

SMTAK3 Series



Description

The SMTAK3 series of high current transient suppressors have been specially designed for use in D.C. line protection and any demanding applications. They offer superior clamping characteristics over standard S.A.D. technologies by virtue of the Littelfuse Foldbak technology. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level.

Features

- Very low clamping voltage
- Sharp breakdown voltage
- Low slope resistance
- Bi-directional
- Foldbak technology for superior clamping factor
- Symmetric in leads width for easier soldering during assembly.
- IEC 61000-4-2 ESD 15kV(Air), 8kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2
- EFT protection of data lines in accordance with IEC 61000-4-4
- Halogen-free
- RoHS compliant
- Glass passivated junction
- Pb-free E4 means 2nd level interconnect is Pb-free and the terminal finish material is silver (IPC/JEDEC J-STD-609A.01)
- UL Recognized to ANSI/UL 497B

Agency Recognitions

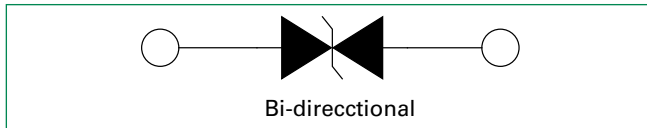
Agency	Agency File Number
	E128662

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 125	°C
Current Rating ¹	I _{pp}	3	kA

Note:
1. Rated I_{pp} measured with 8/20µs pulse.

Functional Diagram



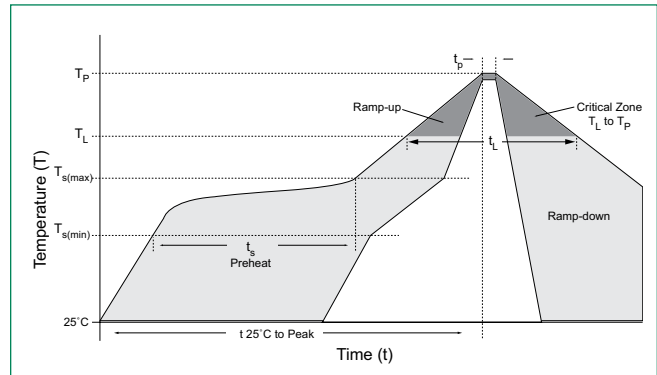
Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Numbers	Part Marking	Standoff Voltage (V _{SO}) Volts	Max. Reverse Leakage (I _R @ V _{SO}) µA	Typical I _R @ 85°C (µA)	Reverse Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Max. Clamping Voltage V _{CL} @ I _{pp} Peak Pulse Current (I _{pp}) (Note 1)		Max. Temp Coefficient OF V _{BR} (%/°C)	Max. Capacitance 0 Bias 10kHz (nF)	Agency Approval
					Min	Max		V _{CL} Volts	I _{pp} Amps			
SMTAK3-015C	S3-015C	15	10	15	16	19	10	28	3,000	0.1	9.0	X
SMTAK3-058C	S3-058C	58	10	15	64	70	10	110	3,000	0.1	6.0	X
SMTAK3-066C	S3-066C	66	10	15	72	80	10	120	3,000	0.1	6.0	X
SMTAK3-076C	S3-076C	76	10	15	85	95	10	140	3,000	0.1	6.0	X

Note:
1. Using 8/20µs wave shape as defined in IEC 61000-4-5.

Soldering Parameters

Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_p)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (t_p)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		30 seconds max
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C



Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

Physical Specifications

Weight	Contact manufacturer
Case	Compound encapsulated
Terminal	Silver plated leads, solderable per MIL-STD-202 Method 208

Wave Solder Profile

Figure 1 - Non Lead-free Profile

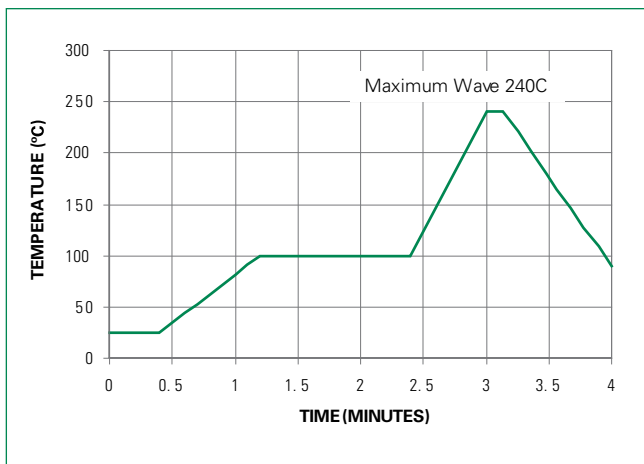
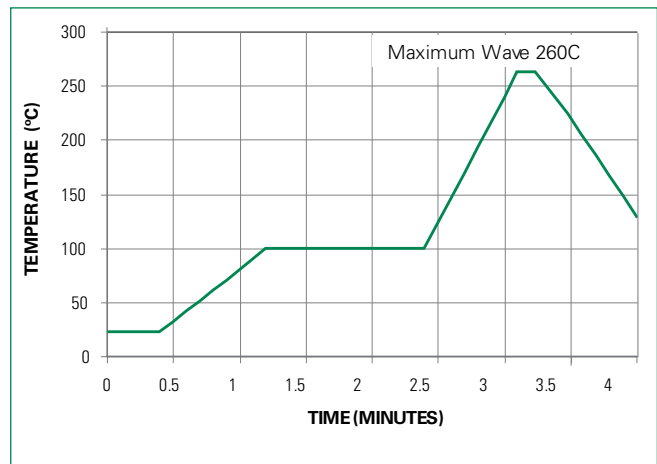


Figure 2 - Lead-free Profile



Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 3 - Peak Power Derating

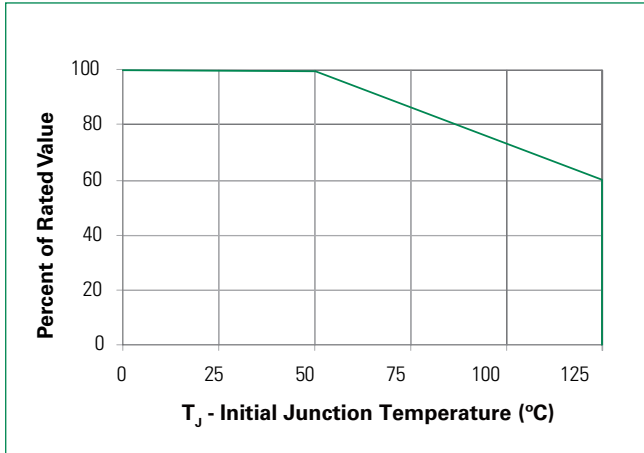


Figure 4 - Typical Peak Pulse Power Rating Curve

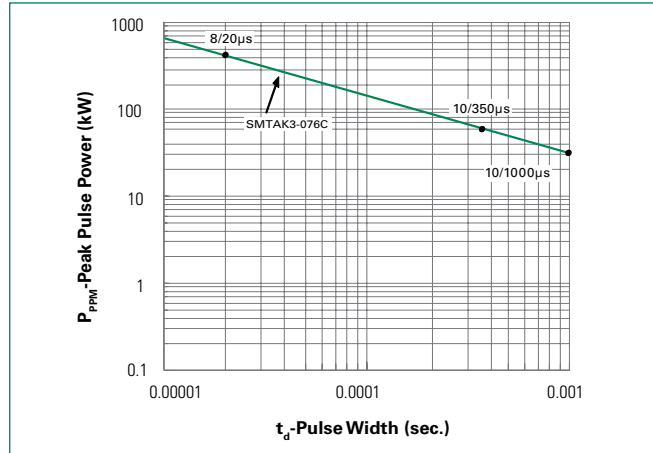


Figure 5 - Typical V_{BR} Vs Junction Temperature

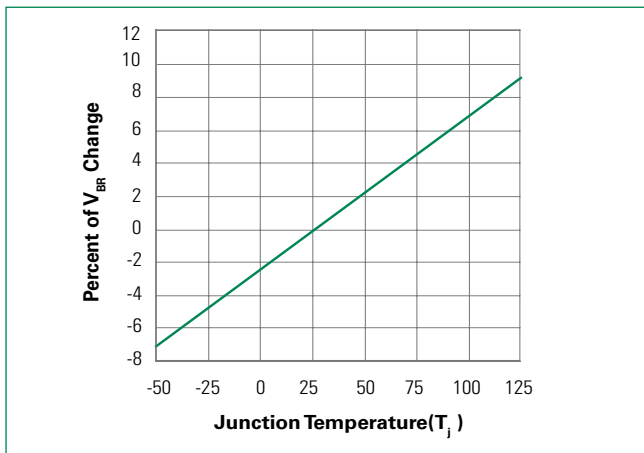
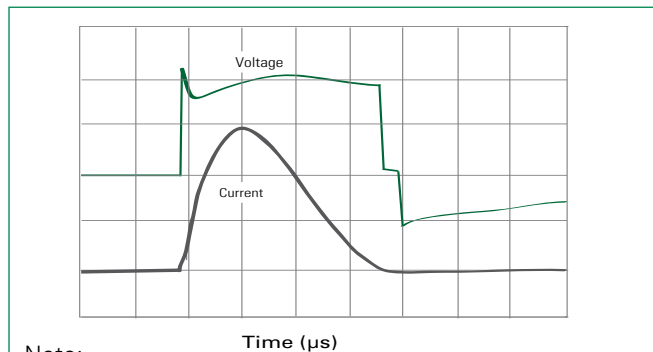


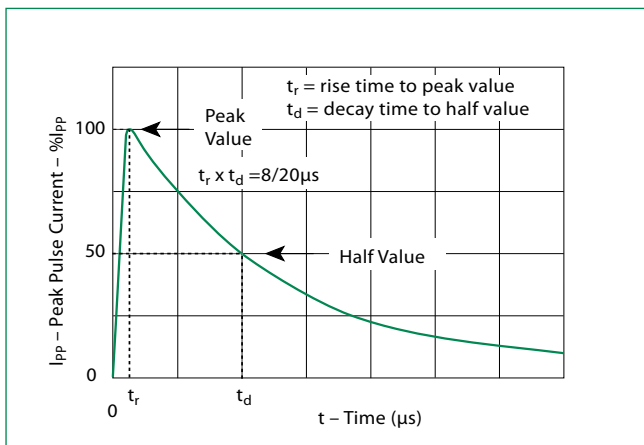
Figure 6 - Surge Response (8/20 Surge current waveform)



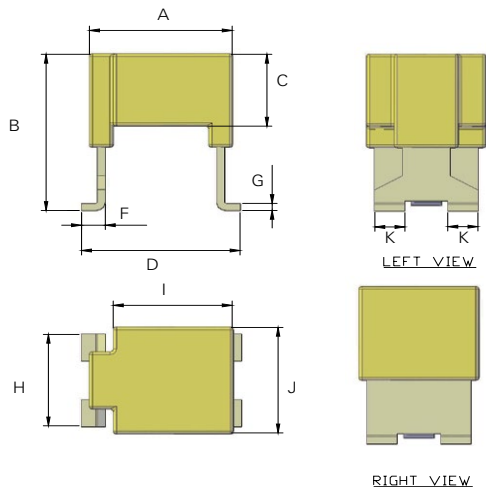
Note:

The power dissipation causes a change in avalanche voltage during the surge and the avalanche voltage eventually returns to the original value when the transient has passed.

Figure 7 - Pulse Waveform

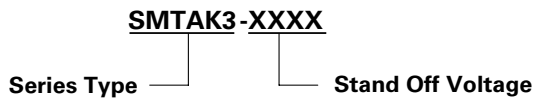


Dimensions

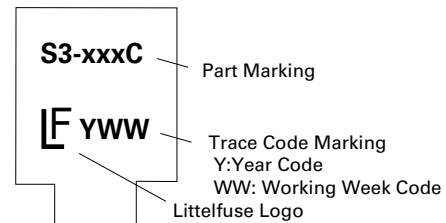


Dimensions	Inches	Millimeters
A	0.354 +0.059/- 0.020	9.0 +1.5/- 0.5
B-SMTAK3-015C	0.362 +/- 0.059	9.2 +/- 1.5
B-SMTAK3-058C/ 066C/076C	0.394 +/- 0.039	10.0 +/- 1.0
C-SMTAK3-015C	0.205 REF	5.2 REF
C-SMTAK3-058C/ 066C/076C	0.264 REF	6.7 REF
D	0.366 +/- 0.020	9.3 +/- 0.5
F	0.045 +/- 0.012	1.15 +/- 0.3
G	0.020 +/- 0.008	0.5 +/- 0.2
H	0.256 +/- 0.020	6.5 +/- 0.5
I	0.319 REF	8.1 REF
J	0.295 +0.059/- 0.020	7.5 +1.5/- 0.5
K	0.075 +/- 0.020	1.9 +/- 0.5

Part Numbering System



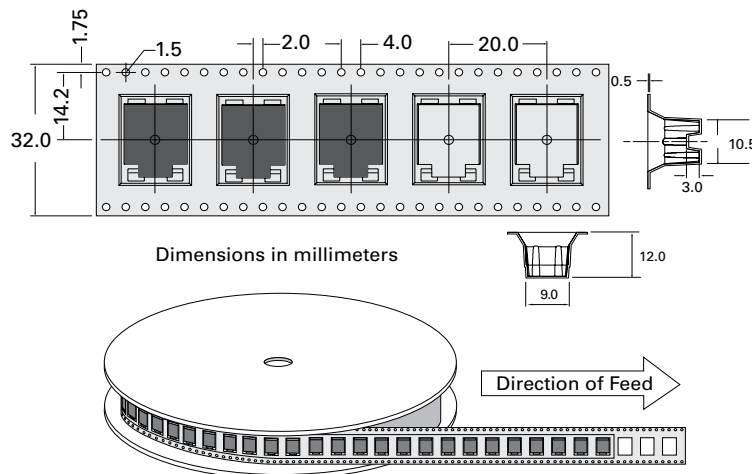
Part Marking System



Packing Options

Part Number	Component Package	Packing Mode	Quantity
SMTAK3-xxxC	SMTAK Package	Tape & Reel – 32mm/13" tape	200
SMTAK3-xxxC-B	SMTAK Package	Bulk	100

Tape and Reel Specification



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