

Features

- 1kV peak pulse voltage capability at 1.2/50-8/20μs@2Ω waveform
- Low clamping capability **nCLAMP™**
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

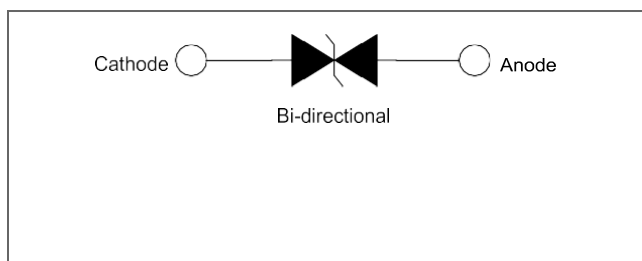
RoHS
Compliant



Applications

This low clamp TVS series are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom electronic applications.

Function Diagram



Maximum Ratings and Thermal Characteristics (T _A =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak pulse voltage at 1.2/50μs-8/20μμ@2Ω waveform	V _{PP}	1000	V
Power Dissipation on Infinite Heat Sink at T _L =50°C	P _D	5.0	W
Operating Temperature Range	T _J	-55 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
	Pending

Characteristics (T = 25°C unless otherwise noted)

Part Number	Key Marking	V _R	V _{BR} @ I _T		I _T	I _R @ V _R	V _H	V _C @ V _{pp}	V _{pp}
		V	MIN(V)	MAX(V)	mA	MAX(μA)	TYP(V)	MAX(V)	V
Bi-Polar									
SMB05K15CA	F15Cn	15	16.7	18.5	1	1	NA	32	1000
☆SMB05K18CA-n	F18Cn	18	20.0	22.3	1	1	18	37	1000
☆SMB05K20CA-n	F20Cn	20	22.0	24.5	1	1	19	40	1000
☆SMB05K30CA-n	F30Cn	30	33.0	38.0	1	1	25	48	1000
☆SMB05K58CA-n	F58Cn	58	60.0	72.0	1	1	45	85	1000

Surge waveform: 1.2/50μs-8/20μs@2Ω

V_R: Stand-off voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown voltage

I_T: Testing current

I_R: Reverse leakage current

V_H: Holding voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified V_{PP}

☆(-n): Products with negative resistance



Ratings and Characteristic Curves (T = 25°C unless otherwise noted)

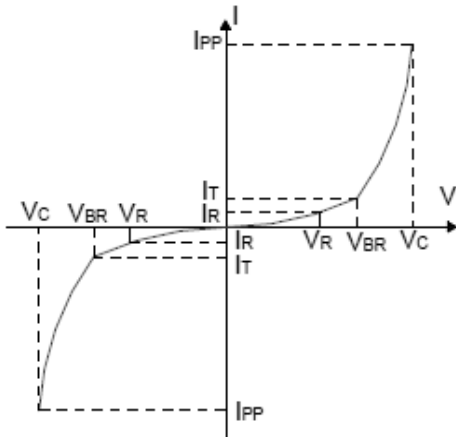


Figure 1. I-V Curve Characteristics

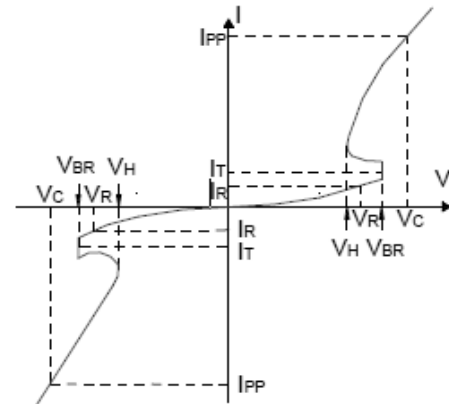


Figure 2. I-V Curve Characteristics with negative resistance

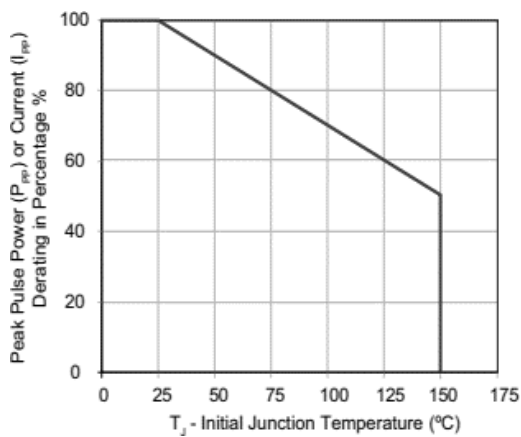


Figure 3. Peak pulse power derating curve

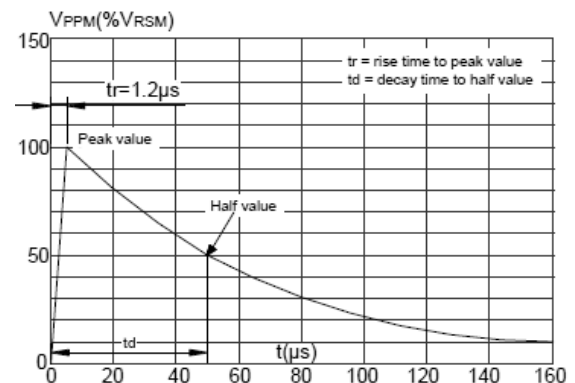


Figure 4. Pulse waveform

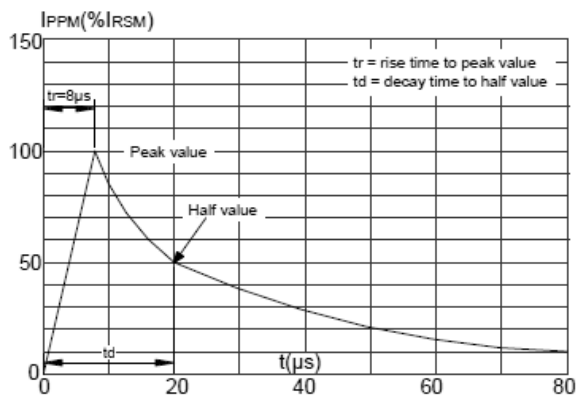
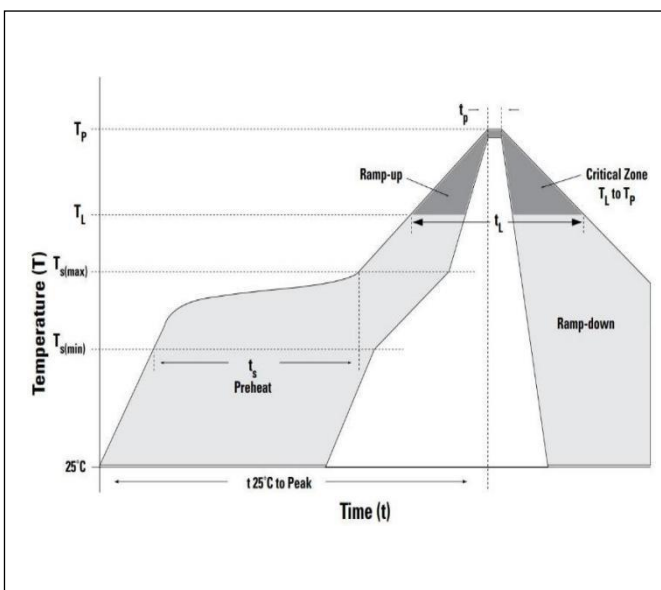


Figure 5. Pulse waveform

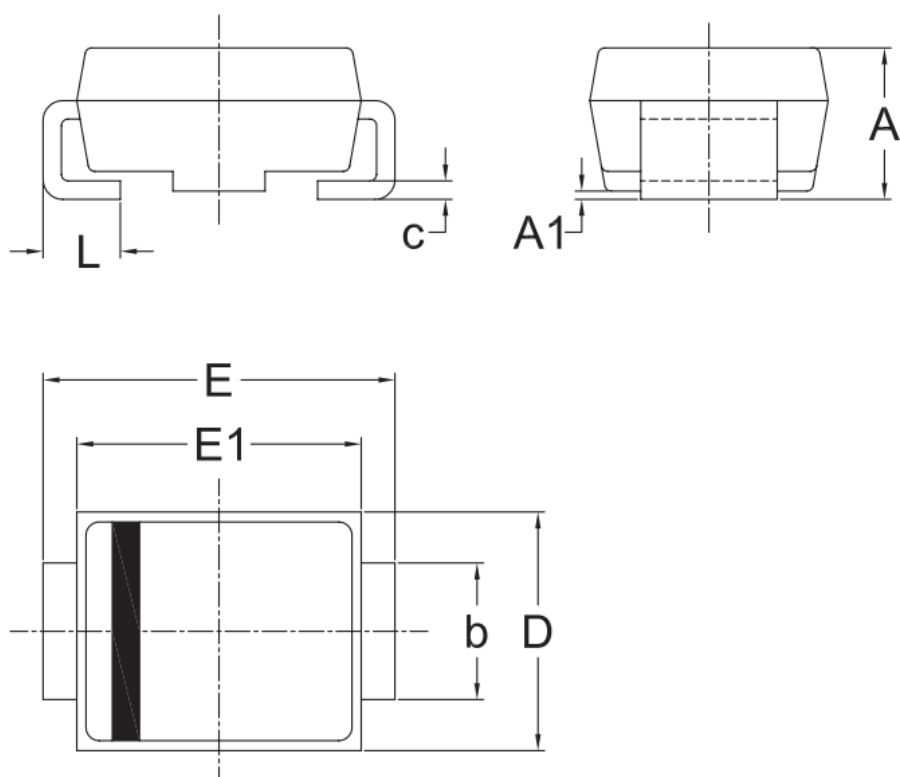
Soldering Parameters

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_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

Soldering profile

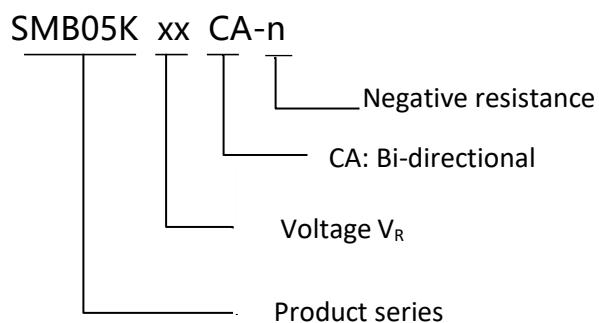


Dimensions

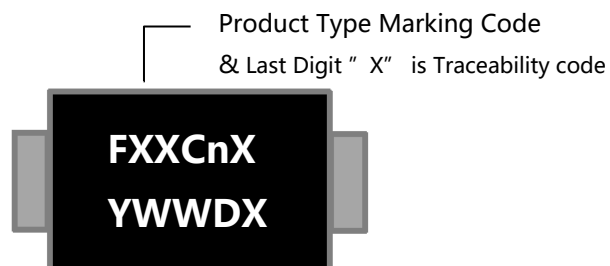


SMB封装尺寸									
unit		A	A1	b	c	D	E	E1	L
mm	max	2.61	0.3	2.3	0.305	3.94	5.7	4.7	1.52
	min	1.99	0.1	1.7	0.15	3.3	5.05	4.06	0.76

Part Numbering



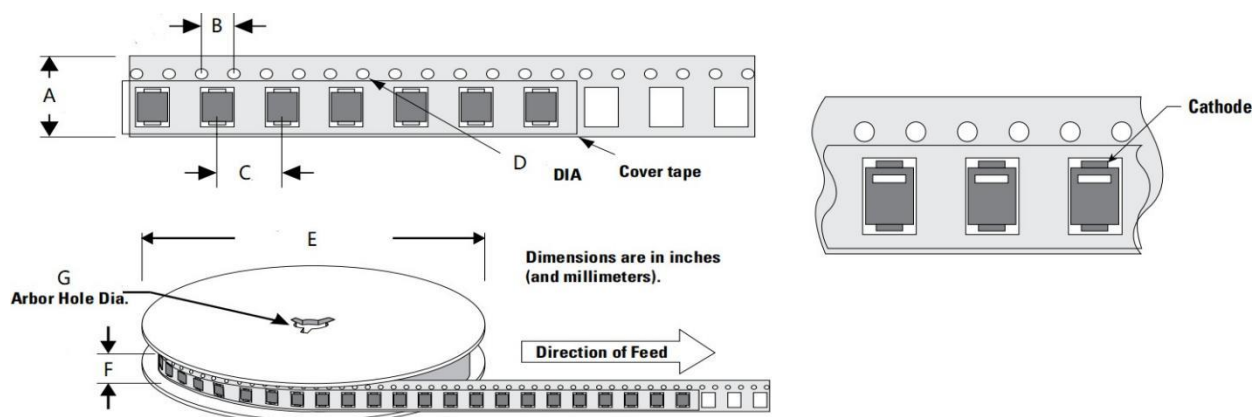
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
SMB05KxxCA(-n)	DO-214AA	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	16.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	19.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	16-Feb-2024
1.1	Update SMB05K58CA-n VBR	23-Dec-2024
1.2	Series Update	14-Mar-2025