General Purpose, Pulse and DC Transient Suppression

SMP253, Metallized Impregnated Paper, Class Y2, 250 VAC, Surface Mount Device

Overview

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

Applications

For worldwide use as an electromagnetic interference suppressor in all Y2 applications, line-to-earth.

Benefits

- Approvals: ENEC, UL, CSA
- Rated voltage: 250 VAC 50/60 Hz
- Capacitance range: 0.001 – 0.0047 µF
- Size code: 5045, 12.7 mm
- Capacitance tolerance: ±20%
- Climatic category: 40/100/56/B, IEC 60068–1
- Tape & Reel packaging in accordance with IEC 60286–3
- RoHS compliance and lead-free terminations
- Operating temperature range of −40°C to +100°C
- 100% screening factory test at 3,000 VDC

Legacy Part Number System

SMP253	M	A	4100	M	TR24
Series	Rated Voltage (VAC)	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Y2, Metallized Paper	M = 250	A = 12.7	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = ±20%	See Table 1

New KEMET Part Number System

P	101	AA	102	M	250	V
Capacitor Class	Series	Chip Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Y2, Metallized Paper	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	250 = 250	See Ordering Options Table

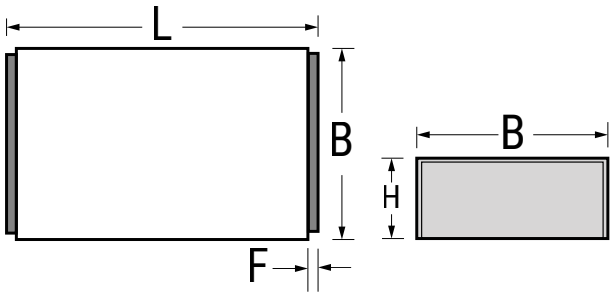
Benefits cont'd

- Highest possible safety regarding active and passive flammability
- Excellent self-healing properties ensure long life, even when subjected to frequent overvoltages
- Good resistance to ionization due to impregnated dielectric
- High dv/dt capability
- Impregnated paper that ensures excellent stability and reliability, particularly in applications with continuous operation

Ordering Options Table

Packaging Type	KEMET Packaging Code	Legacy Packaging Code
Standard Lead and Packaging Options		
Tape & Reel (Standard Reel)	V	TR24
Bulk (Bag)	A	BULK
Other Lead and Packaging Options		
Tape & Reel (Vertical Orientation Standard Reel)	Y	TV24

Dimensions – Millimeters



Chip Size	B		H		L		F	
EIA	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
5045	11.5	±0.2	6.5	±0.2	12.7	±0.2	0.5	Nominal

Performance Characteristics

Rated Voltage	250 VAC 50/60 Hz	
Capacitance Range	0.001 – 0.0047 µF	
Capacitance Tolerance	±20%	
Temperature Range	−40°C to +100°C	
Climatic Category	40/100/56/B	
Approvals	S, UL, CSA	
Dissipation Factor	Maximum Values at +23°C	
	1 kHz	1.3%
Test Voltage Between Terminals	The 100% screening factory test is carried out at 3,000 VDC. The voltage level is selected to meet the requirements in applicable equipment standards. All electrical characteristics are checked after the test. This test may not be repeated due to potential capacitor damage. KEMET is not liable for any failures that result from repeating the test.	
Insulation Resistance	Between Terminals	
	12,000 MΩ	

Environmental Test Data

Test	IEC Publication	Procedure
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
Active Flammability	IEC 60384–14	
Passive Flammability	IEC 60384–14	Needle-flame test
Humidity	IEC 60068–2–3 Test Ca	+40°C and 90 – 95% R.H.

Approvals

Mark	Specification	File Number
	EN/IEC 60384–14	Pending
	UL 60384 and CAN/CSA E60384–14:09	Pending

Environmental Compliance

All KEMET EMI capacitors are RoHS compliant.

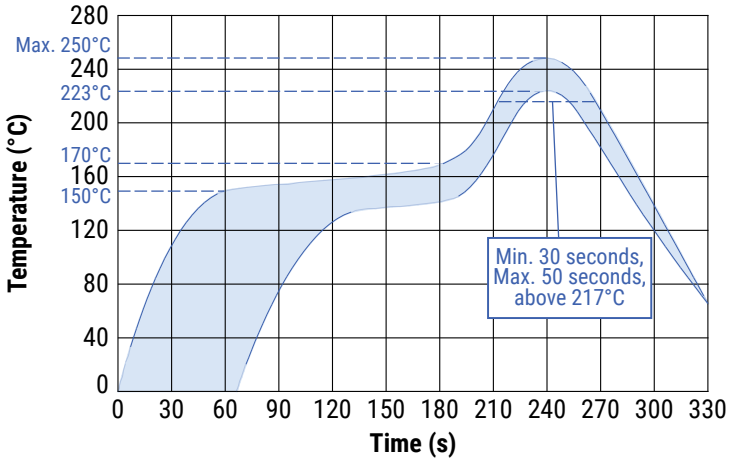
Table 1 – Ratings & Part Number Reference

Capacitance Value (µF)	Maximum Dimensions in mm			dV/dt (V/µs)	New KEMET Part Number	Legacy Part Number
	B	H	L			
0.0010	11.5	6.5	12.7	2,000	P101AA102M250(1)	SMP253MA4100M(1)
0.0015	11.5	6.5	12.7	2,000	P101AA152M250(1)	SMP253MA4150M(1)
0.0022	11.5	6.5	12.7	2,000	P101AA222M250(1)	SMP253MA4220M(1)
0.0025	11.5	6.5	12.7	2,000	P101AA252M250(1)	SMP253MA4250M(1)
0.0033	11.5	6.5	12.7	2,000	P101AA332M250(1)	SMP253MA4330M(1)
0.0039	11.5	6.5	12.7	2,000	P101AA392M250(1)	SMP253MA4390M(1)
0.0047	11.5	6.5	12.7	2,000	P101AA472M250(1)	SMP253MA4470M(1)
Capacitance Value (µF)	**B (mm)**	**H (mm)**	**L (mm)**	**dV/dt (V/µs)**	**New KEMET Part Number**	**Legacy Part Number**

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

Soldering Process

Reflow soldering temperature is measured on the top body surface of the component. Use the recommended soldering profiles for convection reflow ovens and IR reflow ovens. If a vapor phase reflow oven is used, consult KEMET. Exceeding the manufacturer's process recommendations may harm the component. KEMET is not liable for any defect caused by exceeding recommendations. According to international standards, the maximum temperature capability must be measured on the top surface of a component. The international standards do not define how the thermocouple should be fastened on the component. Our recommendation for attaching the thermocouple to the top surface of the component is to glue it with high-temperature resistant glue.



Marking

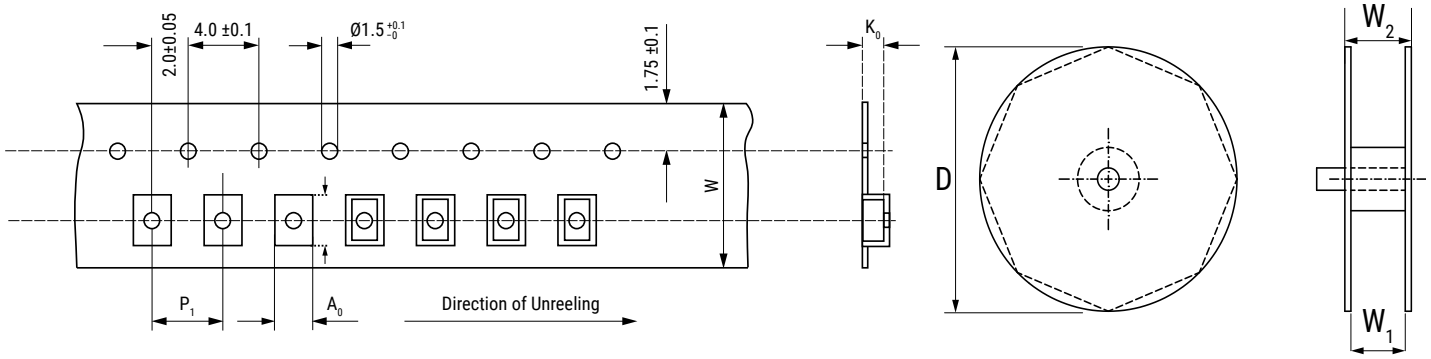
- KEMET's logo
- Series
- Capacitance
- Rated voltage
- Capacitor class
- Manufacturing date code

Packaging Quantities

Chip Size EIA	Thickness (mm)	Height (mm)	Length (mm)	Standard Reel (330 mm)	
				Horizontal Orientation	Vertical Orientation
5045	11.5	6.5	12.7	600	400

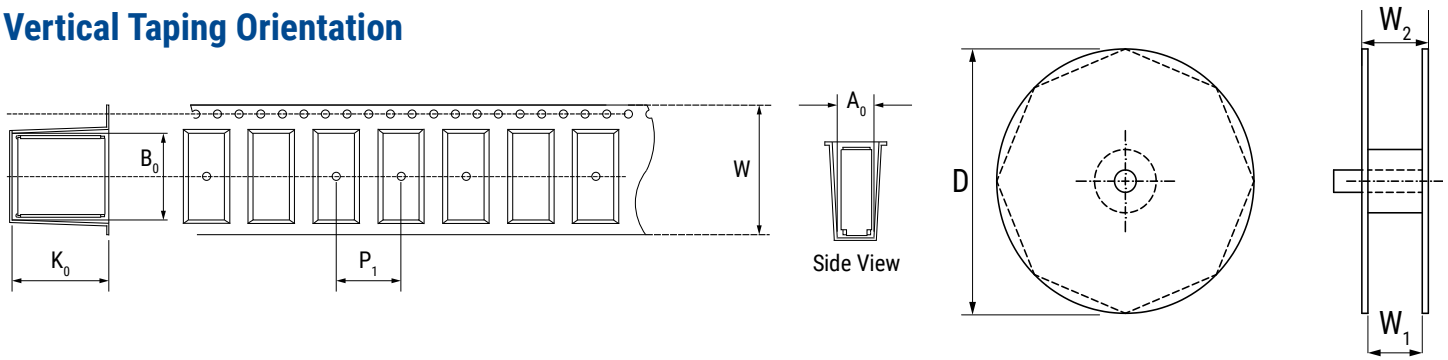
Carrier Taping & Packaging (IEC 60286–2)

Horizontal Taping Orientation



EIA Size Code Horizontal Mounting	Dimensions in mm			Taping Specification							
	B	H	L	W	P_1	A_0	B_0	K_0	D	W_1	W_2
	Nominal	Nominal	Nominal	−0/+0.3	+/−0.1	Nominal	Nominal	Nominal	±2.0	−0/+2	Maximum
5045	11.5	6.5	12.7	24.0	16.0	11.9	13.1	6.8	330	24.4	30.0

Vertical Taping Orientation



EIA Size Code Vertical Mounting	Dimensions in mm			Taping Specification							
	B	H	L	W	P_1	A_0	B_0	K_0	D	W_1	W_2
	Nominal	Nominal	Nominal	−0/+0.3	+/−0.1	Nominal	Nominal	Nominal	±2.0	−0/+2	Maximum
5026 (5045)	12.7	6.5	11.5	24.0	16.0	6.9	13.1	11.8	330	24.4	30.0

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Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given 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) 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 indicted or that other measures may not be required.