

DESCRIPTION:

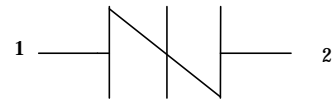
TSS-SMB series thyristors are a type of semi-conduct component. They are designed in applications, modems, telephones, line cards, answering machines, FAX machines, SLICs, T1/E1, xDSL, PBXs and more.

FEATURES:

- ✧ Lower capacitance
- ✧ Excellent capability of absorbing transient surge
- ✧ Quick response to surge voltage (ns Level)
- ✧ Eliminates overvoltage caused by fast rising transients
- ✧ Moisture sensitivity level: Level 1
- ✧ Non degenerative



SMB



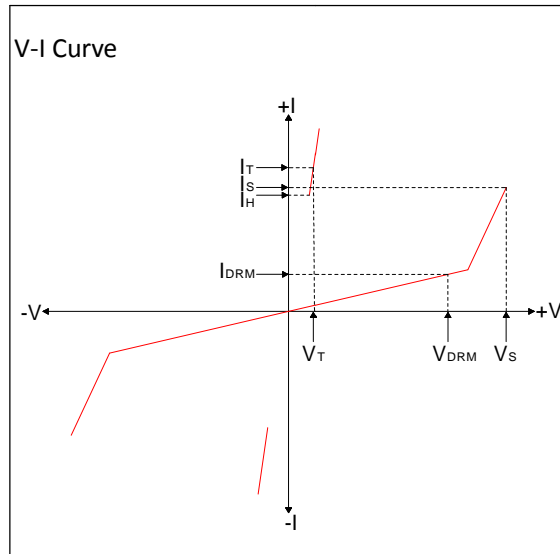
Symbol

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-60 to +150	$^\circ\text{C}$
Operating junction temperature range	T_j	-40 to +150	$^\circ\text{C}$
Repetitive peak pulse current	I_{PP}	80	A

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

Symbol	Parameter
V_{DRM}	Peak off-state voltage
I_{DRM}	Off-state current
V_S	Switching voltage
I_S	Switching current
V_T	On-state voltage
I_T	On-state current
I_H	Holding current
C_O	Off-state capacitance



ELECTRICAL CHARACTERISTICS (TA=25°C, continued)

Part Number	I _{DRM} @V _{DRM}		V _S ^① @I _S		V _T @I _T		I _H	C _O ^②
	μA	V	V	mA	V	A	mA	pF
	max		max	max	max	max	min	max
BEP0080SB	5	6	25	800	4	2.2	30	45
BEP0080SB-MC	5	6	25	800	4	2.2	30	30
BEP0220SB	5	18	30	800	4	2.2	30	100
BEP0220SB-MC	5	18	30	800	4	2.2	30	50
BEP0300SB	5	25	40	800	4	2.2	30	100
BEP0300SB-MC	5	25	40	800	4	2.2	30	50
BEP0640SB	5	58	77	800	4	2.2	120	80
BEP0640SB-MC	5	58	77	800	4	2.2	120	40
BEP0720SB	5	66	87	800	4	2.2	120	75
BEP0720SB-MC	5	66	87	800	4	2.2	120	40
BEP0900SB	5	75	98	800	4	2.2	120	70
BEP0900SB-MC	5	75	98	800	4	2.2	120	40
BEP1100SB	5	90	130	800	4	2.2	120	70
BEP1100SB-MC	5	90	130	800	4	2.2	120	35
BEP1300SB	5	120	160	800	4	2.2	120	60
BEP1300SB-MC	5	120	160	800	4	2.2	120	35
BEP1500SB	5	140	180	800	4	2.2	120	55
BEP1500SB-MC	5	140	180	800	4	2.2	120	35
BEP1800SB	5	170	220	800	4	2.2	120	50
BEP1800SB-MC	5	170	220	800	4	2.2	120	35
BEP2300SB	5	190	260	800	4	2.2	120	50
BEP2300SB-MC	5	190	260	800	4	2.2	120	30
BEP2600SB	5	220	300	800	4	2.2	120	45
BEP2600SB-MC	5	220	300	800	4	2.2	120	30
BEP3100SB	5	275	350	800	4	2.2	120	45
BEP3100SB-MC	5	275	350	800	4	2.2	120	25
BEP3500SB	5	320	400	800	4	2.2	120	45
BEP3500SB-MC	5	320	400	800	4	2.2	120	25
BEP3800SB	5	340	450	800	4	2.2	120	45
BEP3800SB-MC	5	340	450	800	4	2.2	120	25
BEP4200SB	5	340	450	800	4	2.2	120	45
BEP4200SB-MC	5	340	450	800	4	2.2	120	25

ELECTRICAL CHARACTERISTICS (TA=25°C, continued)

Part Number	I _{DRM} @V _{DRM}		V _S ^① @I _S		V _T @I _T		I _H	C _O ^②
	μA	V	V	mA	V	A	mA	pF
	max		max	max	max	max	min	max
BEP0080SC	5	6	25	800	4	2.2	30	80
BEP0080SC-MC	5	6	25	800	4	2.2	30	45
BEP0220SC	5	18	30	800	4	2.2	30	80
BEP0220SC-MC	5	18	30	800	4	2.2	30	45
BEP0300SC	5	25	40	800	4	2.2	30	80
BEP0300SC-MC	5	25	40	800	4	2.2	30	45
BEP0640SC	5	58	77	800	4	2.2	120	80
BEP0640SC-MC	5	58	77	800	4	2.2	120	45
BEP0720SC	5	66	87	800	4	2.2	120	75
BEP0720SC-MC	5	66	87	800	4	2.2	120	40
BEP0900SC	5	75	98	800	4	2.2	120	75
BEP0900SC-MC	5	75	98	800	4	2.2	120	40
BEP1100SC	5	90	130	800	4	2.2	120	75
BEP1100SC-MC	5	90	130	800	4	2.2	120	40
BEP1300SC	5	120	160	800	4	2.2	120	75
BEP1300SC-MC	5	120	160	800	4	2.2	120	40
BEP1500SC	5	140	180	800	4	2.2	120	70
BEP1500SC-MC	5	140	180	800	4	2.2	120	35
BEP1800SC	5	170	220	800	4	2.2	120	70
BEP1800SC-MC	5	170	220	800	4	2.2	120	35
BEP2300SC	5	190	260	800	4	2.2	120	70
BEP2300SC-MC	5	190	260	800	4	2.2	120	35
BEP2600SC	5	220	300	800	4	2.2	120	70
BEP2600SC-MC	5	220	300	800	4	2.2	120	35
BEP3100SC	5	275	350	800	4	2.2	120	65
BEP3100SC-MC	5	275	350	800	4	2.2	120	30
BEP3500SC	5	320	400	800	4	2.2	120	65
BEP3500SC-MC	5	320	400	800	4	2.2	120	30
BEP3800SC	5	340	450	800	4	2.2	120	65
BEP3800SC-MC	5	340	450	800	4	2.2	120	30
BEP4200SC	5	340	450	800	4	2.2	120	65
BEP4200SC-MC	5	340	450	800	4	2.2	120	30

ELECTRICAL CHARACTERISTICS (TA=25°C, continued)

Part Number	I _{DRM} @V _{DRM}		V _S ^① @I _S		V _T @ I _T		I _H	C _O ^②
	μA	V	V	mA	V	A	mA	pF
	max		max	max	max	max	min	max
BEP0080SD	5	6	25	800	4	2.2	50	150
BEP0640SD	5	58	77	800	4	2.2	50	150
BEP0720SD	5	65	87	800	4	2.2	50	150
BEP0900SD	5	75	98	800	4	2.2	50	140
BEP1100SD	5	90	130	800	4	2.2	50	110
BEP1300SD	5	120	160	800	4	2.2	50	100
BEP1500SD	5	140	180	800	4	2.2	50	90
BEP1800SD	5	170	220	800	4	2.2	50	90
BEP2300SD	5	190	260	800	4	2.2	50	80
BEP2600SD	5	220	300	800	4	2.2	50	70
BEP3100SD	5	275	350	800	4	2.2	50	60
BEP3500SD	5	320	400	800	4	2.2	50	60
BEP3800SD	5	340	450	800	4	2.2	50	60
BEP4200SD	5	400	520	800	4	2.2	100	35

 ① V_s is measured at 100KV/s

 ② Off-state capacitance is measured in V_{DC}=2V, V_{RMS}=1V, f=1MHz

SURGE RATINGS

Series	I _{PP} (A) min			
	2×10us	8×20us	10×360us	10×1000us
B	250	250	125	80
C	500	400	175	100
D	1000	800	---	200

ORDERING INFORMATION

BEP BORN'S Semiconductor Surge Arrester	008 Median Voltage 0:Bi-direction	0	S Package type	B - MC Low Capacitor Surge Ratings : B: 4 KV(10/700us) C: 6 KV(10/700us) D:10 KV(10/700us)
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SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

FIG.1: $t_r \times t_d$ pulse waveform

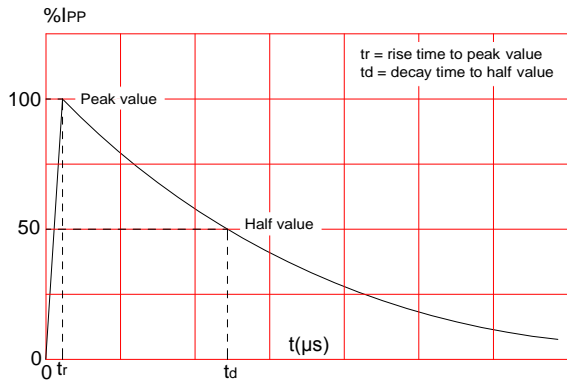


FIG.2: Reflow condition

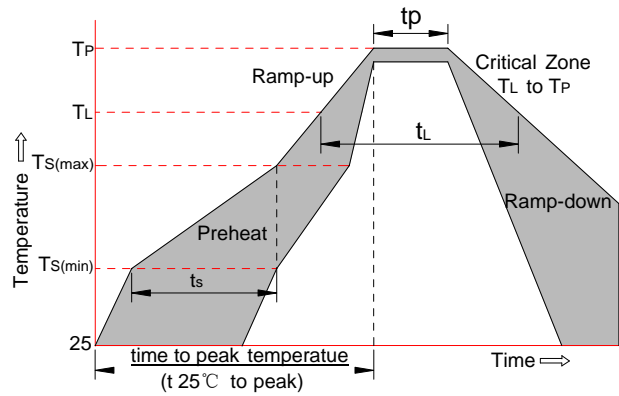


FIG.3: Normalized V_s change vs. junction temperature

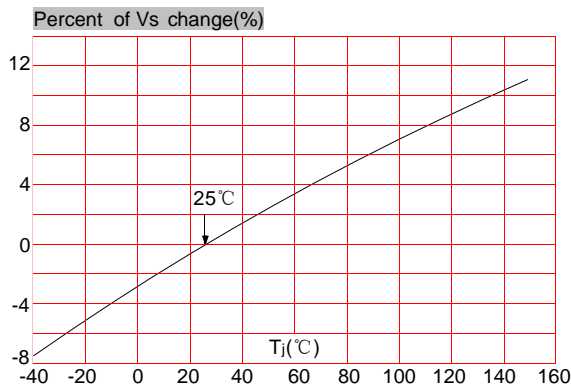
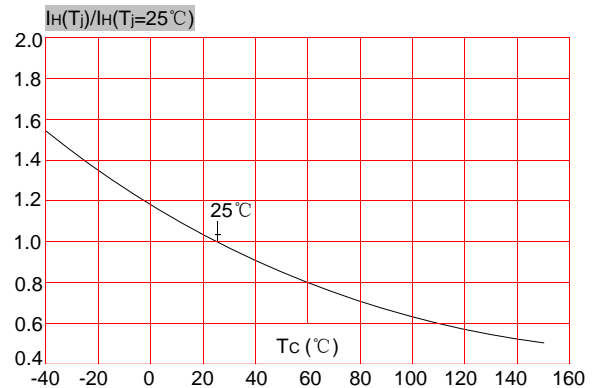
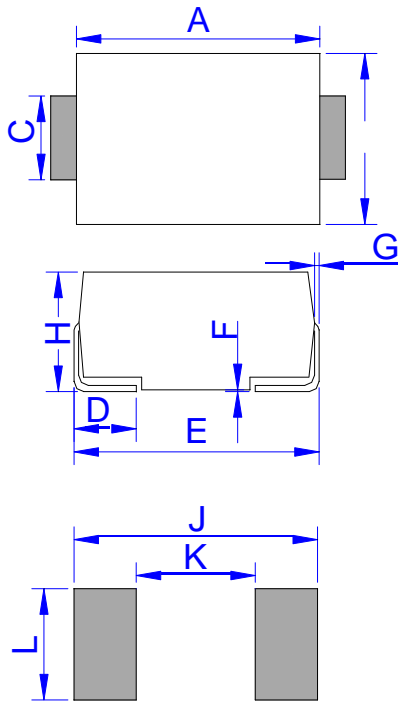


FIG.4: Normalized DC holding current vs. case temperature



PACKAGE MECHANICAL DATA



DO-214AA (SMB)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	

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