

Surface Mount Transient Voltage Suppressors (TVS)

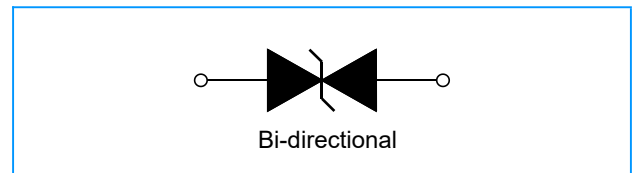
SM2KBF Series
6.5 to 40V
SMBF

Features

- ◆ Excellent clamping capability.
- ◆ Low profile package and low inductance.
- ◆ High peak pulse power capability at 1.2/50 μ s waveform.
- ◆ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ◆ High temperature soldering: 260 $^{\circ}$ C/40s at terminals.
- ◆ Plastic package has underwriters laboratory flammability 94V-0.
- ◆ For surface mounted applications in order to optimize board space.



Symbol



Absolute Maximum Ratings ($T_A=25^{\circ}$ C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}$ C
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}$ C
Steady State Power Dissipation at $T_L=75^{\circ}$ C	$P_{M(AV)}$	5.0	W
Peak Pulse Power Dissipation on 1.2/50 μ s Waveform	V_{PP}/I_{PP}	2KV/1KA	V/A

Electrical Characteristics ($T_A=25^{\circ}$ C)

Part Number	Marking	V_R	I_R @ V_R	V_{BR} @ I_T		I_T	V_C @ V_{PP} ①	V_{PP}/I_{PP}
		(V)	(μ A)	Min(V)	Max(V)	(mA)	Max(V)	(V/A)
SM2KBF6.5CA	2K6.5B	6.5	150	7.20	8.00	10	22	2KV/1KA
SM2KBF15CA	2K15B	15	1	16.7	18.5	1	32	2KV/1KA
SM2KBF18CA	2K18B	18	1	20.0	22.3	1	37	2KV/1KA
SM2KBF20CA	2K20B	20	1	22.0	24.5	1	40	2KV/1KA
SM2KBF30CA	2K30B	30	1	32.0	37.0	1	65	2KV/1KA
SM2KBF33CA	2K33B	33	1	36.0	41.0	1	70	2KV/1KA
SM2KBF36CA	2K36B	36	1	39.5	45.0	1	72	2KV/1KA
SM2KBF40CA	2K40B	40	1	44.0	49.1	1	75	2KV/1KA

① Surge wave :1.2-50us-8/20us (Meet IEC61000-4-5)

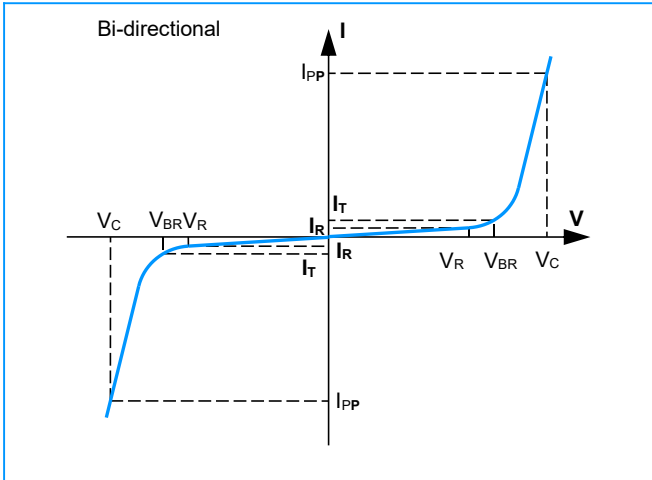
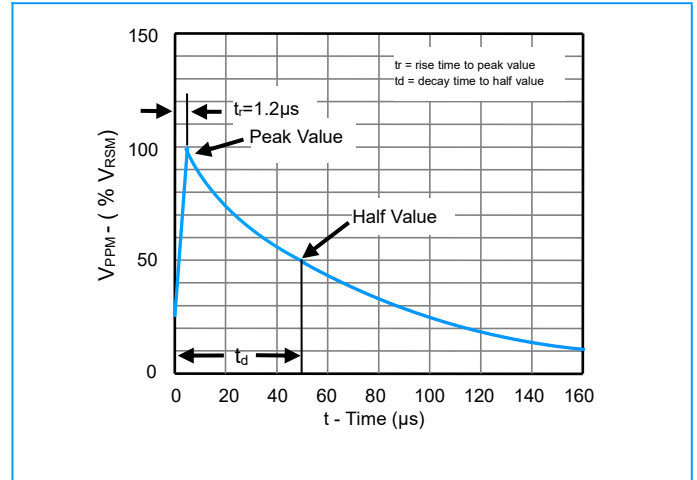
 V_R : Stand-off voltage -- Maximum voltage that can be applied.

 V_{BR} : Breakdown voltage.

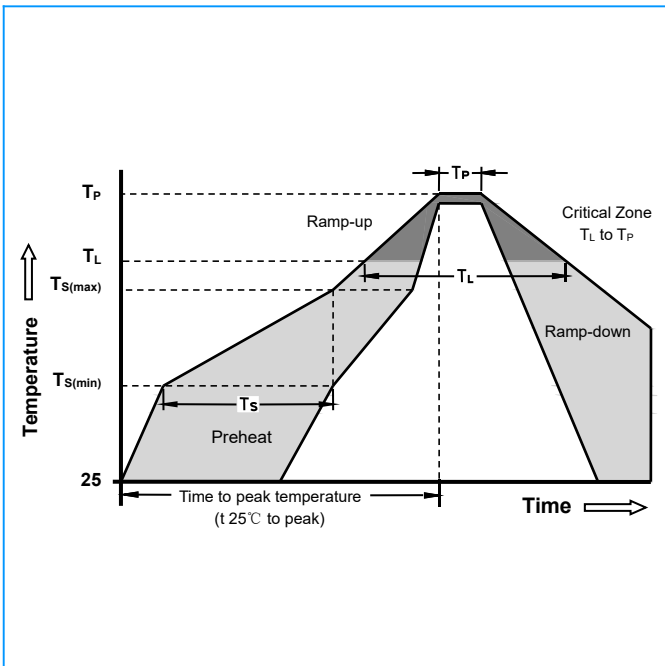
 V_C : Clamping voltage -- Peak voltage measured across the suppressor at a specified V_{PP} .

 I_R : Reverse leakage current.

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Ratings and V-I Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)
Fig. 1 - V-I Curve Characteristics

Fig. 2 - Pulse Waveform


Soldering Parameters



Reflow Condition		Pb-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 -180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	+217°C
	- Time (min to max) (T_L)	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

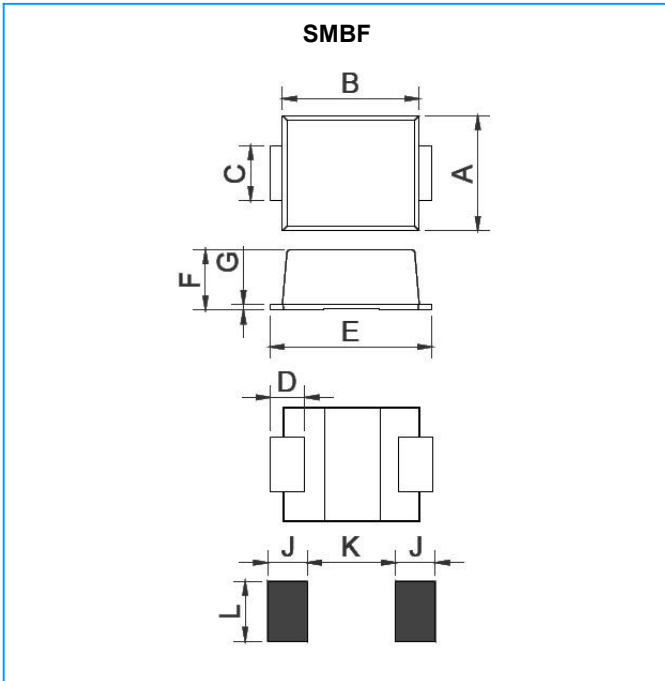
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Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.154	0.177	3.90	4.50
B	0.183	0.203	4.65	5.15
C	0.073	0.085	1.85	2.15
D	0.024	-	0.6	-
E	0.220	0.236	5.60	6.00
F	0.081	0.093	2.05	2.35
G	0.005	0.011	0.12	0.28
J	0.079	-	2.00	-
K	-	0.126	-	3.20
L	0.091	-	2.30	-

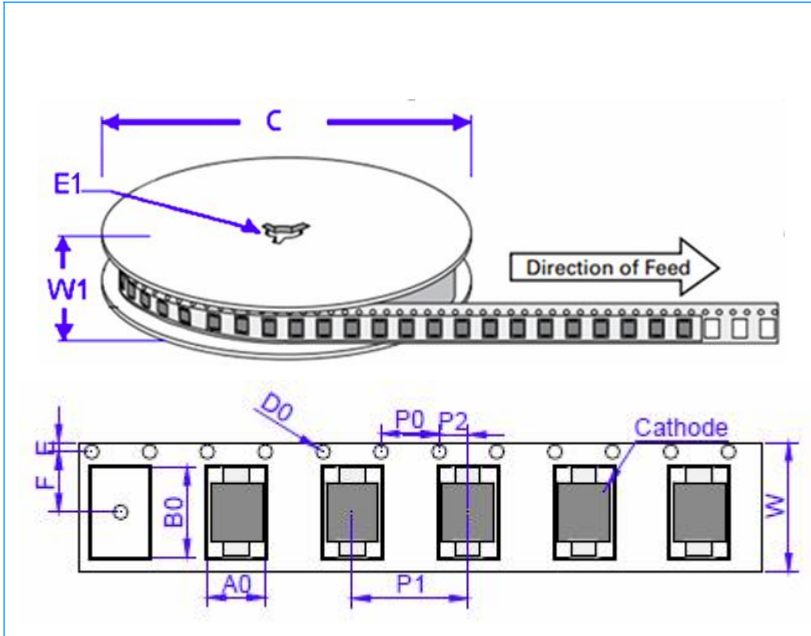
Marking



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Tape and Reel Specifications



Ref.	Dimensions	
	Millimeters	Inches
A0	4.50±0.3	0.177±0.012
B0	6.10±0.3	0.240±0.012
C	330.0	13.0
D0	1.55±0.1	0.061±0.004
E	1.75±0.2	0.069±0.008
E1	13.3±0.3	0.524±0.012
F	5.5±0.2	0.217±0.008
P0	4.00±0.2	0.157±0.008
P1	8.00±0.2	0.315±0.008
P2	2.00±0.2	0.079±0.008
W	12.0±0.2	0.472±0.008
W1	15.7±2.0	0.618±0.079

Packaging

Part Number	Outline	Reel	Per Carton	Reel Diameters
SM2KBFxxxCA	Taping	3000 pcs	48000 pcs	330 mm