

PS/H High Operation Temperature Small Size Polymer Capacitor

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.

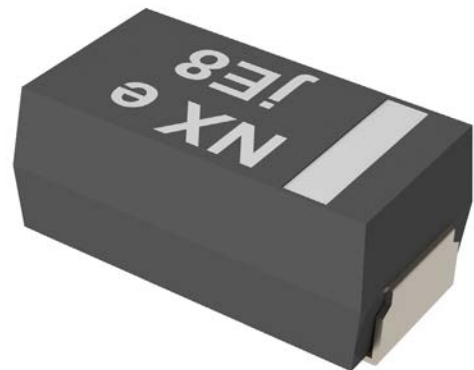
Standard: This quality grade is intended for applications in which failure or malfunction of the device is highly unlikely to cause harm to persons or damage to property, or be the source of any negative effects or problems in the wider community.

Special: This quality grade is intended for special applications that have common requirements, such as 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

PSH	B2	0E	337	M	025	B	LL
Series	Case Code	DC Rated Voltage in Volts	Capacitance (pF)	Capacitance Tolerance	ESR Spec	Tape & Reel	
High operation temperature	B2 (3528-21)	0E = 2.5 V 0J = 6.3 V 1C = 16 V 1E = 25 V	First two digits represents the cap code. Third digit specifies number of zeros to follow	M = ±20%	025 = 25 mΩ	Tape width 8 mm, φ 180 mm reel	Supplier internal control code

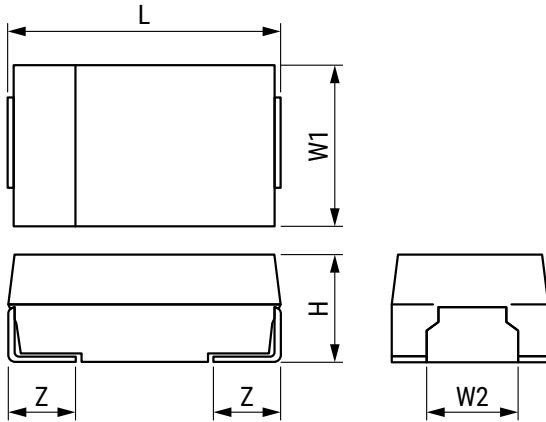
Performance Characteristics

Item	Performance Characteristics										
Operating Temperature	-55°C to +125°C										
Rated Voltage Range (V)	2.5 – 25										
Category Voltage Range (V, 125°C)	2/3 x rated voltage										
Surge Voltage (V)	<table border="1"> <tr> <td>Rated Voltage</td> <td>2.5 V</td> <td>6.3 V</td> <td>16 V</td> <td>25 V</td> </tr> <tr> <td>Surge Voltage</td> <td>3.3 V</td> <td>8 V</td> <td>20 V</td> <td>29 V</td> </tr> </table>	Rated Voltage	2.5 V	6.3 V	16 V	25 V	Surge Voltage	3.3 V	8 V	20 V	29 V
Rated Voltage	2.5 V	6.3 V	16 V	25 V							
Surge Voltage	3.3 V	8 V	20 V	29 V							
Nominal Capacitance (120 Hz)	15 μF ~ 330 μF*										
Dissipation Factor (tan δ, 120 Hz)	Refer to Standard Ratings*										
Leakage Current (LC, Vr, 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

Dimensions – Millimeters

Metric will govern



Case Size		Component Dimensions				
KEMET	EIA	L ±0.2	W1 ±0.2	W2 ±0.1	H ±0.1	Z ±0.2
B2	3528-21	3.5	2.8	2.2	1.9	0.8

Qualification

For "LL" code Part Numbers

Test	Condition	Characteristics			
		Δ C/C	tan δ	LC	
Surge Voltage	Temperature: 85°C, Surge Voltage apply, 1,000 Ω series resistance, 1,000 cycles	Within -20%/+20% of the initial value			
		Within IL			
		Within IL			
Temperature Stability	Temperature exposure at +25°C, -55°C, +125°C	+25°C	-55°C	+125°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	125°C, 2/3* Rated voltage apply, 1,000 hours 105°C, Rated voltage apply, 2,000 hours	Within -20%/+20% of the initial value			
		Within 1.5 × IL			
		125°C: No short (< 2 mA) 105°C: Within IL			
Humidity	Temperature: 60°C, Humidity: 90 ~ 95% R.H., 500 hours	+40% ~ -20% of the initial value			
		Within 1.5 × IL			
		Within IL			

IL = Initial limit

Qualification cont.

For Part Numbers without code

Test	Condition	Characteristics				
Endurance	125°C, 2/3 Rated voltage apply, 2,000 hours	Δ C/C	Within -20%/+10% of the initial value			
		tan δ	Within initial limits			
		LC	Within 2.0 x initial limit			
		ESR	Within 2.0 x initial limit			
Storage Life	125°C, 0 voltage, 2,000 hours	Δ C/C	Within -20%/+10% of the initial value			
		tan δ	Within initial limits			
		LC	Within 2.0 x initial limit			
		ESR	Within 2.0 x initial limit			
Humidity	Temperature: 60°C, Humidity: 90 ~ 95% R.H., No Load, 500 hours	Δ C/C	Within -5%/+35% of the initial value			
		tan δ	Within initial limits			
		LC	Within 3.0 x initial limit			
		ESR	N/A			
Temperature Stability	Extreme temperature exposure at a succession of continuous steps at +25°C, -55°C, +25°C, +85°C, +125°C, +25°C		+25°C	-55°C	+85°C	+105°C
		Δ C/C	-	±20%	±20%	±20%
		tan δ	IL	IL	1.2 x IL	1.5 x IL
		LC	IL	-	10 x IL	10 x IL
Surge Voltage	Temperature: 125°C, Voltage: 1.32 x Rated voltage, 1,000 cycles	Δ C/C	Within -20%/+10% of the initial value			
		tan δ	Within initial limits			
		LC	Within initial limits			
		ESR	Within initial limits			
Mechanical Shock/Vibration	MIL-STD-202, Method 213, Condition I, 100 G Peak. MIL-STD-202, Method 204, Condition D, 10 Hz to 2,000 Hz, 20 G peak	Δ C/C	Within ±10% of the initial value			
		tan δ	Within initial limits			
		LC	Within initial limits			

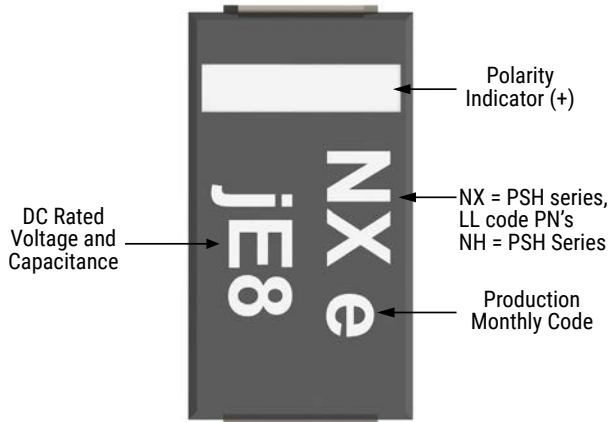
IL = Initial limit

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
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
2.5	220	B2/3528-21	PSHB20E227M025BLL	110	10	25	1844
2.5	220	B2/3528-21	PSHB20E227M025B	110	10	25	1844
2.5	330	B2/3528-21	PSHB20E337M025BLL	165	10	25	1844
2.5	330	B2/3528-21	PSHB20E337M025B	165	10	25	1844
6.3	150	B2/3528-21	PSHB20J157M045BLL	189	10	45	1374
6.3	220	B2/3528-21	PSHB20J227M045BLL	277.2	10	45	1374
16	22	B2/3528-21	PSHB21C226M100BLL	70.4	10	100	922
16	33	B2/3528-21	PSHB21C336M070BLL	105.6	10	70	1102
25	15	B2/3528-21	PSHB21E156M090B	112.5	10	90	972

Part numbers marked in blue font are not recommended for new designs. Please use the available part for the CV need it.

Capacitor Marking



DC Rated Voltage and Capacitance Code

Capacitance (μ F)		Voltage			
		2.5 e	6.3 j	16 C	25 E
15	E7				EE7
22	J7			CJ7	
33	N7			CN7	
150	E8		jE8		
220	J8	eJ8	jJ8		
330	N8	eN8			

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.

KEMET Electronics Corporation Sales Offices

For a complete list of our global sales offices, please visit www.kemet.com/sales.

Disclaimer

YAGEO Corporation and its affiliates do not recommend the use of commercial or automotive grade products for high reliability applications or manned space flight.

All product specifications, statements, information and data (collectively, the "Information") in this datasheet are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without guarantee, warranty, or responsibility of any kind, expressed or implied.

Statements of suitability for certain applications are based on KEMET Electronics Corporation's ("KEMET") knowledge of typical operating conditions for such applications, but are not intended to constitute – and KEMET specifically disclaims – any warranty concerning suitability for a specific customer application or use. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by KEMET with reference to the use of KEMET's products is given gratis, and KEMET assumes no obligation or liability for the advice given or results obtained.

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 indicated or that other measures may not be required.

KEMET is a registered trademark of KEMET Electronics Corporation.