General Purpose Metallized Polyester Film Capacitors

5 6HULHV 5DGLDO PP /HDG 6SDFLQJ $XWRPRWLYH *UDGH

Overview

7KH 5 6HULHV LV FRQVWUXFWHG RI PHWDOOL]HG SRO\HVWHU ¿OP (wound or stacked technology) with radial leads of tinned wire. Radial leads are electrically welded to the contact metal layer on the ends of the capacitor winding. The capacitor is encapsulated with thermosetting resin in a box of material meeting the UL 94V–0 requirements.

Automotive grade devices are available and meet the demanding $XWRPRWLYH (OHFWURQLF &RXQFLO $(&–4 requirements.

$SSOLFDWLRQV

Typical applications include blocking, coupling, decoupling, tim and oscillator circuits. Not suitable for across-the-line applicat (see Suppressor Capacitors).

%HQHÀWV

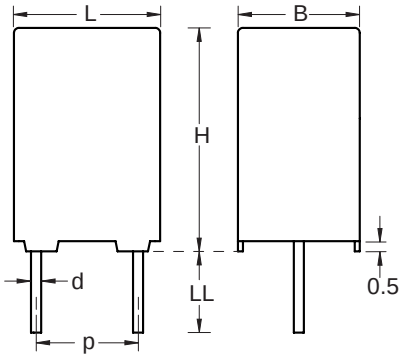
- Voltage range: 50 – 400 VDC
- Capacitance range: 0.001 µF – 4.7 µF
- Lead Spacing: 5 mm
- Capacitance tolerance: ±5%, ±10%, ±20%
- Climatic category: 55/105/56
‡ 2SHUDWLQJ WHPSHUDWXUH UDQJH RI Û& WR Û&
- RoHS compliance and lead-free terminations
- Tape and reel packaging in accordance with IEC 60286–2
- Self-healing
- Automotive (AEC–Q200) grades available

3DUW 1XPEHU 6\VWHP

R82	'	&		AA		J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Cod (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400	C = 5.0	The last three digits U H S UV HLVJHQL W F D Q W			

	Bulk (Bag)–Short Leads	4 +1.5/-0	AA
	Ammo Pack	H_0=18.5 +/- 0.5	DQ
	Tape & Reel (Standard Reel)	H_0= 18.5 +/- 0.5	CK
	Bulk (Bag)–Short Leads	2.7 +0.5/-0	JA
	Bulk (Bag)–Short Leads	3.5 +0.5/-0	JB
	Bulk (Bag)–Short Leads	10 +/- 1	JC
	Bulk (Bag)–Short Leads	4.0 +0.5/-0	JE
	Bulk (Bag)–Short Leads	3.2 +0.3/-0.2	JH
	Bulk (Bag)–Long Leads	17 +1/-2	Z3

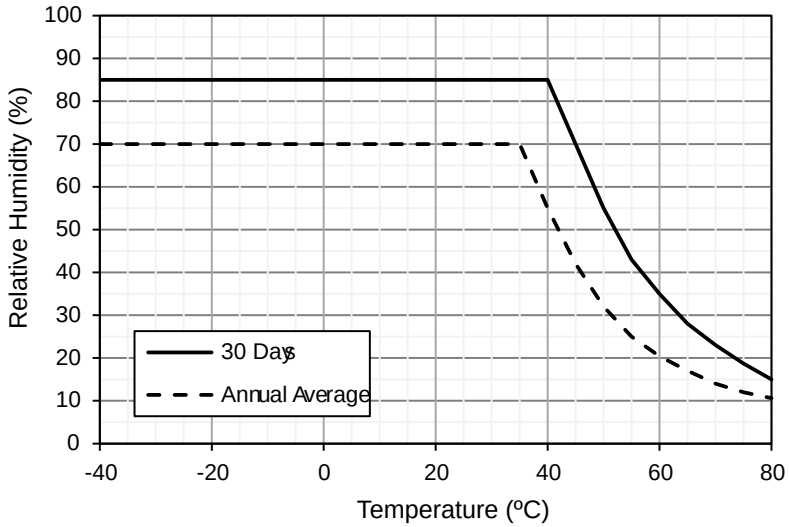
FRONT VIEW SIDE VIEW



p		B		H					
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
5.0	+/-0.4	2.5	+0.1	6.5	+0.1	7.2	+0.2	0.5	+/-0.05
5.0	+/-0.4	3.5	+0.1	7.5	+0.1	7.2	+0.2	0.5	+/-0.05
5.0	+/-0.4	4.5	+0.1	9.5	+0.1	7.2	+0.3	0.5	+/-0.05
5.0	+/-0.4	5.0	+0.1	10.0	+0.1	7.2	+0.3	0.5	+/-0.05
5.0	+/-0.4	6.0	+0.1	11.0	+0.1	7.2	+0.3	0.5	+/-0.05
5.0	+/-0.4	7.2	+0.1	13.0	+0.1	7.2	+0.3	0.6	+/-0.05
Note: See Ordering Options Table for lead length (LL/H_0) options.									

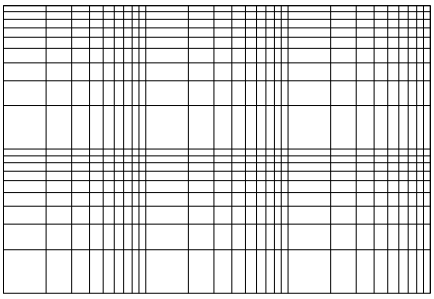
Dissipation Factor tanδ	Maximum Values @ 25°C ±5°C			
	Frequency		C ≤ 0.1 µF	C > 1 µF
	1 kHz		0.80%	0.80%
	10 kHz		1.20%	1.20%
	100 kHz		2.50%	–
Insulation Resistance	Measured @ +25°C ±5°C, according to IEC 60384–2			
	Minimum Values Between Terminals			
	Voltage Charge/Time	C ≤ 0.33 µF	0.33 µF < C ≤ 1.0 µF	C > 1.0 µF
	50 VDC for V_R < 100 VDC 1 minute	≥ 15,000 MΩ	≥ 5,000 MΩ • µF	≥ 1,000 MΩ • µF
	100 VDC for V_R ≥ 100 VDC 1 minute	≥ 30,000 MΩ		

Maximum Humidity in Storage Conditions

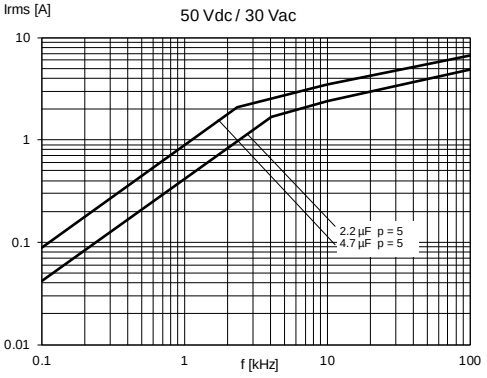


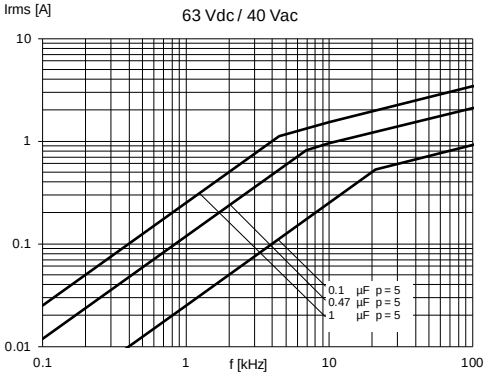
Automotive Grade products meet or exceed the requirements outlined by the Automotive Electronics Council. Details re
methods and conditions are referenced in document AEC–Q200, Stress Test Qualification for Passive Components. For additional
information regarding the Automotive Electronics Council and AEC–Q200, please visit their website at www.aecouncil.c

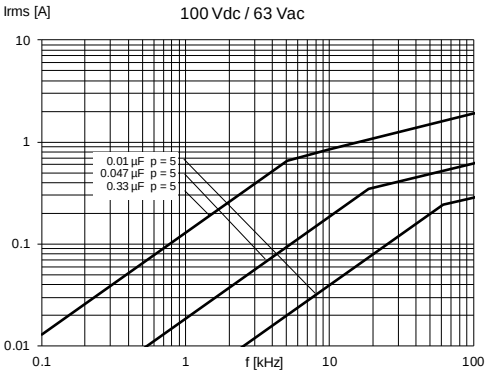
Lead Spacing 5 mm

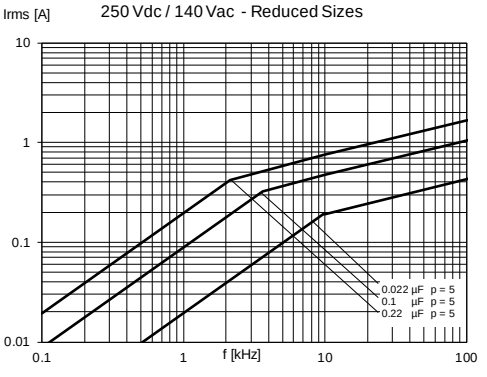


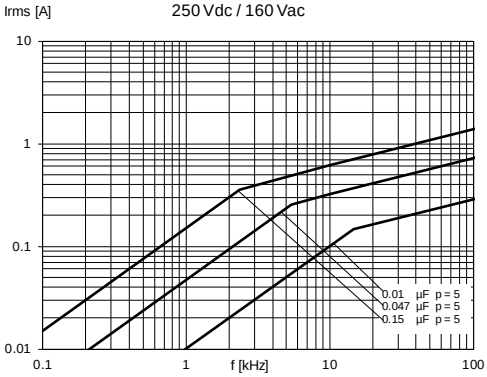
Lead Spacing 5 mm

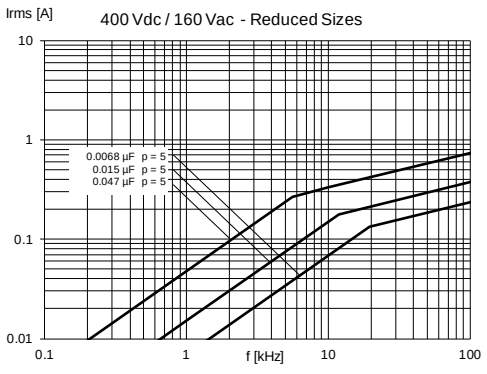


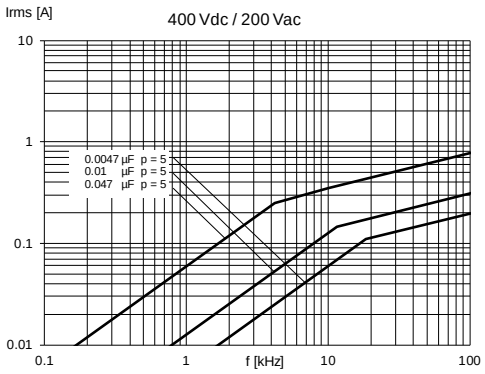












	Temperature: Relative humidity (RH): Test duration:	+40°C ±2°C 93% ±2% 56 days	|Δ C/C| ≤ 5%, Δ tanδ ≤ 0.005 @ 1 kHz IR after test ≥ 50% of initial limit
	Temperature: Voltage applied: Test duration:	+105°C ±2°C 1.25 x V_C	

			B	H				2		
100	63	0.047	2.5	6.5	7.2	5.0	200	40000	82EC2470(1)60(2)	R82EC2470(1)60(2)
100	63	0.068	2.5	6.5	7.2	5.0	200	40000	82EC2680(1)60(2)	R82EC2680(1)60(2)
100	63	0.10	2.5	6.5	7.2	5.0	200	40000	82EC3100(1)70(2)	R82EC3100(1)70(2)
100	63	0.15	3.5	7.5	7.2	5.0	200	40000	82EC3150(1)70(2)	R82EC3150(1)70(2)
100	63	0.22	3.5	7.5	7.2	5.0	200	40000	82EC3220(1)70(2)	R82EC3220(1)70(2)
100	63	0.33	4.5	9.5	7.2	5.0	200	40000	82EC3330(1)70(2)	R82EC3330(1)70(2)
100	63	0.47	4.5	9.5	7.2	5.0	200	40000	82EC3470(1)70(2)	R82EC3470(1)70(2)
100	63	0.68	5.0	10.0	7.2	5.0	200	40000	82EC3680(1)70(2)	R82EC3680(1)70(2)
100	63	1.00	6.0	11.0	7.2	5.0	200	40000	82EC4100(1)70(2)	R82EC4100(1)70(2)
250	140	0.022	2.5	6.5	7.2	5.0	130	65000	82IC2220(1)60(2)	R82IC2220(1)60(2)
250	140	0.047	3.5	7.5	7.2	5.0	130	65000	82IC2470(1)60(2)	R82IC2470(1)60(2)
250	140	0.068	3.5	7.5	7.2	5.0	130	65000	82IC2680(1)60(2)	R82IC2680(1)60(2)
250	140	0.10	4.5	9.5	7.2	5.0	130	65000	82IC3100(1)60(2)	R82IC3100(1)60(2)
250	140	0.15	5.0	10.0	7.2	5.0	130	65000	82IC3150(1)60(2)	R82IC3150(1)60(2)
250	140	0.22	6.0	11.0	7.2	5.0	130	65000	82IC3220(1)60(2)	R82IC3220(1)60(2)
250	160	0.0068	2.5	6.5	7.2	5.0	250	125000	82IC1680(1)50(2)	R82IC1680(1)50(2)
250	160	0.010	2.5	6.5	7.2	5.0	250	125000	82IC2100(1)50(2)	R82IC2100(1)50(2)
250	160	0.015	2.5	6.5	7.2	5.0	250	125000	82IC2150(1)50(2)	R82IC2150(1)50(2)
250	160	0.022	3.5	7.5	7.2	5.0	250	125000	82IC2220(1)50(2)	R82IC2220(1)50(2)
250	160	0.033	3.5	7.5	7.2	5.0	250	125000	82IC2330(1)50(2)	R82IC2330(1)50(2)
250	160	0.047	4.5	9.5	7.2	5.0	250	125000	82IC2470(1)50(2)	R82IC2470(1)50(2)
250	160	0.068	4.5	9.5	7.2	5.0	250	125000	82IC2680(1)50(2)	R82IC2680(1)50(2)
250	160	0.10	5.0	10.0	7.2	5.0	250	125000	82IC3100(1)55(2)	R82IC3100(1)55(2)
250	160	0.15	6.0	11.0	7.2	5.0	250	125000	82IC3150(1)50(2)	R82IC3150(1)50(2)
400	160	0.0068	2.5	6.5	7.2	5.0	200	160000	82MC1680(1)60(2)	R82MC1680(1)60(2)
400	160	0.015	3.5	7.5	7.2	5.0	200	160000	82MC2150(1)60(2)	R82MC2150(1)60(2)
400	160	0.033	4.5	9.5	7.2	5.0	200	160000	82MC2330(1)60(2)	R82MC2330(1)60(2)
400	160	0.047	5.0	10.0	7.2	5.0	200	160000	82MC2470(1)60(2)	R82MC2470(1)60(2)
400	160	0.068	6.0	11.0	7.2	5.0	200	160000	82MC2680(1)60(2)	R82MC2680(1)60(2)
400	200	0.0010	2.5	6.5	7.2	5.0	400	320000	82MC1100(1)50(2)	R82MC1100(1)50(2)
400	200	0.0015	2.5	6.5	7.2	5.0	400	320000	82MC1150(1)50(2)	R82MC1150(1)50(2)
400	200	0.0022	2.5	6.5	7.2	5.0	400	320000	82MC1220(1)50(2)	R82MC1220(1)50(2)
400	200	0.0033	2.5	6.5	7.2	5.0	400	320000	82MC1330(1)50(2)	R82MC1330(1)50(2)
400	200	0.0047	2.5	6.5	7.2	5.0	400	320000	82MC1470(1)50(2)	R82MC1470(1)50(2)
400	200	0.0068	3.5	7.5	7.2	5.0	400	320000	82MC1680(1)50(2)	R82MC1680(1)50(2)
400	200	0.010	3.5	7.5	7.2	5.0	400	320000	82MC2100(1)50(2)	R82MC2100(1)50(2)
400	200	0.015	4.5	9.5	7.2	5.0	400	320000	82MC2150(1)50(2)	R82MC2150(1)50(2)
400	200	0.022	4.5	9.5	7.2	5.0	400	320000	82MC2220(1)50(2)	R82MC2220(1)50(2)
400	200	0.033	5.0	10.0	7.2	5.0	400	320000	82MC2330(1)50(2)	R82MC2330(1)50(2)
400	200	0.047	6.0	11.0	7.2	5.0	400	320000	82MC2470(1)50(2)	R82MC2470(1)50(2)
VDC	VAC	Capacitance Value (µF)	B (mm)	H (mm)	L (mm)	Lead Spacing	dV/dt (V/µs)	Max K_0 (V^2/µs)	New KEMET Part Number	Legacy Part Number

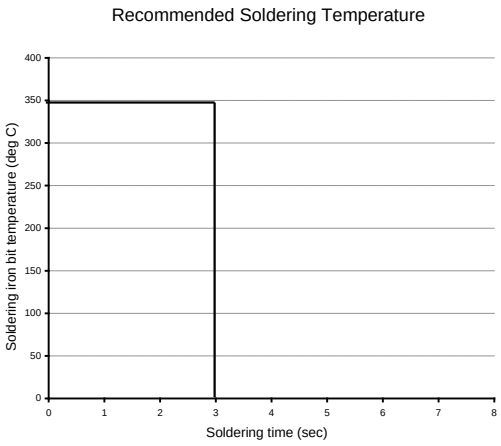
(1) Insert lead and packaging code. See Ordering Options Table for available options.
(2) J = 5%, K = 10%, M = 20%

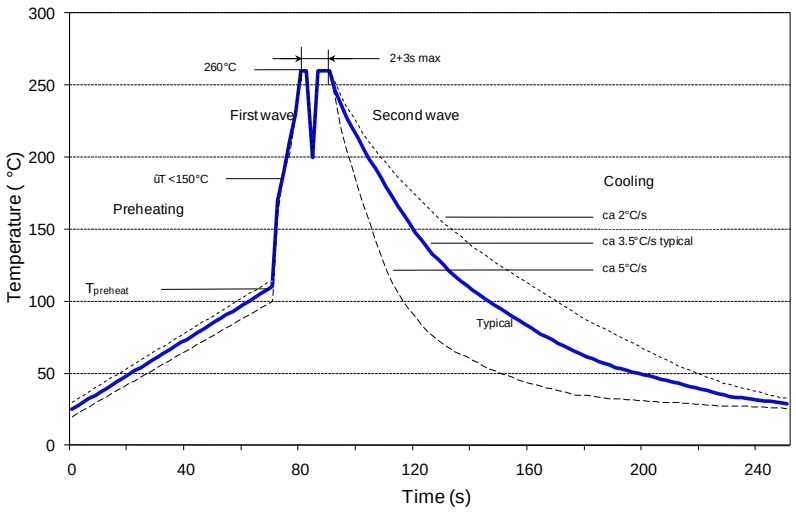
The implementation of the RoHS directive has resulted in the selection of SnAgCu (SAC) alloys or SnCu alloys as primary increased the liquidus temperature from that of 183ºC for SnPb eutectic alloy to 217 – 221ºC for the new alloys. As a result to the components, even in wave soldering, has increased considerably due to higher pre-heat and wave temperatures. Po capacitors are especially sensitive to heat (the melting point of polypropylene is 160 – 170ºC). Wave soldering can be destr for mechanically small polypropylene capacitors (with lead spacing of 5 mm to 15 mm), and great care has to be taken duri recommended solder profles from KEMET should be used. Please consult KEMET with any questions. In general, the wave soldering curve from IEC Publication 61760-1 Edition 2 serves as a solid guideline for successful soldering. Please see Figure 1.

Refow soldering is not recommended for through-hole flm capacitors. Exposing capacitors to a soldering profle in excess of the above the recommended limits may result to degradation or permanent damage to the capacitors.

Do not place the polypropylene capacitor through an adhesive curing oven to cure resin for surface mount components. Ins hole parts after the curing of surface mount parts. Consult KEMET to discuss the actual temperature profle in the oven, if through-hole components must pass through the adhesive curing process. A maximum two soldering cycles is recommended. Please all capacitor surface temperature to return to a normal temperature before the second soldering cycle.

Following is the recommendation for manual soldering with a soldering iron.





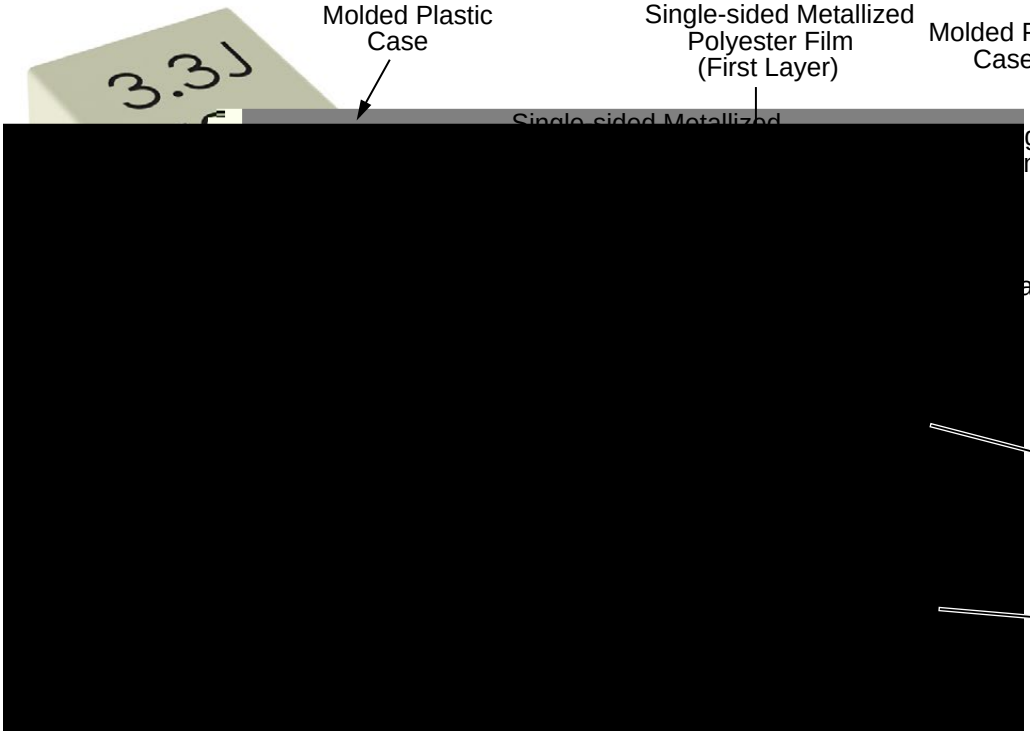
The soldering iron tip temperature should be set at 350°C (+10°C maximum) with the soldering duration not to exceed more than 3 seconds.

1. The table indicates the maximum set-up temperature of the soldering process
Figure 1

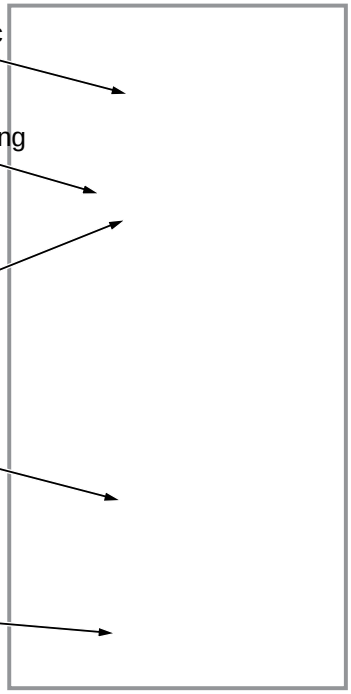
	Capacitor Pitch ≤ 10 mm	Capacitor Pitch = 15 mm	Capacitor Pitch > 15 mm	Capacitor Pitch ≤ 15 mm	Capacitor Pitch > 15 mm
Polyester	130°C	130°C	130°C	270°C	270°C
Polypropylene	100°C	110°C	130°C	260°C	270°C
Paper	130°C	130°C	140°C	270°C	270°C
Polyphenylene Sulphide	150°C	150°C	160°C	270°C	270°C

2. The maximum temperature measured inside the capacitor:
Set the temperature so that inside the element the maximum temperature is below the limit:

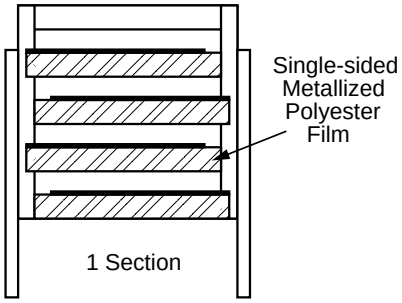
Wound

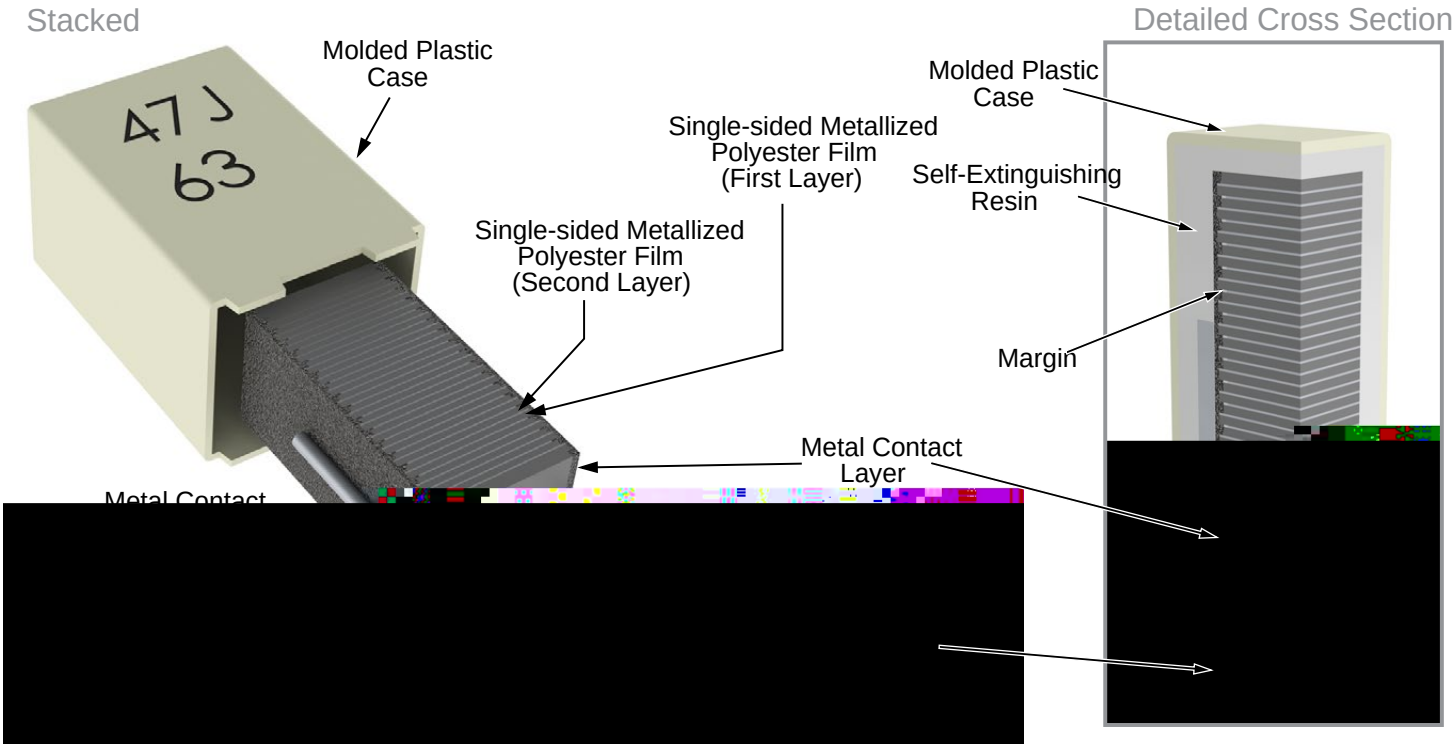


Detailed Cross Section



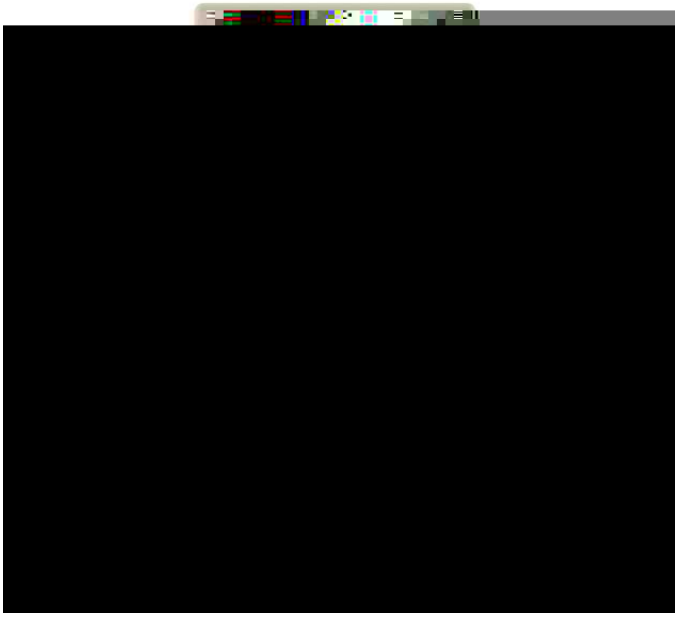
Winding Scheme




Stacked
Detailed Cross Section
Molded Plastic Case
Single-sided Metallized Polyester Film (First Layer)
Single-sided Metallized Polyester Film (Second Layer)
Metal Contact Layer
Molded Plastic Case
Self-Extinguishing Resin
Margin
47 J
63

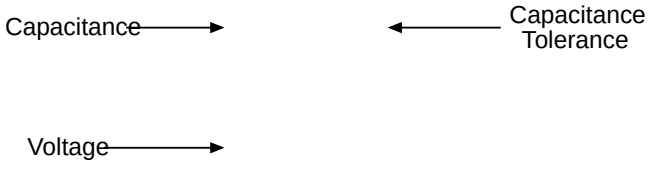
Wound

FRONT



Stacked

FRONT



	2.5	6.5	7.2	3,000	4,000	2,500	3,500
	3.5	7.5	7.2	2,000	3,000	1,800	2,500
	4.5	9.5	7.2	1,500	2,000	1,400	1,900
	5.0	10.0	7.2	1,000	1,500	1,200	1,700
	6.0	11.0	7.2	2,000	1,000	1,000	1,400
	7.2	13.0	7.2	1,500	750	800	1,150