

SPC Series Encapsulated Double Metallized, Size 2824 – 6560, 100 – 630 VDC

Overview

Film capacitor for surface mounting. Double sided metallized film as electrode. Plain polyethylene sulfide (PPS) as dielectric. Rugged box encapsulation in self-extinguishing material meeting the requirements of UL 94 V-0.

Applications

The SPC Series is designed for high frequency coupling and decoupling as well as general high speed applications requiring high dV/dt such as pulse operation in switched-mode power supply (SMPS).

Benefits

- Rated voltage: 100 – 630 VDC
- Rated voltage: 63 – 350 VAC
- Capacitance range: 0.00047 – 0.68 μ F
- EIA size: 2824 – 6560
- Capacitance tolerance: \pm 2%, \pm 2.5%, \pm 5%, \pm 10%
- Climatic category: 55/125/56
- RoHS Compliant and lead-free terminations
- Operating temperature range of -55°C to +125°C



Legacy Part Number System

SPC	7.3	471	K	100	K31	TR12
Series	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Packaging Code
Double Metallized PPS	7.3 10.2 12.7 16.5	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	G = \pm 2% H = \pm 2.5% J = \pm 5% K = \pm 10%	100 250 400 630	See Dimension Table	See Ordering Options Table

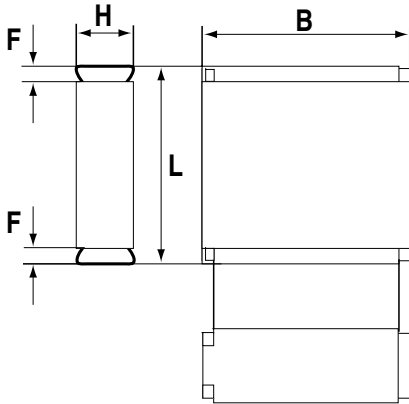
New KEMET Part Number System

F	127	S	G	471	K	100	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging Code
F = Film	Double Metallized PPS	S = 2824 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	G = \pm 2% R = \pm 2.5% J = \pm 5% K = \pm 10%	100 250 400 630	See Ordering Options Table

Ordering Options Table

Chip Size (EIA)	Packaging Type	KEMET Packaging Code	Legacy Packaging Code
2824	Standard Packaging Options		
	Tape & Reel (Standard Reel)	V	TR12
	Bulk (Bag)	A	BULK
4036	Standard Packaging Options		
	Tape & Reel (Horizontal Orientation Standard Reel)	V	TR16
	Bulk (Bag)	A	BULK
	Other Packaging Options		
	Tape & Reel (Vertical Orientation Standard Reel)	Y	TV24
5045	Standard Packaging Options		
	Tape & Reel (Standard Reel)	V	TR24
	Bulk (Bag)	A	BULK
	Other Packaging Options		
	Tape & Reel (Vertical Orientation Standard Reel)	Y	TV24
6560	Standard Packaging Options		
	Tape & Reel (Standard Reel)	V	TR24
	Bulk (Bag)	A	BULK
	Other Packaging Options		
	Tape & Reel (Vertical Orientation Standard Reel)	Y	TV44

Dimensions – Millimeters



KEMET Size Code	Legacy Size Code	Chip Size (EIA)	B		H		L		F	
			Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
SG	K31	2824	6.0	+/-0.2	2.5	+/-0.2	7.3	+/-0.2	0.5	Nominal
SL	K33	2824	6.0	+/-0.2	3.0	+/-0.2	7.3	+/-0.2	0.5	Nominal
SP	K35	2824	6.0	+/-0.2	3.5	+/-0.2	7.3	+/-0.2	0.5	Nominal
ST	K37	2824	6.0	+/-0.2	4.5	+/-0.2	7.3	+/-0.2	0.5	Nominal
WP	A31	4036	9.1	+/-0.2	5.5	+/-0.2	10.2	+/-0.2	0.5	Nominal
YR	B31	5045	11.5	+/-0.2	6.5	+/-0.2	12.7	+/-0.2	0.5	Nominal
ZS	C31	6560	15	+/-0.2	7.0	+/-0.2	16.5	+/-0.2	0.5	Nominal

Environmental Compliance

All KEMET surface mount capacitors are RoHS Compliant.

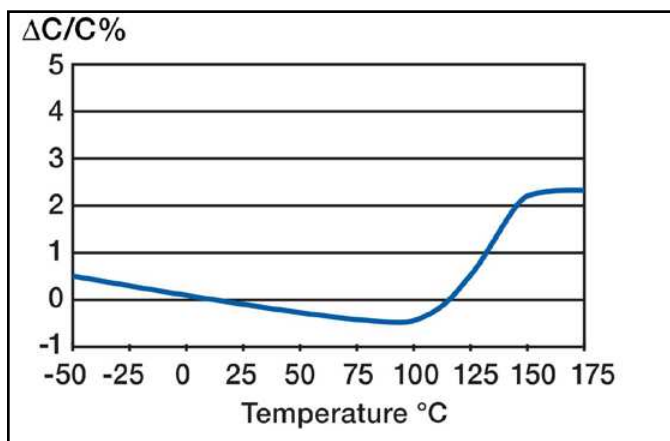


RoHS Compliant

Performance Characteristics

Rated Voltage (VDC)	100	250	400	630
Rated Voltage (VAC)	63	160	250	350
Capacitance Range (μF)	0.00047 – 0.68	0.00047 – 0.33	0.00047 – 0.15	0.00047 – 0.10
Chip Size (EIA)	2824 – 6560			
Capacitance Tolerance	$\pm 2\%$, $\pm 2.5\%$, $\pm 5\%$, $\pm 10\%$			
Category Temperature Range	-55°C to +125°C			
Rated Temperature	+100°C			
Voltage Derating	The rated voltage should be decreased with 1.25%/°C from +100°C to +125°C and 1.5%/°C from +125°C to 175°C			
Climatic Category	55/125/56			
Test Voltage	$1.6 \times V_R$, 60 seconds			
Insulation Resistance	Measured at +20°C According to IEC 60384-19			
	Minimum Value Between Terminals			
		$C \leq 0.33 \mu\text{F}$		$C > 0.33 \mu\text{F}$
	$V_R \leq 100$	50,000 M Ω		16,500 M $\Omega \cdot \mu\text{F}$
	$V_R > 100$	100,000 M Ω		
Dissipation Factor	Maximum Values at +23°C			
		$C \leq 0.1 \mu\text{F}$		$0.1 < C < 0.68 \mu\text{F}$
	1 kHz	0.10%		0.10%
	10 kHz	0.15%		0.15%
	100 kHz	0.20%		0.40%
Pulse Rise Time	The capacitors can withstand an unlimited number of pulses with a dV/dt according to Table 1. For voltages (V) lower than the rated voltage (V_R), the specified dV/dt can be multiplied by V_R/V .			

Capacitance vs. Temperature



Dissipation Factor vs. Temperature

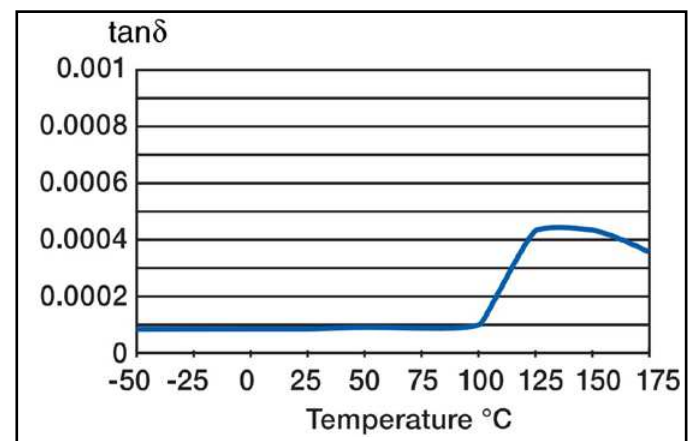


Table 1 – Ratings & Part Number Reference cont'd

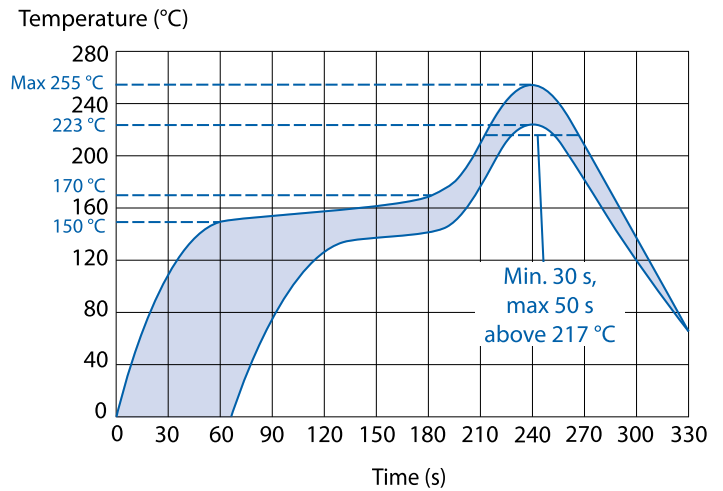
VDC	VAC	Cap Value (μ F)	Size Code (New/Legacy)	Dimensions in mm			Chip Size	dV/dt (V/ μ s)	New KEMET Part Number	Legacy Part Number
				B	H	L				
400	250	0.047	YR/B31	11.5	6.5	12.7	5045	900	F127YR473(1)400(2)	SPC12.7473(1)400B31(2)
400	250	0.068	ZS/C31	15.0	7.0	16.5	6560	450	F127ZS683(1)400(2)	SPC16.5683(1)400C31(2)
400	250	0.10	ZS/C31	15.0	7.0	16.5	6560	450	F127ZS104(1)400(2)	SPC16.5104(1)400C31(2)
400	250	0.15	ZS/C31	15.0	7.0	16.5	6560	450	F127ZS154(1)400(2)	SPC16.5154(1)400C31(2)
630	350	0.00047	SG/K31	6.0	2.5	7.3	2824	2000	F127SG471(1)630(2)	SPC7.3471(1)630K31(2)
630	350	0.00068	SG/K31	6.0	2.5	7.3	2824	2000	F127SG681(1)630(2)	SPC7.3681(1)630K31(2)
630	350	0.0010	SG/K31	6.0	2.5	7.3	2824	2000	F127SG102(1)630(2)	SPC7.3102(1)630K31(2)
630	350	0.0015	SG/K31	6.0	2.5	7.3	2824	2000	F127SG152(1)630(2)	SPC7.3152(1)630K31(2)
630	350	0.0022	SL/K33	6.0	3.0	7.3	2824	2000	F127SL222(1)630(2)	SPC7.3222(1)630K33(2)
630	350	0.0033	SP/K35	6.0	3.5	7.3	2824	2000	F127SP332(1)630(2)	SPC7.3332(1)630K35(2)
630	350	0.0047	ST/K37	6.0	4.5	7.3	2824	2000	F127ST472(1)630(2)	SPC7.3472(1)630K37(2)
630	350	0.0068	WP/A31	9.1	5.5	10.2	4036	1600	F127WP682(1)630(2)	SPC10.2682(1)630A31(2)
630	350	0.010	WP/A31	9.1	5.5	10.2	4036	1600	F127WP103(1)630(2)	SPC10.2103(1)630A31(2)
630	350	0.015	WP/A31	9.1	5.5	10.2	4036	1600	F127WP153(1)630(2)	SPC10.2153(1)630A31(2)
630	350	0.022	YR/B31	11.5	6.5	12.7	5045	1100	F127YR223(1)630(2)	SPC12.7223(1)630B31(2)
630	350	0.033	YR/B31	11.5	6.5	12.7	5045	1100	F127YR333(1)630(2)	SPC12.7333(1)630B31(2)
630	350	0.047	ZS/C31	15.0	7.0	16.5	6560	550	F127ZS473(1)630(2)	SPC16.5473(1)630C31(2)
630	350	0.068	ZS/C31	15.0	7.0	16.5	6560	550	F127ZS683(1)630(2)	SPC16.5683(1)630C31(2)
630	350	0.10	ZS/C31	15.0	7.0	16.5	6560	550	F127ZS104(1)630(2)	SPC16.5104(1)630C31(2)
VDC	VAC	Cap Value (μ F)	Size Code (New/Legacy)	B (mm)	H (mm)	L (mm)	Chip Size	dV/dt (V/ μ s)	New KEMET Part Number	Legacy Part Number

(1) G = $\pm 2\%$, R = $\pm 2.5\%$ (Legacy code = H), J = $\pm 5\%$, K = $\pm 10\%$.

(2) Insert ordering code for lead type and packaging. See Ordering Options Table for available options.

Soldering Process

Reflow soldering temperature is measured on the top body surface of the component. Preheating temperature should be less than 170°C. The time above 217°C should be less than 50 seconds. The peak temperature must not exceed 255°C.



Marking

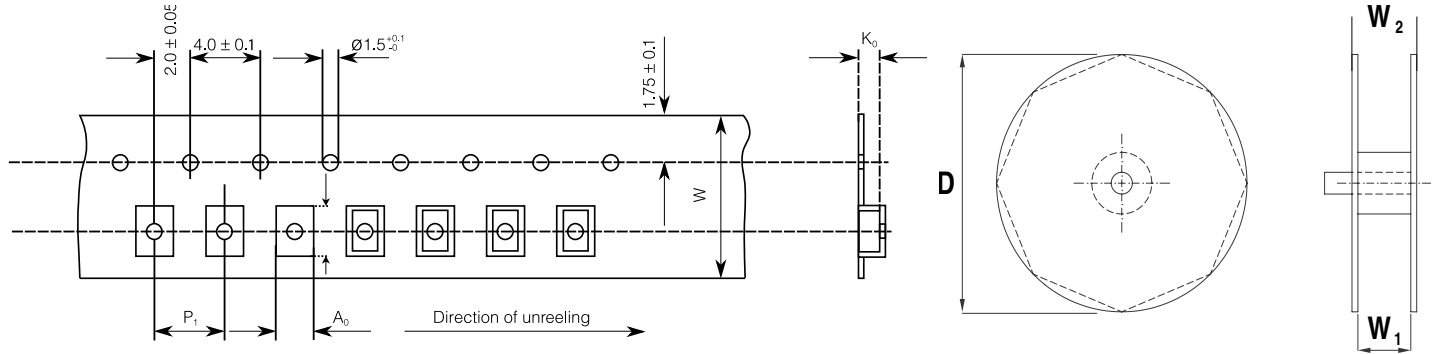
- Capacitance
- Capacitance tolerance code
- Rated voltage code
- Capacitor type D for SPC
- Manufacturing date code

Packaging Quantities

Chip Size (EIA)	Base (mm)	Height (mm)	Length (mm)	Bulk	Reel Horizontal Orientation	Reel Vertical Orientation
2824	6	2.5	7.3	2000	3100	
2824	6	3	7.3	2000	2500	
2824	6	3.5	7.3	2000	2300	
2824	6	4.5	7.3	1000	1700	
4036	9.1	5.5	10.2	1000	800	500
5045	11.5	6.5	12.7	1000	600	400
6560	15	7	16.5	800	500	200

Carrier Taping & Packaging (IEC 60286–2)

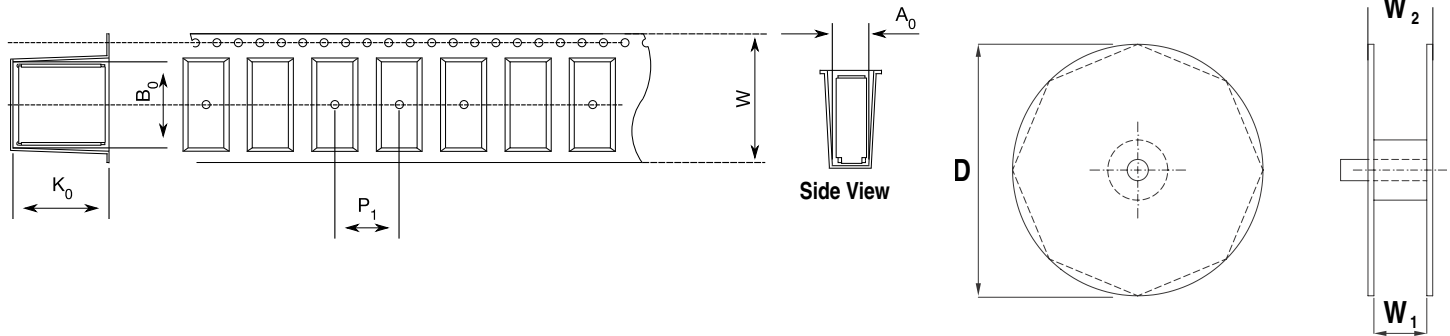
Horizontal Taping Orientation



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
2220	5.0	2.5	5.7	12.0	8.0	5.5	6.0	2.8	330	12.4	22.0
2220	5.0	3.0	5.7	12.0	8.0	5.5	6.0	3.3	330	12.4	22.0
2220	5.0	4.0	5.7	12.0	8.0	5.5	6.0	4.3	330	12.4	22.0
2824	6.0	2.5	7.3	12.0	8.0	6.5	7.5	2.8	330	12.4	22.0
2824	6.0	3.0	7.3	12.0	8.0	6.5	7.5	3.3	330	12.4	22.0
2824	6.0	3.5	7.3	12.0	8.0	6.5	7.5	3.8	330	12.4	22.0
2824	6.0	4.5	7.3	12.0	8.0	6.5	7.5	4.8	330	12.4	22.0
4036	9.1	5.5	10.2	16.0	16.0	9.5	10.5	5.8	330	16.4	22.0
5045	11.5	6.5	12.7	24.0	16.0	11.9	13.1	6.8	330	24.4	30.0
6560	15.0	7.0	16.5	24.0	20.0	15.4	16.8	7.3	330	24.4	30.0

Carrier Taping & Packaging (IEC 60286–2) cont'd

Vertical Taping Orientation



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
4022	5.5	9.1	10.2	24.0	16.0	6.0	10.5	9.3	330	24.4	30.0
5026	6.5	11.5	12.7	24.0	16.0	6.9	13.1	11.8	330	24.4	30.0
6528	7.0	15.0	16.5	44.0	20.0	7.5	17.0	15.3	330	44.5	49.5

Note: Chip dimensions B and H correspond to dimensions H and B in the horizontal mounting table.

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Other KEMET Resources

Tools	
Resource	Location
Configure A Part: CapEdge	http://capacitoredge.kemet.com
SPICE & FIT Software	http://www.kemet.com/spice
Search Our FAQs: KnowledgeEdge	http://www.kemet.com/keask

Product Information	
Resource	Location
Products	http://www.kemet.com/products
Technical Resources (Including Soldering Techniques)	http://www.kemet.com/technicalpapers
RoHS Statement	http://www.kemet.com/rohs
Quality Documents	http://www.kemet.com/qualitydocuments

Product Request	
Resource	Location
Sample Request	http://www.kemet.com/sample
Engineering Kit Request	http://www.kemet.com/kits

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Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

Digitally signed by Jeannette Calvo

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Date: 2012.12.14 11:23:04 -05'00'

