9.5	20.5	0.8
150333*1000FE^	0.0330	0.335	1.102	0.031	8.5	28	0.8
150473*1000HE^	0.0470	0.374	1.102	0.031	9.5	28	0.8
150683*1000KE^	0.0680	0.433	1.102	0.031	11.0	28	0.8
150104*1000NE^	0.1000	0.512	1.102	0.031	13.0	28	0.8
150154*1000OF^	0.1500	0.551	1.299	0.031	14.0	33	0.8
150224*1000WF^	0.2200	0.689	1.299	0.031	17.5	33	0.8
150334*1000YF^	0.3300	0.807	1.299	0.031	20.5	33	0.8
150474*1000ZF1^	0.4700	0.945	1.299	0.031	24.0	33	0.8

* Indicates capacitance tolerance

^If ordering tape and reel,

J = ±5%, K = ±10%, M = ±20%

insert 1, 2, or 3.

See tape & reel specifications to determine which class applies.

Part Number highlighted in yellow, available until stock is depleted.

Replacement part number with "BB" case size.

Part Number highlighted in green - OBSOLETE

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.