OBSOLETE

PMZ2035, Class X1, 440 VAC/1,000 VDC

Overview

Multilayer, metallized paper encapsulated and impregnated in self-extinguishing material that meets the requirements of UL 94 V–0.

Applications

For worldwide use in contact protection, contact interference suppression, and transient suppression.

Benefits

- Approvals: ENEC
- Rated voltage: 440 VDC 50/60 Hz
- Capacitance: 0.1 µF
- Capacitance tolerance: ±10%; other tolerances on request
- Resistance: 150 Ω
- Resistance tolerance: ±30%
- Lead spacing: 25.4 mm
- Climatic category: 40/085/56/B, IEC 60068–1
- Tape & Reel packaging in accordance with IEC 60286–2
- RoHS compliance and lead-free terminations
- Operating temperature range of −40°C to +85°C
- Excellent self-healing properties that ensure long life, even when subjected to frequent over-voltages
- Good resistance to ionization due to impregnated paper dielectric
- High dv/dt capability
- Impregnated paper that ensures excellent stability and reliability properties, particularly in applications with continuous operation

Legacy Part Number System

PMZ2035	R	E	6100	K	150	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Resistance (Ω)	Lead and Packaging Code
RC Snubber, Metallized Paper	R = 440	E = 25.4	Digits two – four (3) indicates the first three digits of the capacitance value. First digit indicates the total number of digits in the capacitance value.	K = ±10% M = ±20%	Resistance Value in Ω	See Ordering Options Table

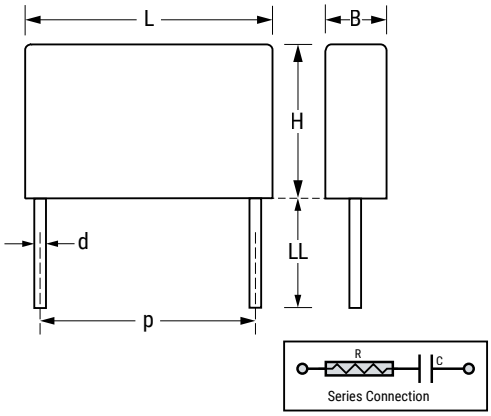
New KEMET Part Number System

P	435	E	J	104	K	440	A	H151
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Lead and Packaging Code	Resistance (Ω)
P = Metallized Paper	RC Snubber	E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	440 = 440	See Ordering Options Table	H and first two digits representing significant figures. Third digit specifies number of zeros.

Ordering Options Table

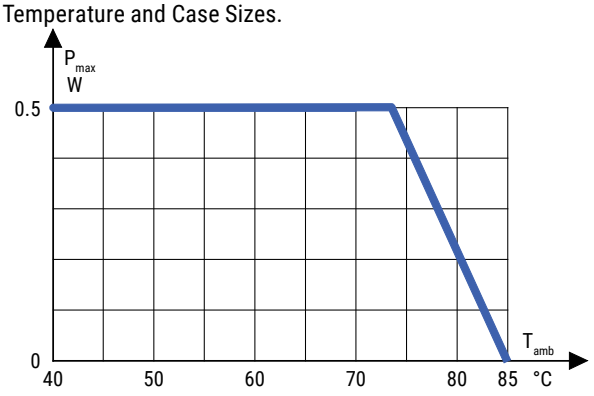
Lead Spacing Nominal (mm)	Type of Leads and Packaging	Lead Length (mm)	KEMET Lead and Packaging Code	Legacy Lead and Packaging Code
25.4	**Standard Lead and Packaging Options**			
	Bulk (Bag) – Short Leads	6 +0/–1	C	R06
	Bulk (Tray) – Maximum Length Leads	30 +5/–0	A	R30

Dimensions – Millimeters



Size Code	p		B		H		L		d	
	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
EJ	25.4	±0.4	12.1	Maximum	19	Maximum	30.5	Maximum	1	±0.05
Note: See the Ordering Options Table for lead length (LL) options.										

Performance Characteristics

Rated Voltage	440 VAC 50/60 Hz
Capacitance Range	0.1 µF
Capacitance Tolerance	±10%, other tolerances on request
Resistance Range	150 Ω
Resistance Tolerance	±30%
Temperature Range	−40°C to +85°C
Climatic Category	40/085/56/B
Approvals	ENEC
Peak Pulse Voltage	1,000 V
Series Resistance	The series resistance is defined at 100 kHz
Insulation Resistance	Minimum Value Between Terminals ≥ 6,000 MΩ
Pulse Current	Maximum 12 A repetitive. Maximum 20 A peak for occasional transients.
Test Voltage Between Terminals	The 100% screening factory test is carried out at 1,800 VDC. The voltage level is selected to meet the requirements in applicaple equipment standards. All electrical characteristics are checked after the test.
In DC Applications	Recommended voltage ≤ 1,000 VDC
Power Ratings	The average losses may reach 0.5 W, provided the surface temperature does not exceed +85°C. For maximum permitted power dissipation versus temperature, see Derating Curve.
Derating Curves	Maximum Allowable Power Dissipation vs. Ambient Temperature and Case Sizes. 

Environmental Test Data

Test	IEC Publication	Procedure
Endurance	IEC 60384–14	1.25 x V_R VAC 50 Hz, once every hour increased to 1,000 VAC for 0.1 second, 1,000 hours at upper rated temperature.
Vibration	IEC 60068–2–6 Test Fc	3 directions at 2 hours each, 10 – 500 Hz at 0.75 mm or 98 m/s^2
Bump	IEC 60068–2–29 Test Eb	4,000 bumps at 390 m/s^2
Change of Temperature	IEC 60068-2-14 Test Na	Upper and lower rated temperature, 5 cycles
Active Flammability	IEC 60384–14	V_R +20 surge pulses at 4.0 kV (pulse every 5 seconds)
Passive Flammability	IEC 60384–14	IEC 60384–1, IEC 60695–11–5 Needle-flame test
Damp Heat Steady State	IEC 60068–2–78 Test Cab	+40°C and 93% RH, 56 days

Approvals

Certification Body	Mark	Specification	File Number
Intertek Semko AB		EN/IEC 60384–14	SE/0140–29C

Environmental Compliance

All KEMET EMI capacitors are RoHS compliant.

Table 1 – Ratings & Part Number Reference

Lead Space	Capacitance Value (µF)	Resistance Ω	Maximum Dimensions (mm)			Quantity per Package		F Article Code	Part Number
			B	H	L	R06	R30		
25.4	0.1	150	12.1	19.0	30.5	100	800	P435EJ104K440(1)H151	PMZ2035RE6100K150(1)

(1) Insert lead and packaging code. See Ordering Options Table for available options.

Soldering Process

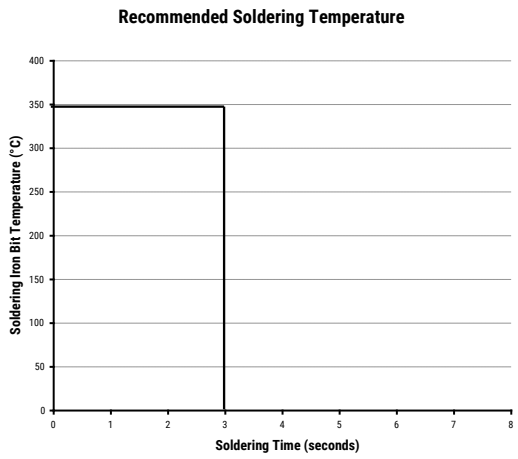
The implementation of the RoHS directive has resulted in the selection of SnAuCu (SAC) alloys or SnCu alloys as primary solder. This has increased the liquidus temperature from that of 183ºC for SnPb eutectic alloy to 217 – 221ºC for the new alloys. As a result, the heat stress to the components, even in wave soldering, has increased considerably due to higher pre-heat and wave temperatures. Polypropylene capacitors are especially sensitive to heat (the melting point of polypropylene is 160 – 170ºC). Wave soldering can be destructive, especially for mechanically small polypropylene capacitors (with lead spacing of 5 – 15 mm), and great care must be taken during soldering. The recommended solder profiles from KEMET should be used. 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. See Figure 1.

Reflow soldering is not recommended for through-hole film capacitors. Exposing capacitors to a soldering profile in excess of the recommended limits may result in degradation of or permanent damage to the capacitors.

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

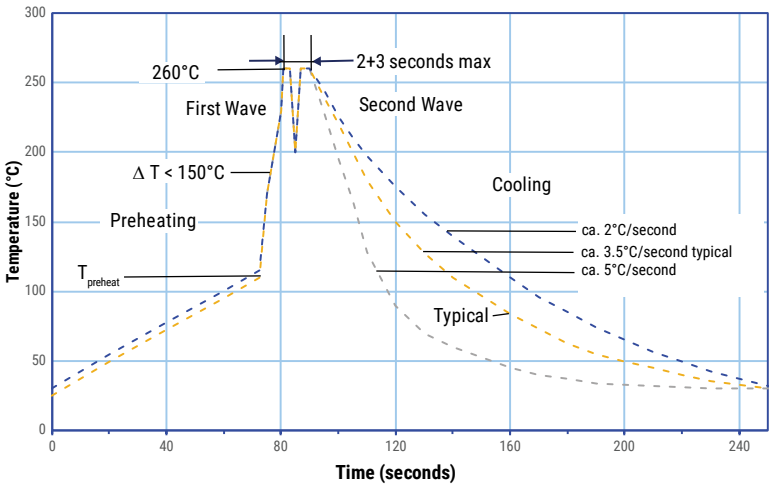
Manual Soldering Recommendations

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



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

Wave Soldering Recommendations



Soldering Process cont.

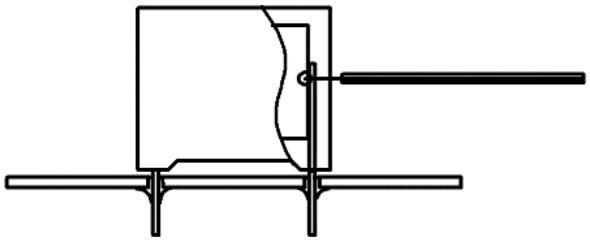
Wave Soldering Recommendations cont'd

1. The table indicates the maximum setup temperature for the soldering process.

Dielectric film material	Maximum Preheat Temperature			Maximum Peak Soldering Temperature	
	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.

Dielectric Film Material	Maximum Temperature Measured Inside the Element
Polyester	160°C
Polypropylene	110°C
Paper	160°C
Polyphenylene Sulphide	160°C



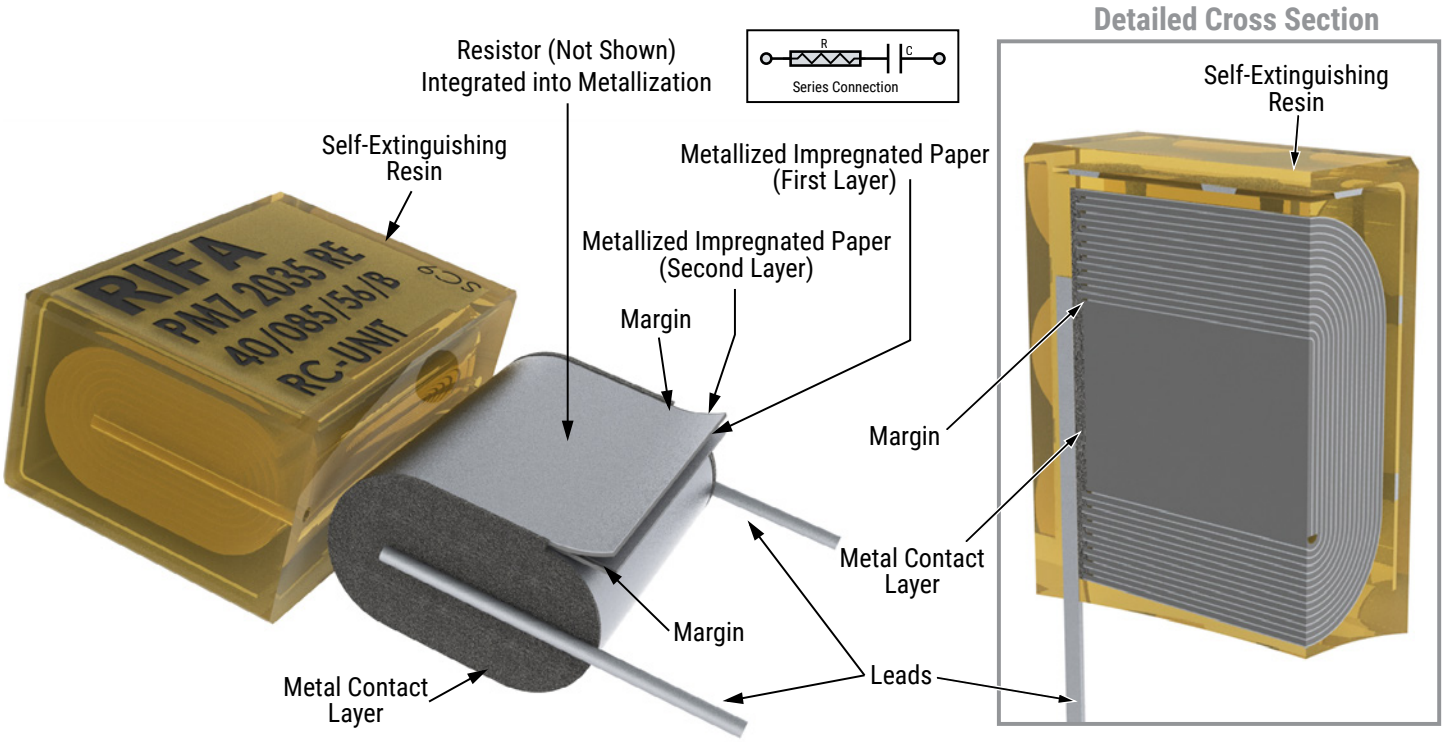
Temperature monitored inside the capacitor.

Selective Soldering Recommendations

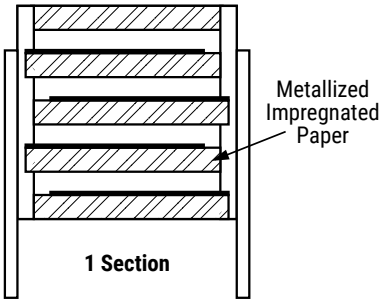
Selective dip soldering is a variation of reflow soldering. In this method, the printed circuit board with through-hole components to be soldered is preheated and transported over the solder bath, as in normal flow soldering, without touching the solder. When the board is over the bath, it is stopped. Pre-designed solder pots are lifted from the bath with molten solder, only at the places of the selected components, and pressed against the lower surface of the board to solder the components.

The temperature profile for selective soldering is similar to the double wave flow soldering outlined in this document. **However, instead of two baths, there is only one with a time from 3 to 10 seconds.** In selective soldering, the risk of overheating is greater than in double wave flow soldering. Great care must be taken so that the parts do not overheat.

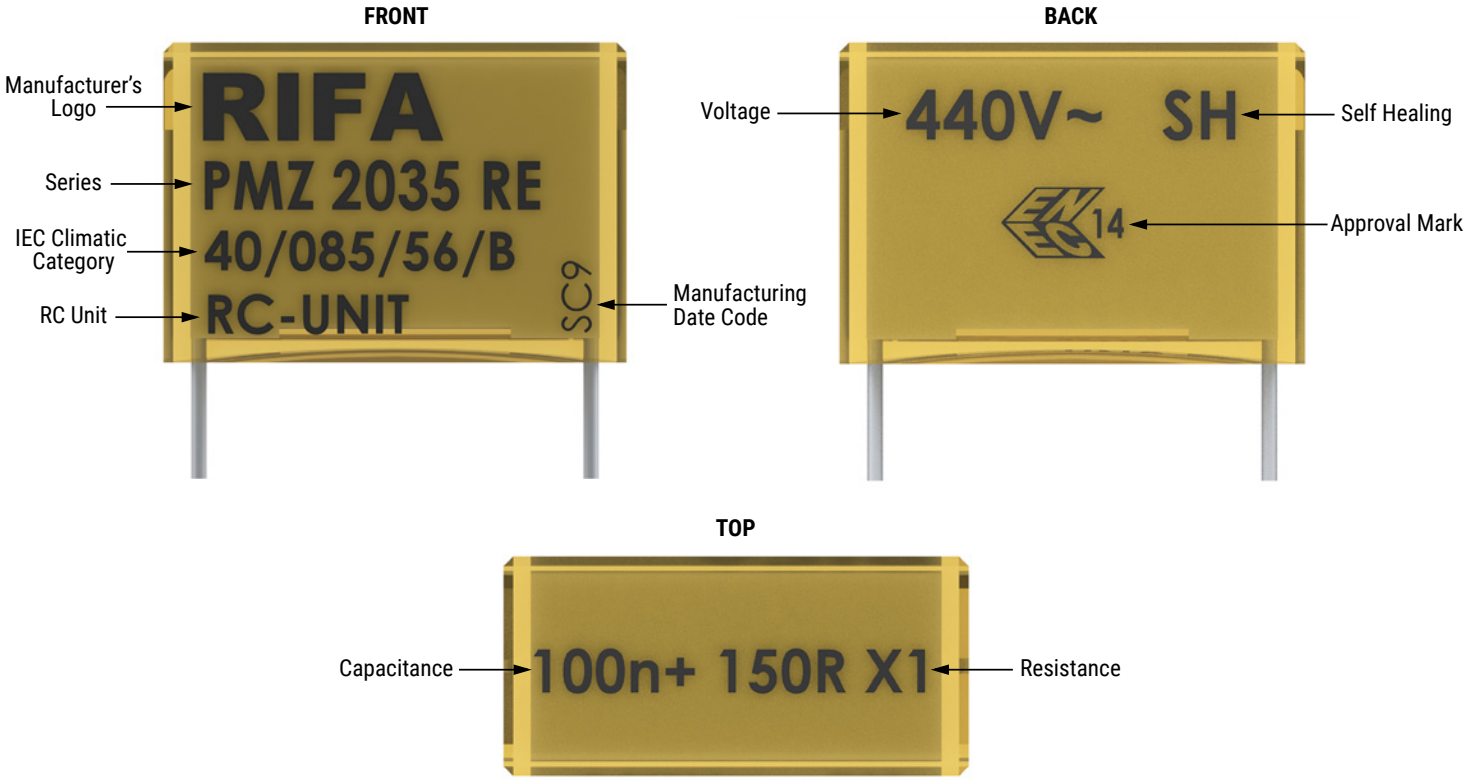
Construction



Winding Scheme



Marking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Series
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BACK
Voltage
440V~
SH
Self Healing
14
Approval Mark
TOP
Capacitance
100n+ 150R X1
Resistance

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