



Surface Mount Surge Suppressors Bridge

FEATURES

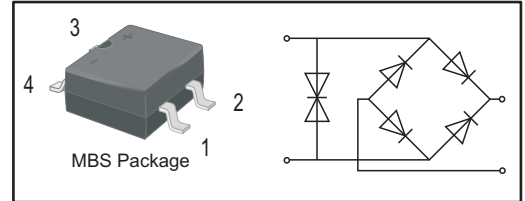
- Green Molding Compound
(No Halogen and Antimony)
- Lower clamping voltage
- Glass Passivated Chip Junction
- High Surge Current Capability
- Designed for Surface Mount Application

MECHANICAL DATA

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

PINNING

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



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 _A = 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 (@V _R =1000V) @T _A =25 °C @T _A =125 °C	I _R	5 40						μA
Typical Junction Capacitance (f=1MHz,4V DC)	C _j	7						pF
Typical Thermal Resistance (Note1)	R _{θJA} R _{θJC} R _{θJL}	45 15 25						°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 TA = 25°C per Fig. 7.



Fig.1 Average Rectified Output Current Derating Curve

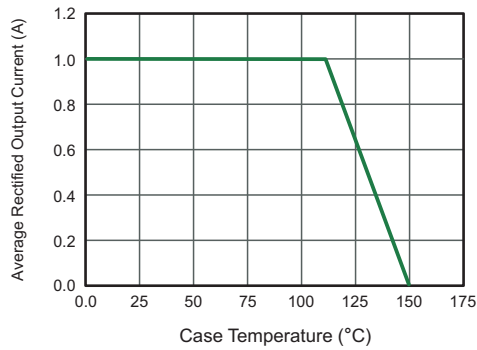


Fig.2 Typical Reverse Characteristics

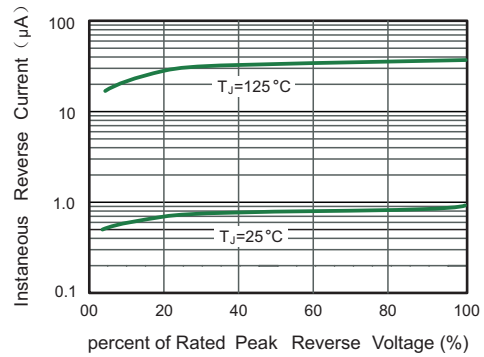


Fig.3 Typical Forward Characteristic

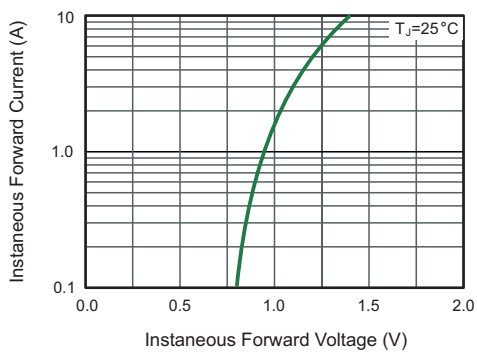


Fig.4 Typical Junction Capacitance

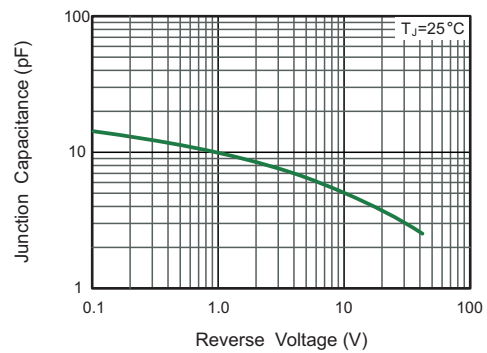


Fig.5 Maximum Non-Repetitive Peak Forward Surge Current

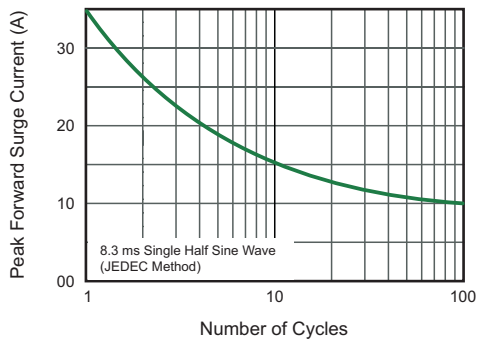


Fig.6 Peak Pulse Power Rating Curve

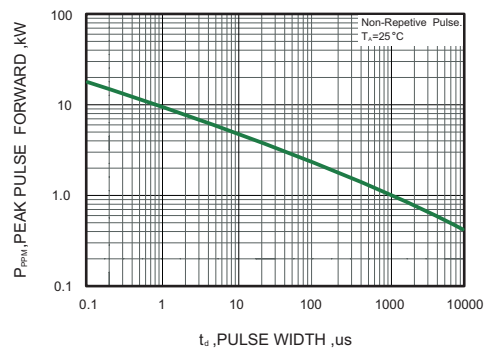


Fig.7 Forward Current Derating Curve

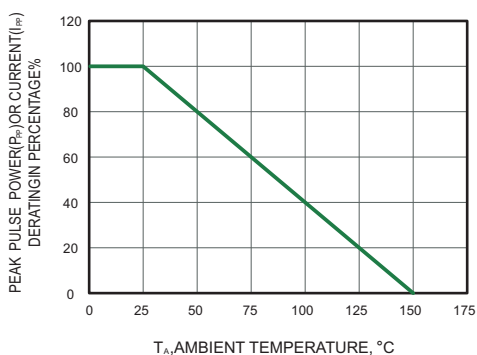


Fig.8 Pulse Waveform

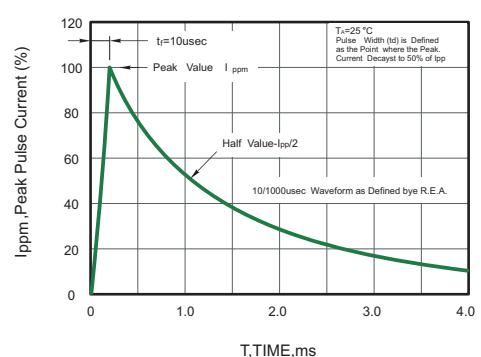




Fig.9 Maximum peak current

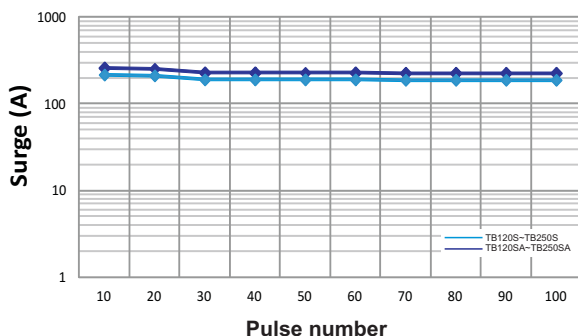


Fig.10 V/I Curve

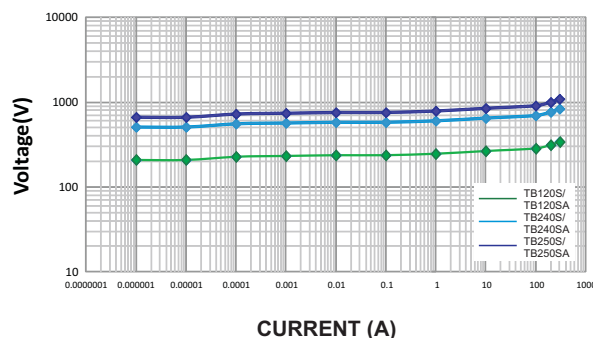
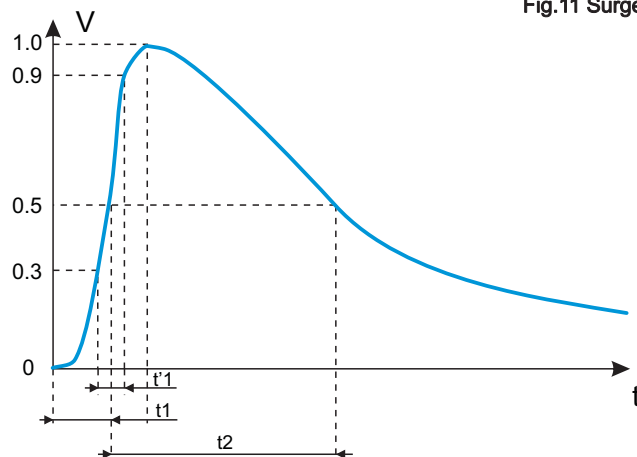


Fig.11 Surge Waveform

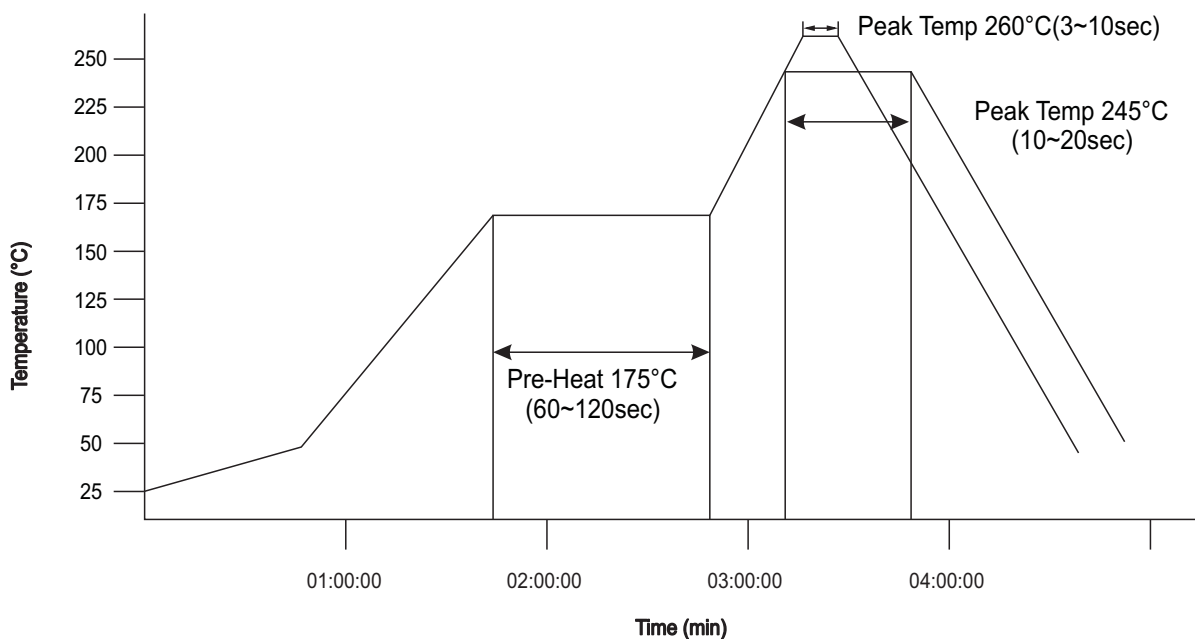


IEC61000-4-5 Standards

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 :

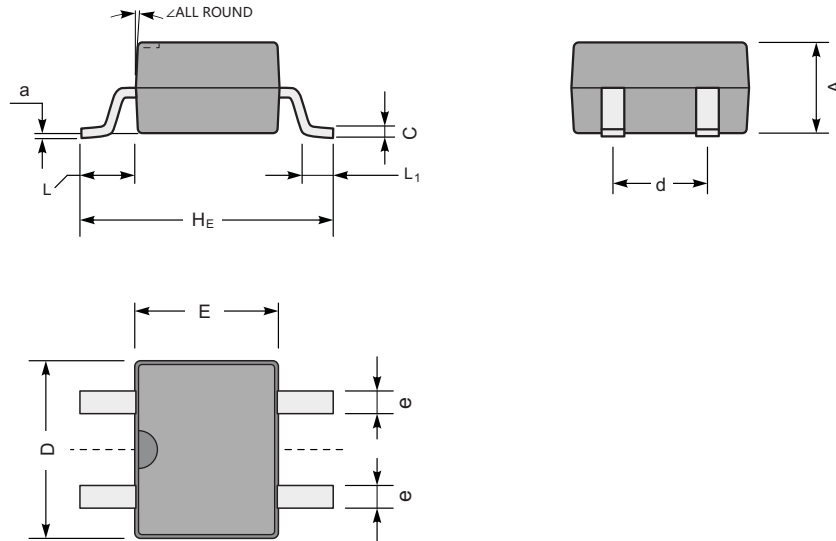
- (1) Ramp-up rate (217°C to peak) +3°C/second max.
- (2) Temp. maintain at 175±25 180seconds max.
- (3) Temp. maintain above 217°C 60~150 seconds
- (4) The peak temperature must be at least 260°C, the time above the 255°C must be within 20s



PACKAGE OUTLINE

Plastic surface mounted package; 4 leads

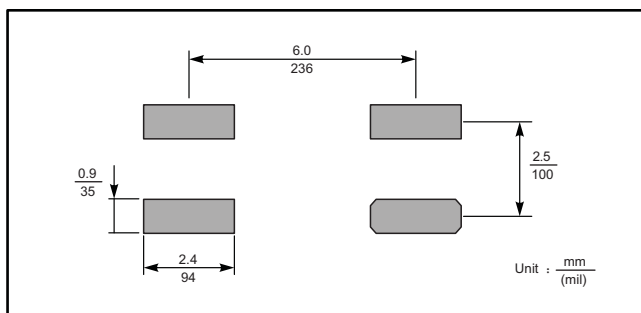
MBS



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



Important Notice and Disclaimer

Jingdao Microelectronics reserves the right to make changes to this document and its products and specifications at any time without notice.

Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

Jingdao Microelectronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Jingdao Microelectronics assume any liability for application assistance or customer product design.

Jingdao Microelectronics does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of Jingdao Microelectronics.

Jingdao Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of Jingdao Microelectronics.