MBS-TB120S/SA~TB250S/SA
SURGE SUPPRESSOR BRIDGE

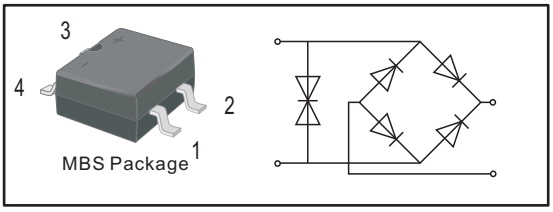
FEATURES

- Lead Free Finish/RoHS Compliant
- Green Molding Compound (No Halogen and Antimony)
- Large withstanding surge current capability : 200A/220A (@8/20μs)
- Lower clamping voltage and excellent performance on ringing waves testing.
- Glass Passivated Chip Junction
- High Surge Current Capability
- Designed for Surface Mount Application

PINNING

PIN	DESCRIPTION
1	Input Pin (~)
2	Input Pin (~)
3	Output Anode (+)
4	Output Cathode (-)

MECHANICAL DATA
- Case: MBS
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 100mg / 0.0035oz



Maximum Ratings and Thermal Characteristics(TA = 25°C unless otherwise specified)
Ratings at 25 °C ambient temperature unless otherwise specified.
Single phase half-wave 60 Hz, resistive or inductive load, for capacitive load current derate by 20 %.

Parameter of Bridge Rectifier	Symbols	TB120S	TB240S	TB250S	TB120SA	TB240SA	TB250SA	Units
Average Rectified Output Current at T_c = 125 °C	I_O	1.0						A
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)	I_{FSM}	35						A
Maximum Forward Voltage at 1.0 A	V_F	1.1						V
Maximum DC Reverse Current at Rated DC Blocking Voltage (@VR=1000V) @T_A=25 °C / @T_A=125 °C	I_R	5 40						μA
Typical Junction Capacitance (f=1MHz,4V DC)	C_j	13						pF
Typical Thermal Resistance (Note1)	$R_{\theta JA}$ $R_{\theta JC}$	80 28						°C/W
Operating and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150						°C

Note: 1. Mounted on glass epoxy PC board with 4×1.5"×1.5" (3.81×3.81 cm) copper pad.

Parameter of TVS	Symbol	TB120S	TB240S	TB250S	TB120SA	TB240SA	TB250SA	Unit
Maximum allowable continuous AC voltage at 50-60Hz	V_{RMS}	155	310	380	155	310	380	V
Breakdown voltage @ 1mA	V_{BR}	237~263	492~543	551~609	237~263	492~543	551~609	V
Maximum allowable continuous DC voltage	V_{DC}	220	440	490	220	440	490	V
Maximum allowable clamping voltage @ 8/20us(Fig 10)	V_C	350	700	850	350	700	850	V
Maximum peak current (8/20μs@2Ω)(Fig 9)	I_{peak}	200			220			A
Peak Pulse Current on 10/1000 us waveform (Note 2, Fig 7)	I_{PPM}	See Table 1						A
Operating and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150						°C

Table 1

Type	Typ. Clamp Voltage V_C @ I_{PP}(V)	Peak Pulse Current@10/1000us I_{PP}(A)
TB120S	290	2.2
TB240S	630	1.2
TB250S	680	0.9
TB120SA	290	2.6
TB240SA	630	1.6
TB250SA	680	1.3

NOTE2:Non-repetitive current pulse, per Fig.8 and derated above T_A = 25℃ per Fig. 7.

Fig.1 Average Rectified Output Current Derating Curve

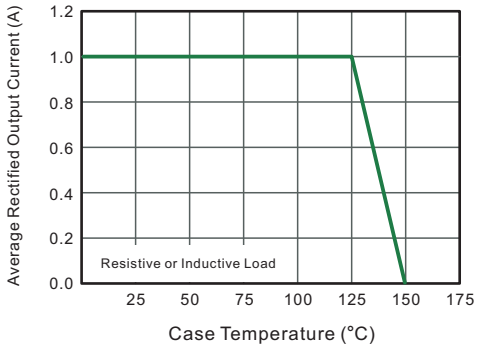


Fig.2 Typical Reverse Characteristics

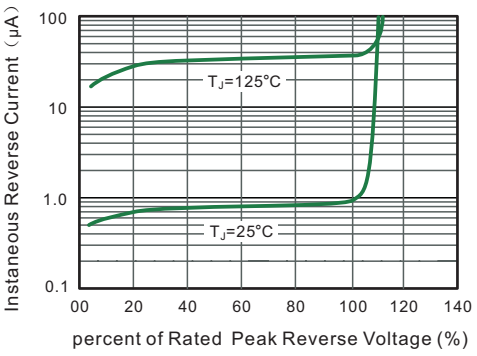


Fig.3 Typical Instaneous Forward Characteristics

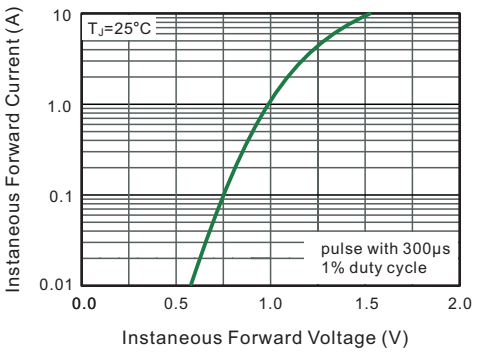


Fig.4 Typical Junction Capacitance

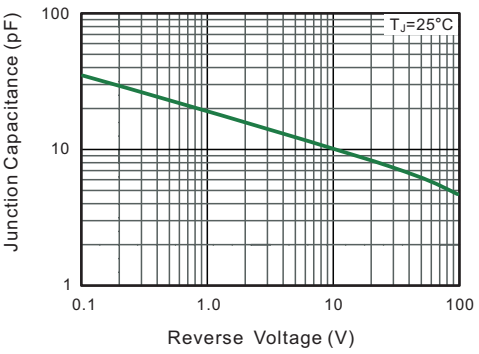


Fig.5 Maximum Non-Repetitive Peak Forward Surage Current

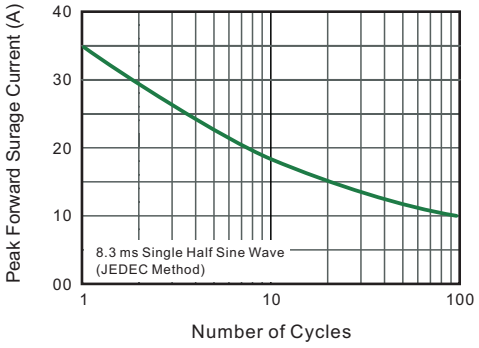


Fig.6 Peak Pulse Power Rating Curve

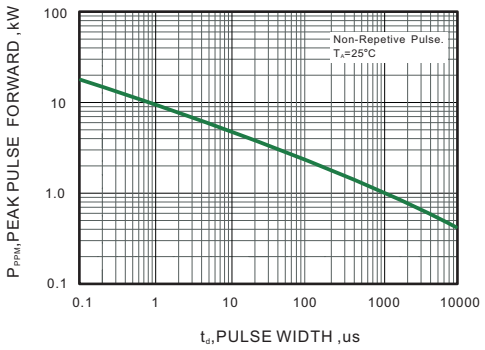


Fig.7 Forward Current Derating Curve

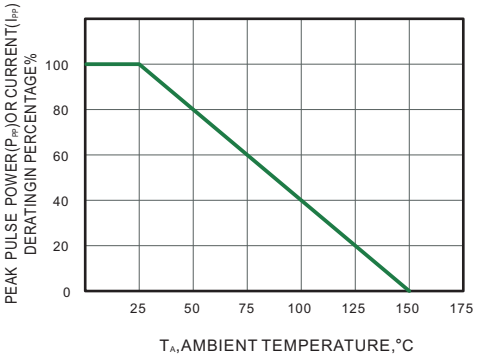


Fig.8 Pulse Waveform

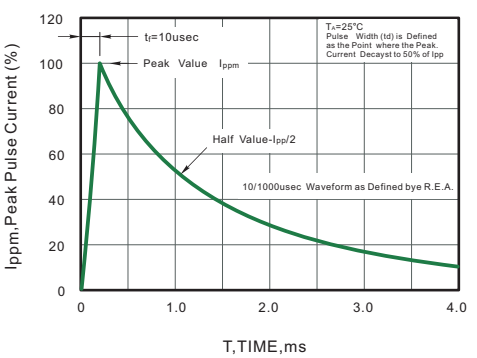


Fig.9 Maximum peak current

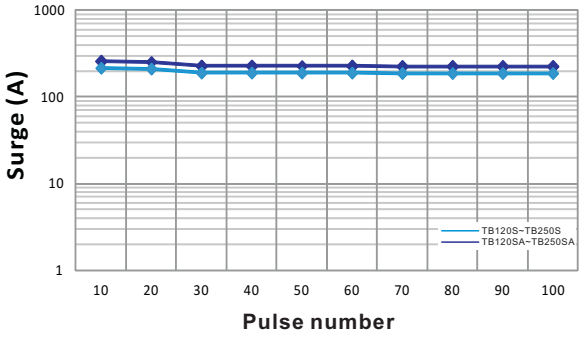


Fig.10 V/I Curve

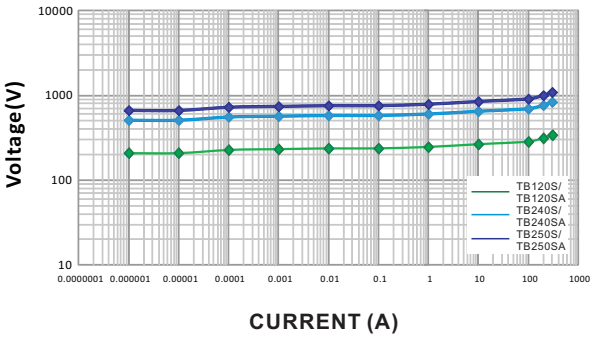
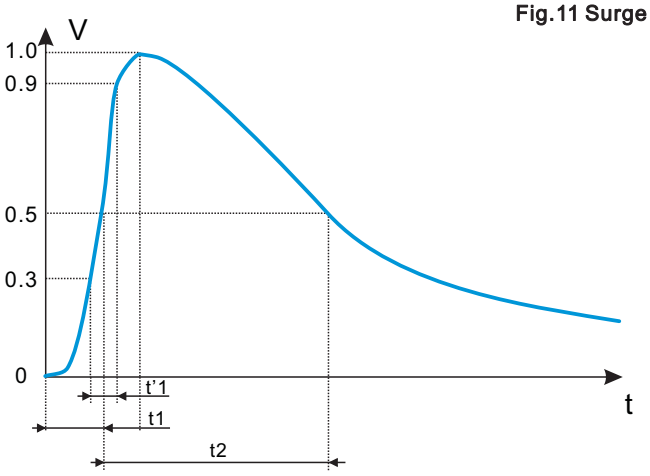


Fig.11 Surge Waveform

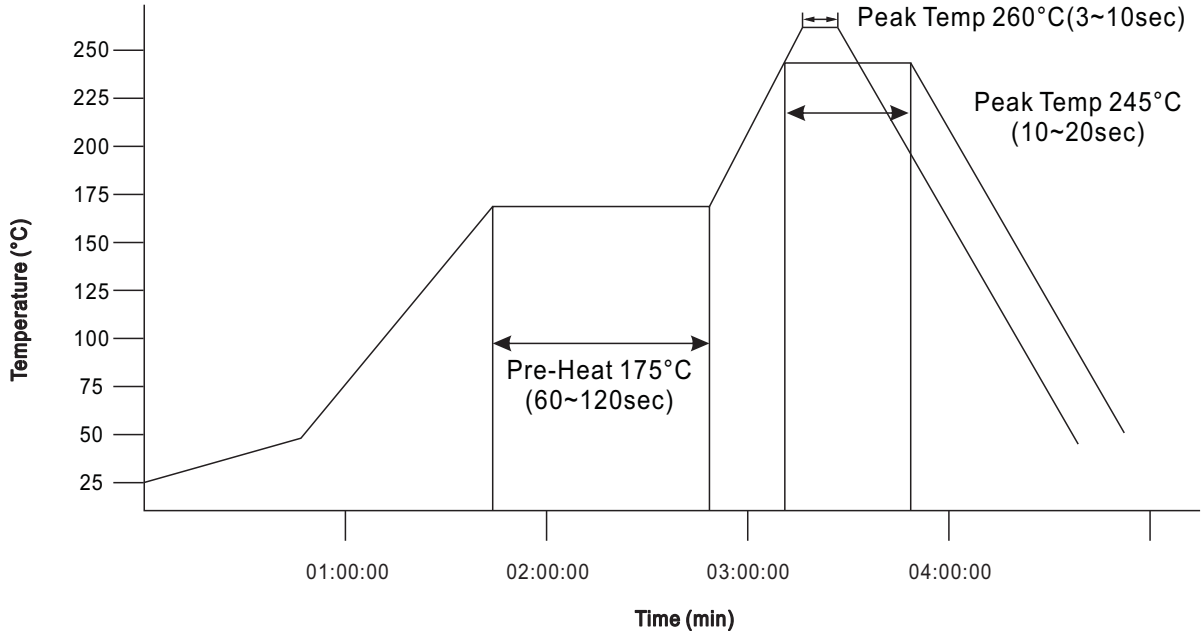


IEC61000-4-5 Standards

SEVERITY LEVEL	T1(=1.67t'1)	T2
1	10us	1000us
2	8us	20us

8/20us waveform current

Fig.12 The IR reflow and temperature of soldering for Pb free process

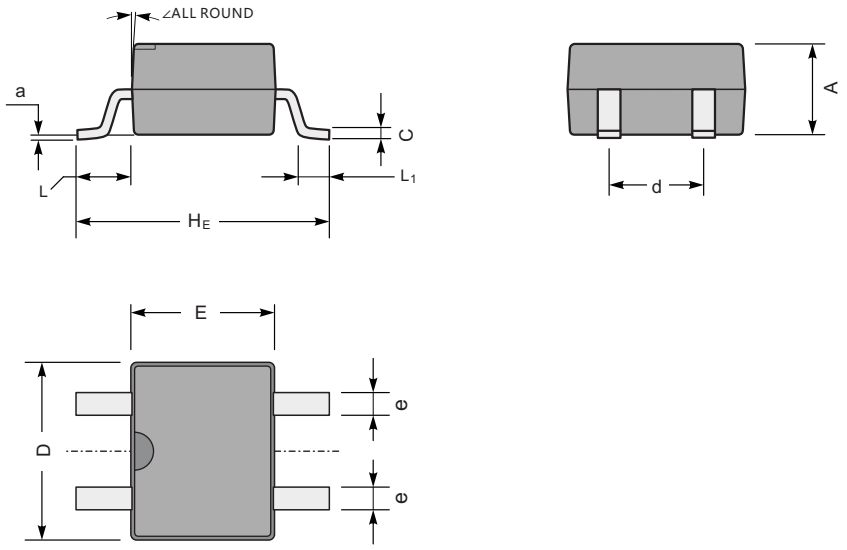


IR reflow Pb free process suggestion profile:

(1) Ramp-up rate (217℃ to peak) +3℃/second max.
(2) Temp. maintain at 175±25 180seconds max.
(3) Temp. maintain above 217℃ 60~150 seconds
(4) The peak temperature must be at least 260℃, the time above the 255℃ must be within 20s

PACKAGE OUTLINE

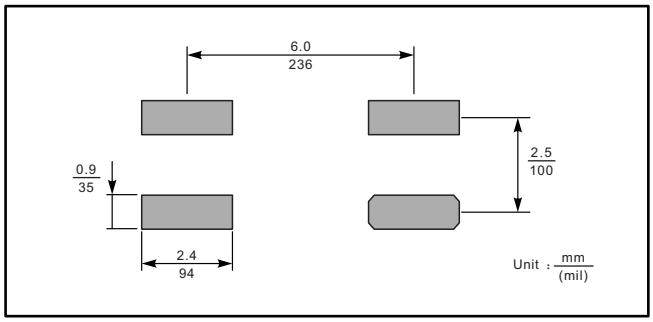
Plastic surface mounted package; 4 leads MBS



MBS mechanical data

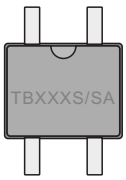
UNIT		A	C	D	E	H_E	d	e	L	L_1	a	∠
mm	max	2.6	0.22	5.0	4.1	7.0	2.7	0.7	1.7	1.1	0.2	7°
	min	2.2	0.15	4.5	3.6	6.4	2.3	0.5	1.3	0.5	—	
mil	max	102	8.7	197	161	276	106	28	67	43	8	
	min	94	5.9	177	142	252	91	20	51	20	—	

The recommended mounting pad size



Marking

Type number	Marking code
TB120S	TB120S
TB240S	TB240S
TB250S	TB250S
TB120SA	TB120SA
TB240SA	TB240SA
TB250SA	TB250SA



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