Features

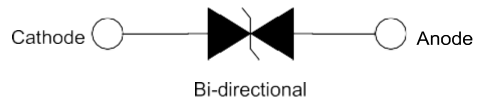
RoHS Compliant

- 1KA peak pulse power capability at 8/20μs 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

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 Power Dissipation at T_A=25°C by 10/1000μs Waveform (Fig.2	P_{PPM}	1000	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	6.5	W
Operating Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Peak pulse current at 8/20μs waveform	Ipp	1000	A

AGENCY	AGENCY FILE NUMBER
UL	Pending

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

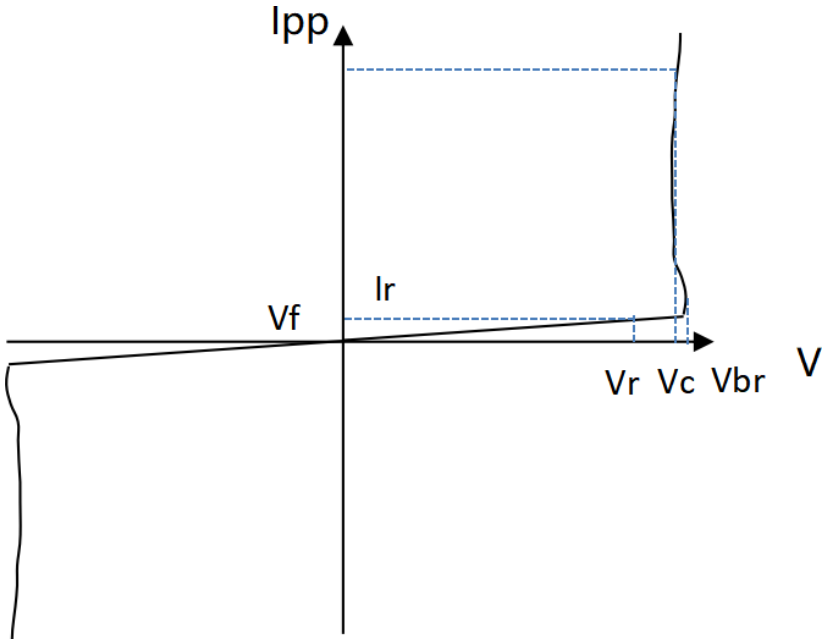
Characteristics (T =25°C unless otherwise noted)

Part Number (Bi)	Marking	V_{RWM}	V_{BR} @ I_T		I_T	V_C @ V_{PP1}	V_{PP1}	I_R @V_{RWM}
		(V)	(V)min	(V)max	(mA)	(V)max	(V)	(μA) max
SMBF15CA-n	BF015n	15	16.7	18.5	1	32	2000	1
SMBF16CA-n	BF016n	16	17.8	19.7	1	34	2000	1
SMBF18CA-n	BF018n	18	20.0	22.3	1	37	2000	1
SMBF20CA-n	BF020n	20	22.0	24.5	1	40	2000	1
SMBF30CA-n	BF030n	30	32.0	37.0	1	65	2000	1
SMBF33CA-n	BF033n	33	36.0	41.0	1	70	2000	1
SMBF36CA-n	BF036n	36	39.5	45.0	1	72	2000	1
SMBF40CA-n	BF040n	40	44.0	49.1	1	75	2000	1

NOTES:

1、$V_{PP}1$ at TA=25ºC by 8/20μs Waveform

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

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

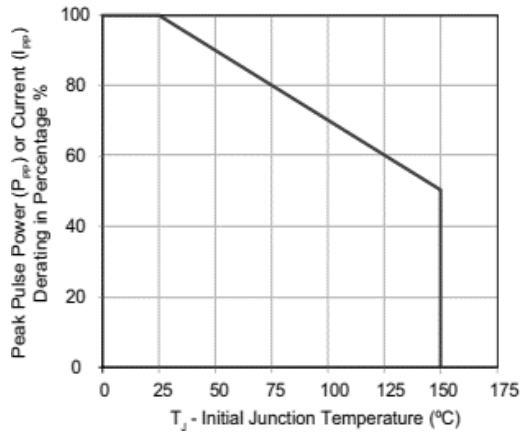


Figure 1. Peak pulse power derating curve

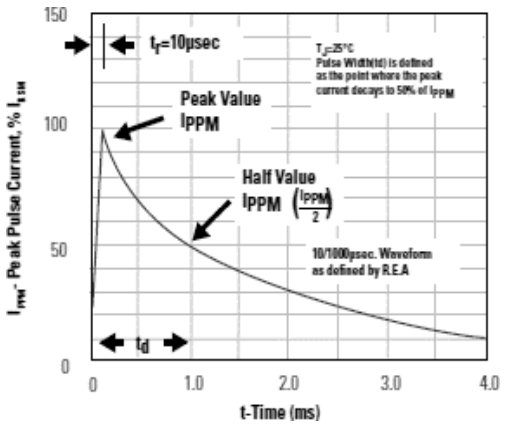


Figure2. Pulse waveform

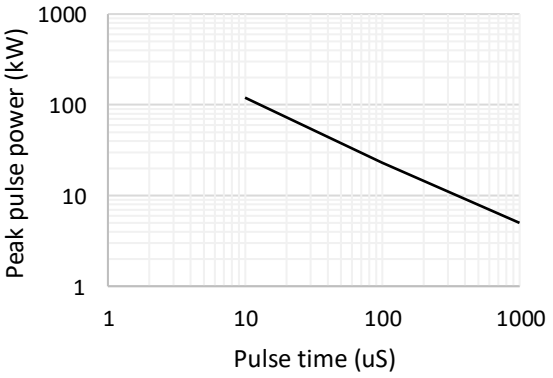


Figure 3. Peak pulse power rating curve

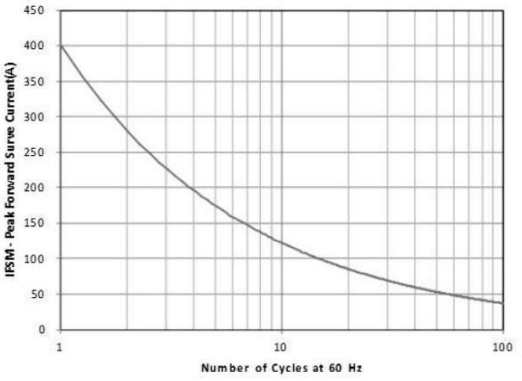
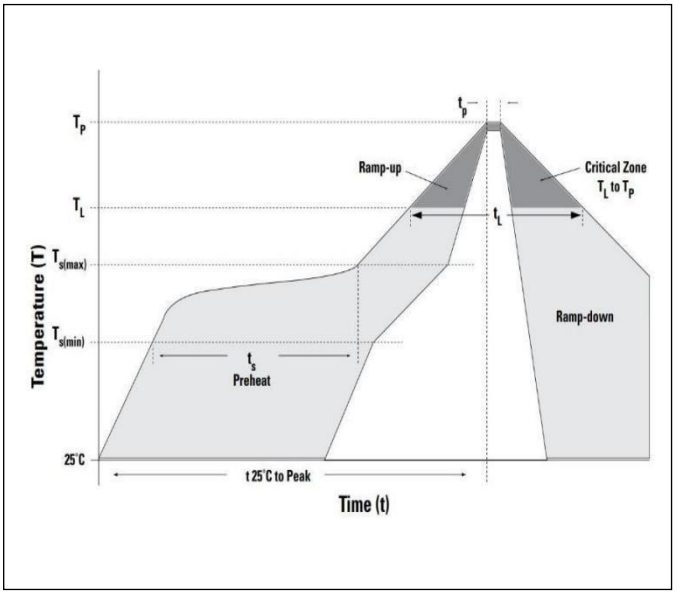


Figure 4. Maximum non-repetitive surge current

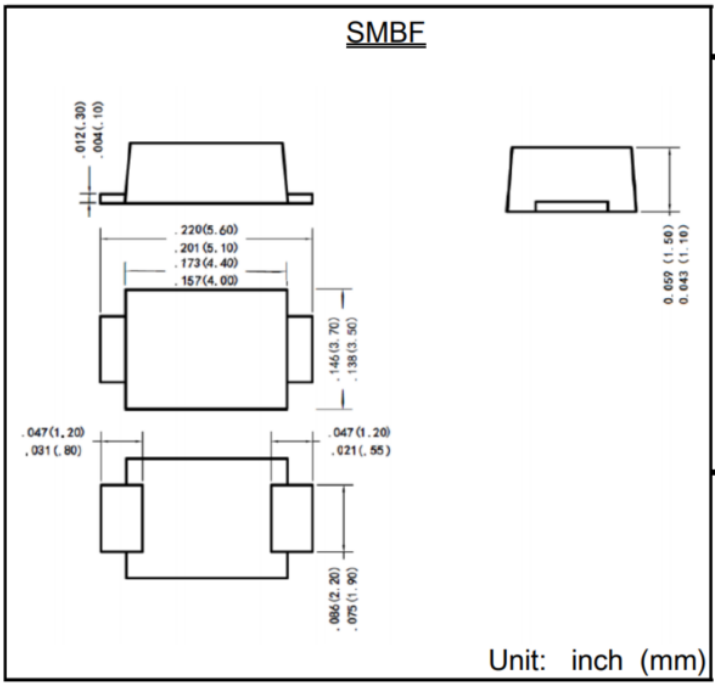
Soldering Parameters

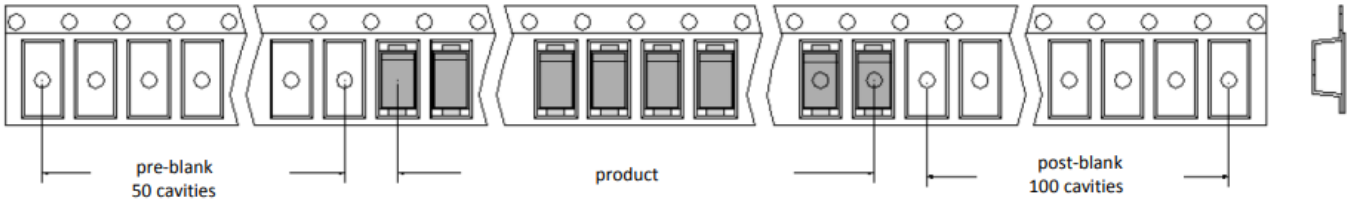
Reflow Condition		Lead–free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (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

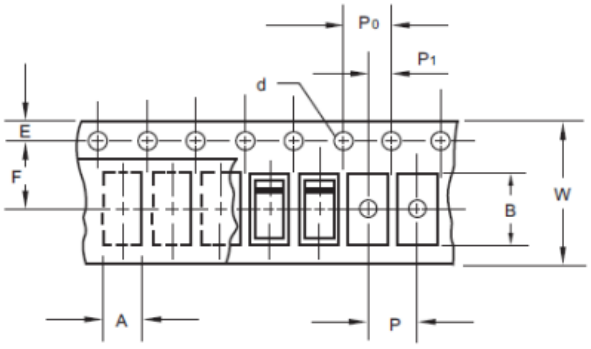
Soldering profile

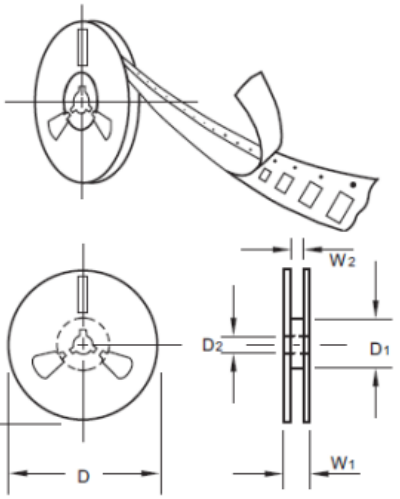


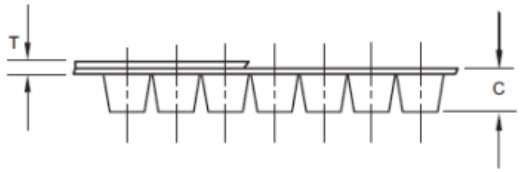
Dimensions











REF	mm
A	3.80±0.15
B	5.75±0.15
C	1.45±0.15
d	1.55±0.10
D	330.0±2.0
D1	75±2.0
D2	13.5±1.0
E	1.75±0.10
F	5.50±0.05
P	8.00±0.10
P0	4.00±0.10
P1	2.00±0.10
T	0.25±0.10
W	12.00±0.15
W1	18.10±1.5
W2	13.5±1.5

Part Numbering

SMBF xx xx - n

- Low clamp
- CA: Bi-directional
- Voltage V_R
- Product series

Part Marking

Packing

Part number	Package name	Small packing quantity	Packing method
SMBFXXXX-n	SMBF	5	Tape & Reel

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	5-Sep-2023
1.1	Product Type Extension	5-Mar-2024