F/PS Low Profile High Capacitance Polymer Capacitor

KEMET
a YAGEO company

Overview

NeoCapacitor® provides excellent performance for various applications due to high conductivity of the conductive polymer.

TOKIN's devices are classified into the following three quality grades, in accordance with their application: Standard, Special, and Specific. The quality grade of all devices in this document is "standard" and cannot be used for "special" or "specific" quality grade applications. Customers who intend to use the products in this document for applications other than "standard" quality grade must contact KEMET sales representative in advance.

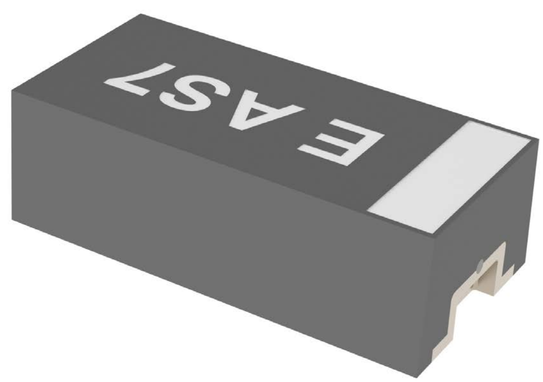
Standard: This quality grade is intended for applications in which failure or malfunction of the device is highly unlikely to cause harm to persons or damage to property, or be the source of any negative effects or problems in the wider community.

Special: This quality grade is intended for special applications that have common requirements, such specific industrial fields. Devices with a "special" quality grade are designed, manufactured, and tested using more a stringent quality assurance program than what is used for "standard" grade devices. There is a high possibility that failure or malfunction of the device when being used for applications in this category will cause harm to persons or damage to property, or bring negative effects or problems in the wider community.

Specific: Devices in this quality grade are designed, manufactured, and tested using a quality assurance program that is designated by the customer or that is created in accordance with the customer's specifications. There is an extremely high possibility that failure or malfunction of the device when being used for applications in this category will cause harm to persons or damage to property, or bring serious problems in the wider community. Customers who use KEMET's products for these "specific" applications must conclude an individual quality agreement and/or development agreement with KEMET. A quality assurance program designated by the customer must also be determined in advance.

Benefits

- Excellent noise absorption performance
- Higher ripple current
- Miniaturized, thinner, higher capacitance and lower ESR
- Lead free (JEITA PHASE3), RoHS2 directive (2011/65/EU + 2015/863/EU) and halogen-free.
- Antimony-free and Red phosphorous-free materials for mold resin.



Applications

Typical applications include voltage smoothing, noise absorption in high speed operation circuit , multi media instruments, PC (voltage smoothing and noise absorption of CPU, memory and various LSI), Smartphone, mobile phone (stabilization of battery voltage, stabilization for display), LCD TV (stabilization of LCD driver and timing controller) and others (tablet, PC, portable audio player, DSC, DVC, HDD, SSD, communication card, portable gaming devices, head-mounted displays, drones, IoT devices).

K-SIM

For a detailed analysis of specific part numbers, please visit ksim.kemet.com to access KEMET's K-SIM software. KEMET K-SIM is designed to simulate behavior of components with respect to frequency, ambient temperature, and DC bias levels.

Ordering Information

TE	FPS	A3	0J	107	M	(100)	8R
Tape & Reel	Series	Case Code	DC Rated Voltage in Volts	Capacitance (pF)	Capacitance tolerance	ESR Spec	Packing Orientation
TE = φ 180 mm reel	Face down structure	A2 (3216–12) A3 (3216–10) B10 (3528–10) B3 (3528–12)	0G = 4 V 0J = 6.3 V 1A = 10 V 1C = 16 V 1D = 20 V 1E = 25 V 1V = 35 V	First two digits represents the cap code. Third digit specifies number of zeros to follow	M = ±20%	(100) shows 100 mΩ Blank = Refer to PN in Table 1 for specification	8 = Tape width (8 mm) R = Packaging orientation (cathode on sprocket hole)

Performance Characteristics

Item	Performance Characteristics
Operating Temperature	–55°C to +105°C
Rated Voltage Range (V)	4 – 35
Surge Voltage (V)	Rated Voltage: 4 V, 6.3 V, 10 V, 16 V, 20 V, 25 V, 35 V Surge Voltage: 5.2 V, 8 V, 13 V, 20.7 V, 23 V, 29 V, 41 V
Nominal Capacitance (120 Hz)	6.8 µF ~ 220 µF*
Dissipation Factor (tan δ, 120 Hz)	Refer to Standard Ratings*
Leakage Current (LC, V_R, 5 minutes)	Refer to Standard Ratings
Equivalent Series Resistance (ESR, 100 kHz)	Refer to Standard Ratings
Permissible Ripple Current (100 kHz)	Refer to Standard Ratings

** For these measurements apply 1.5 VDC*

Qualification

A2/A3/B3 case

Test	Condition	Characteristics			
Surge Voltage	Temperature: 85°C, Surge Voltage apply, 1,000 Ω series resistance, 1,000 cycles	Δ C/C	Within −20%/+20% of the initial value		
		tan δ	Within IL		
		LC	Within IL		
Temperature Stability	Temperature exposure at +25°C, −55°C, +105°C		+25°C	-55°C	+105°C
		Δ C/C	–	0% ~ −20% compare with +25°C	+50% ~ 0% compare with +25°C
		tan δ	Within IL	Within IL	Within 1.5 × IL
		LC	Within IL	–	Within 10 × IL
Endurance	Temperature: 105°C, Rated voltage apply, Time: 1,000 hours 2,000 hours*1	Δ C/C	Within -20%/+20% of the initial value		
		tan δ	Within 1.5 × IL		
		LC*2	Within IL		
Humidity	Temperature: 60°C, Humidity: 90 ~ 95% R.H., 500 hours	Δ C/C*3	+30% ~ −20% of the initial value		
		tan δ	Within 1.5 × IL		
		LC*4	Within IL		

IL = Initial limit
**1 For TEFPSB31E156M8R, TEFPSB31E226M8R test time is 2,000 hours*
**2 For FPSB31E226M8R LC post testing is within 3 X IL*

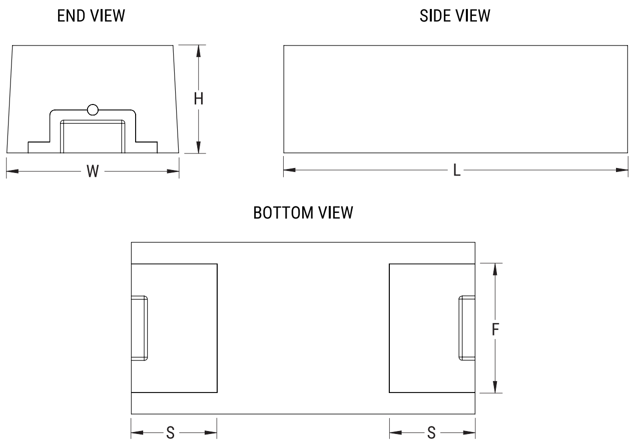
B10 case

Test	Condition	Characteristics			
Surge Voltage	Temperature: 105°C, Surge Voltage apply, 1,000 Ω series resistance, 1,000 cycles	Δ C/C	Within −20%/+20% of the initial value		
		tan δ	Within IL		
		LC	Within IL		
Temperature Stability	Temperature exposure at +25°C, −55°C, +105°C		+25°C	-55°C	+105°C
		Δ C/C	–	0% ~ −20% compare with +25°C	+50% ~ 0% compare with +25°C
		tan δ	Within IL	Within IL	Within 1.5 × IL
		LC	Within IL	–	Within 10 × IL
Endurance	Temperature: 105°C, Rated voltage apply, Time: 1,000 hours 2,000 hours*1	Δ C/C	Within -20%/+20% of the initial value		
		tan δ	Within 1.5 × IL		
		LC*2	Within 1.25 × IL		
Humidity	Temperature: 60°C, Humidity: 90 ~ 95% R.H., 500 hours	Δ C/C*3	+30% ~ −20% of the initial value		
		tan δ	Within 1.5 × IL		
		LC*4	Within 5 × IL		

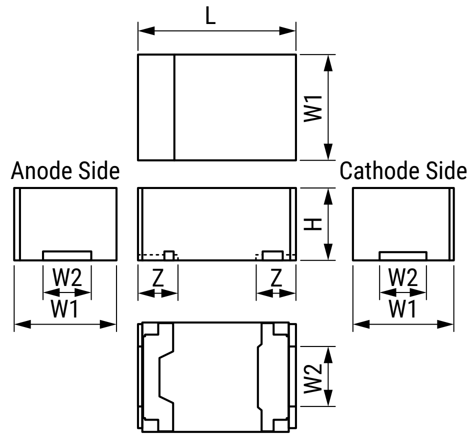
Dimensions – Millimeters (Inches)

Metric will govern

A2 & A3 Case



B3 & B10 Case



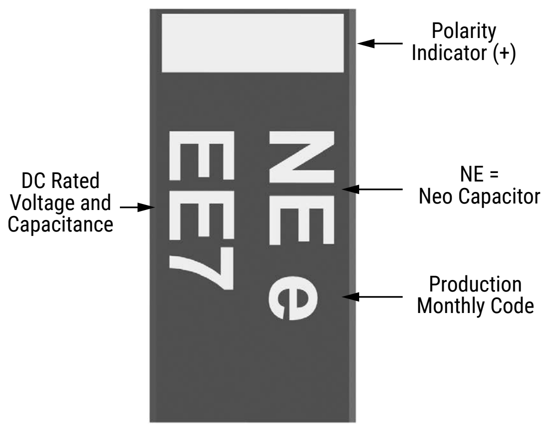
Case Size		Component Dimensions				
KEMET	EIA	L ±0.2	W1 ±0.2	W2 ±0.1	H ±0.1	Z ±0.2
A2	3216–12	3.2	1.6	1.2	1.1	0.8
A3	3216–10	3.2	1.6	1.2	0.9	0.8
B10	3528–10	3.5	2.8	2.2	1.0 max	0.7
B3	3528–12	3.5	2.8	2.2	1.1	0.7

Table 1 – Ratings & Part Number Reference

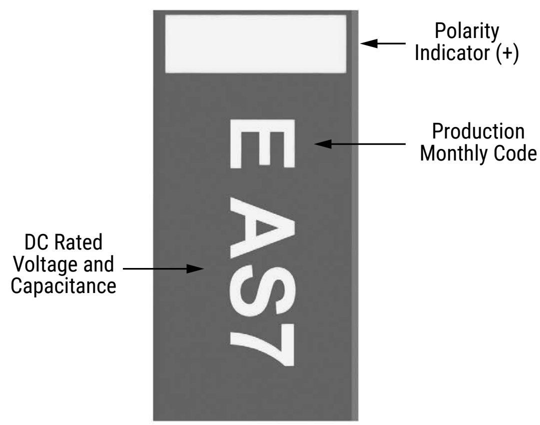
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	Leakage Current	tan δ	ESR	Permissible Ripple Current	Rated and Maximum Operating Temperature
V	µF	KEMET/EIA		µA at +25°C Maximum	% at 25°C 120 Hz Maximum	mΩ at 25°C 100 kHz Maximum	mA at +25°C 100 kHz Maximum	°C
4	100	A3/3216-10	TEFPSA30G107M8R	40	8	200	548	105
4	220	B10/3528-10	TEFPSB100G227M(25)	88	10	25	1732	105
4	220	B10/3528-10	TEFPSB100G227M(30)	88	10	30	1581	105
6.3	47	A3/3216-10	TEFPSA30J476M8R	29.6	6	200	548	105
6.3	47	A3/3216-10	TEFPSA30J476M(70)8R	29.6	6	70	925	105
6.3	100	A3/3216-10	TEFPSA30J107M8R	63	8	200	548	105
6.3	100	A3/3216-10	TEFPSA30J107M(100)8R	63	8	100	774	105
6.3	100	A3/3216-10	TEFPSA30J107M(70)8R	63	8	70	925	105
6.3	100	A3/3216-10	TEFPSA30J107M(55)8R	63	8	55	1044	105
10	22	A3/3216-10	TEFPSA31A226M8R	22	8	200	548	105
10	33	A3/3216-10	TEFPSA31A336M8R	33	6	200	548	105
10	33	A3/3216-10	TEFPSA31A336M(150)8R	33	6	150	632	105
10	47	A3/3216-10	TEFPSA31A476M8R	47	6	200	548	105
10	47	A3/3216-10	TEFPSA31A476M(150)8R	47	6	150	632	105
16	33	A2/3216-12	TEFPSA21C336M8R	54	10	200	548	105
20	15	B10/3528-10	TEFPSB101D156M8R	30	10	150	707	105
25	10	A2/3216-12	TEFPSA21E106M(150)8R	25	10	150	632	105
25	15	B10/3528-10	TEFPSB101E156M8R	75	10	150	707	105
25	15	B3/3528-12	TEFPSB31E156M8R	112.5	10	100	866	105
25	22	B3/3528-12	TEFPSB31E226M8R	165	10	100	866	105
35	6.8	B3/3528-12	TEFPSB31V685M8R	47.6	10	100	866	105
V	µF	KEMET/EIA		µA at +25°C Maximum	% at 25°C 120 Hz Maximum	mΩ at 25°C 100 kHz Maximum	mA at +25°C 100 kHz Maximum	°C
Rated Voltage	Rated Capacitance	Case Code/ Case Size	KEMET Part Number	Leakage Current	tan δ	ESR	Permissible Ripple Current	Rated and Maximum Operating Temperature

Capacitor Marking

B3/B10 Case



A2/A3 Case



DC Rated Voltage and Capacitance Code

Capacitance (µF)		Voltage						
		4 **g**	**6** **j**	**10** **A**	**16** **C**	**20** **D**	**25** **E**	**35** **V**
6.8	W6							VW6
15	E7					DE7	EE7	
22	J7			AJ7			EJ7	
33	N7			AN7	CN7			
47	S7		jS7	AS7				
100	A8	gA8	jA8					
220	J8	gJ8						

Production Monthly Code

Year	Month											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
2021	A	B	C	D	E	F	G	H	J	K	L	M
2022	N	P	Q	R	S	T	U	V	W	X	Y	Z
2023	a	b	c	d	e	f	g	h	j	k	l	m
2024	n	p	q	r	s	t	u	v	w	x	y	z

Production monthly code will resume beginning in 2025.

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