

Surface Mount Transient Voltage Suppressors (TVS)

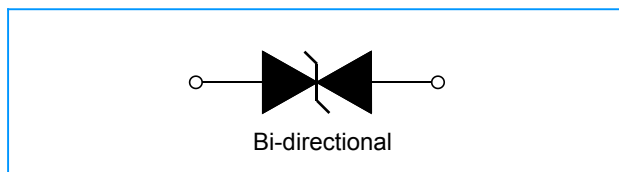
SM2KBFxxxCA Series

Features

- ◆ Excellent clamping capability.
- ◆ Low profile package and low inductance.
- ◆ High peak pulse power capability at 1.2/50μs waveform.
- ◆ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ◆ High temperature soldering: 260°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 ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$
Steady State Power Dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	5.0	W
Peak Pulse Power Dissipation on 1.2/50μs Waveform	V_{PP}	2000	V

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

Part Number	Marking	V_R	I_R @ V_R	V_{BR} @ I_T		I_T	V_C @ $V_{PP} \text{ ①}$	V_{PP} ①
Bi-directional		(V)	(μA)	Min(V)	Max(V)	(mA)	Max(V)	(V)
SM2KBF5.0CA	2K5.0B	5.0	300	6.40	7.10	10	20	2000
SM2KBF6.0CA	2K6.0B	6.0	250	6.50	7.40	10	20	2000
SM2KBF6.5CA	2K6.5B	6.5	150	7.20	8.00	10	22	2000
SM2KBF7.0CA	2K7.0B	7.0	100	7.70	8.60	10	22	2000
SM2KBF15CA	2K15B	15	1	16.7	18.5	1	32	2000
SM2KBF16CA	2K16B	16	1	17.8	19.7	1	34	2000
SM2KBF18CA	2K18B	18	1	20.0	22.3	1	37	2000
SM2KBF20CA	2K20B	20	1	22.0	24.5	1	40	2000
SM2KBF40CA	2K40B	40	1	44.0	49.1	1	75	2000

① Surge wave: meet IEC61000-4-5, 1.2/50us-8/20us, 20

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

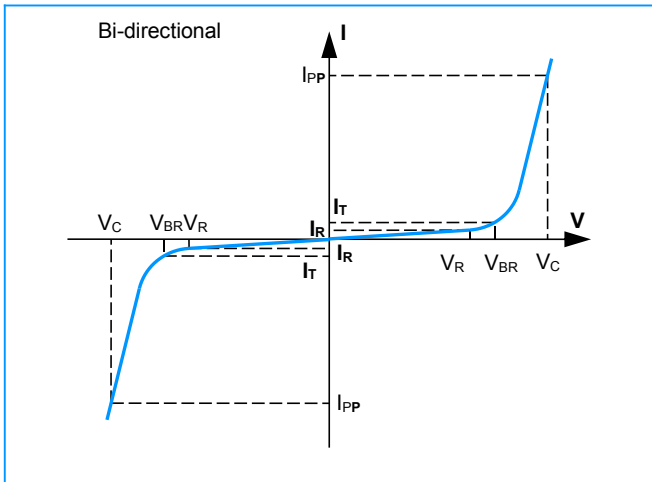
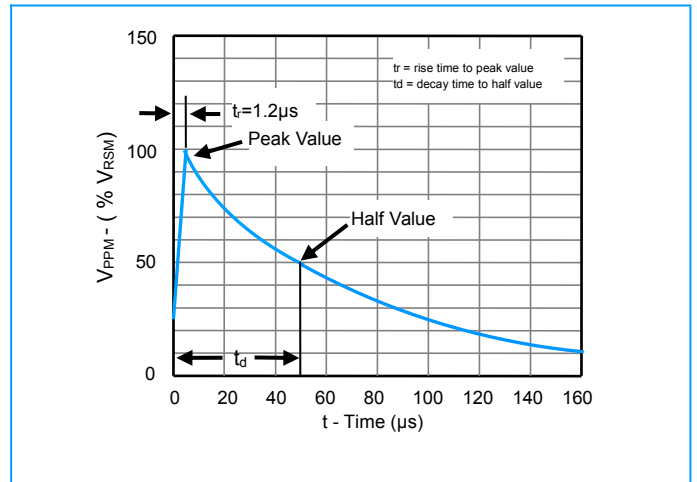
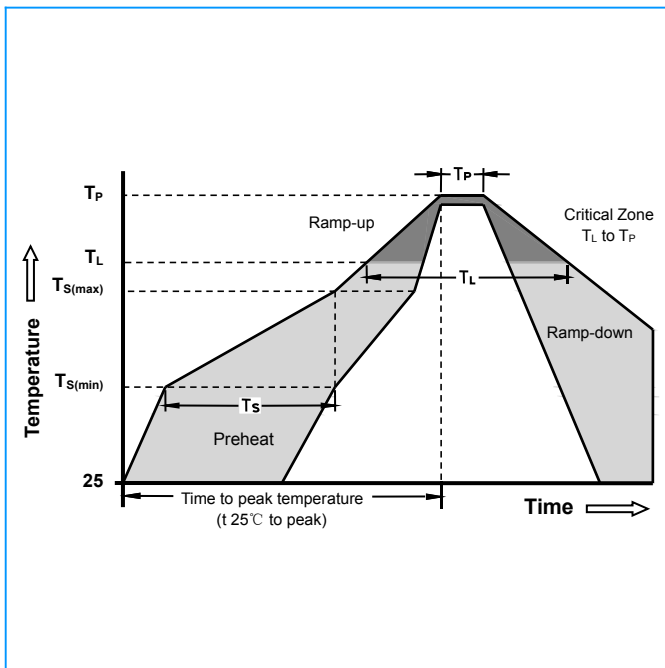


Fig. 2 - Pulse Waveform



Soldering Parameters

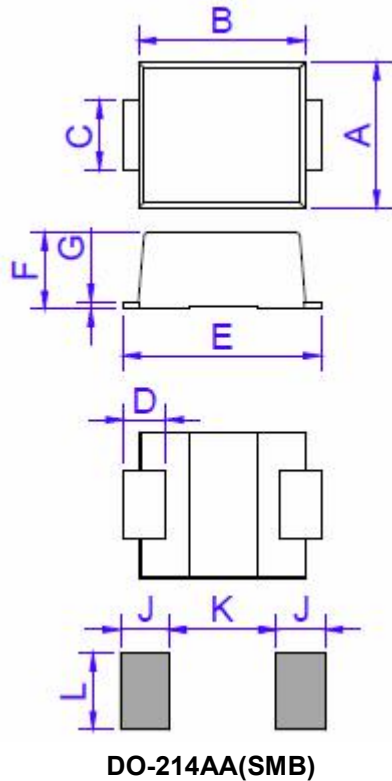


Reflow Condition		Pb-free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	+150°C
	-Temperature Max ($T_{S(max)}$)	+200°C
	- Time (min to max) (T_S)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (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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Package Mechanical Data



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.90	4.50	0.154	0.177
B	4.65	5.15	0.183	0.203
C	1.85	2.15	0.073	0.085
D	0.90	—	0.035	—
E	5.60	6.00	0.220	0.236
F	2.05	2.35	0.081	0.093
G	0.12	0.28	0.005	0.011
J	2.00	—	0.079	—
K	—	3.20	—	0.126
L	2.30	—	0.091	—

Marking

Socay Logo

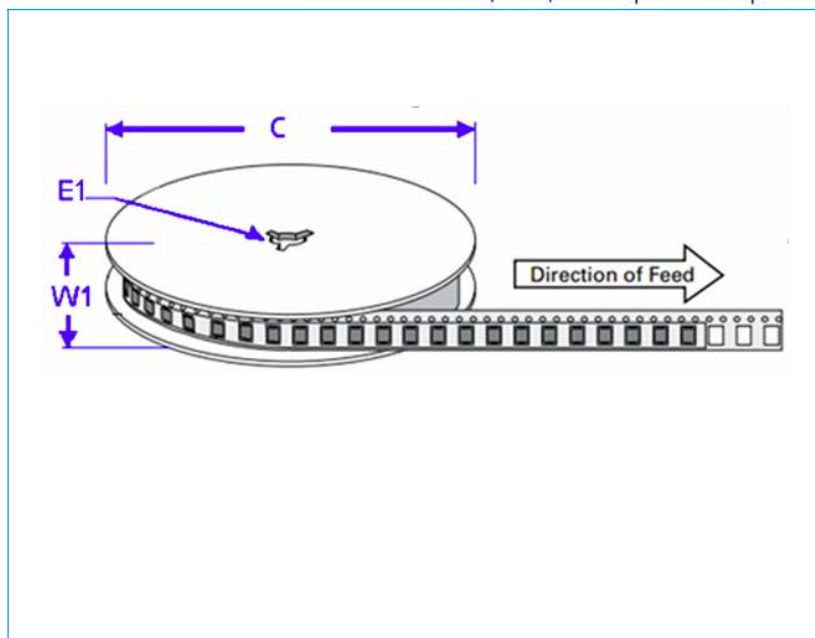


2K5.0B : Device Marking Code

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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