

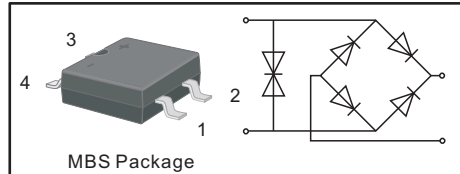


FEATURES:

- RoHS compliant
- Large withstanding surge current capability : 200A/220A (@8/20μs)
- Lower clamping voltage and excellent performance on ringing waves testing.
- Lead Free Finish/RoHS Compliant
- Green Molding Compound (No Halogen and Antimony)
- 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 Electrical characteristics

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	Symbols	TB120S	TB240S	TB250S	TB240SA	Units
Average Rectified Output Current at $T_c = 125\text{ }^\circ\text{C}$	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 (@ $V_R=1000V$)	I_R			5 40		μA
Typical Junction Capacitance (Note1)	C_j			13		pF
Typical Thermal Resistance (Note2)	$R_{\theta JA}$ $R_{\theta JC}$			80 28		$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{stg}			-55 ~ +150		$^\circ\text{C}$

Note: 1. Measured at 1MHz and applied reverse voltage of 4 V D.C.

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

Maximum Ratings and Thermal Characteristics(TA = 25°C unless otherwise specified)

Technology Data	Symbol	TB120S	TB240S	TB250S	TB240SA	Unit
Maximum allowable continuous AC voltage at 50-60Hz	V_{RMS}	155	310	380	310	V
Breakdown voltage at 1mA	V_{BR}	237~263	492~543	551~609	492~543	V
Maximum allowable continuous DC voltage	V_{DC}	220	440	490	440	V
Maximum allowable clamping voltage	V_C	350	700	850	700	V
Maximum peak current (8/20μs@2Ω)	I_{peak}		200		220	A
Operating Junction Temperature and Storage Temperature Range	T_j, T_{stg}			-55 ~ +150		$^\circ\text{C}$

NOTES:

1. The breakdown voltage was measured at 1mA
2. The clamping voltage was measured at 8/20μs standard current
3. The peak current was tested at 8/20μs waveform at 2Ω



Fig.1 Average Rectified Output Current Derating Curve

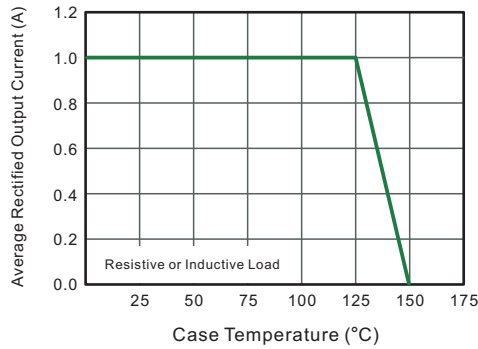


Fig.2 Typical Reverse Characteristics

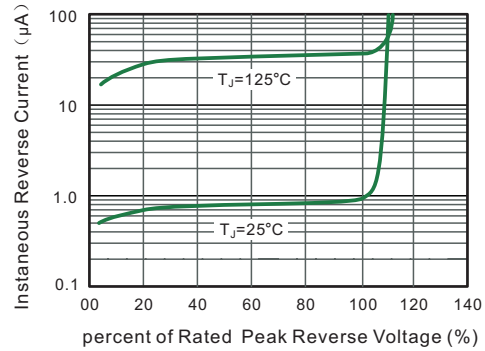


Fig.3 Typical Instantaneous Forward Characteristics

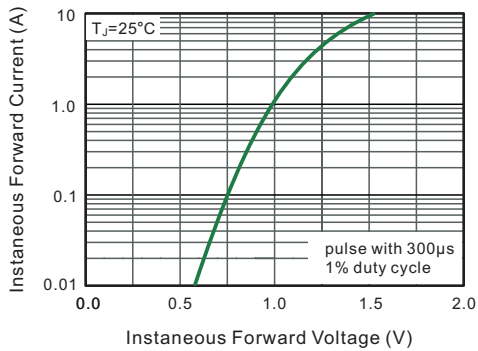


Fig.4 Typical Junction Capacitance

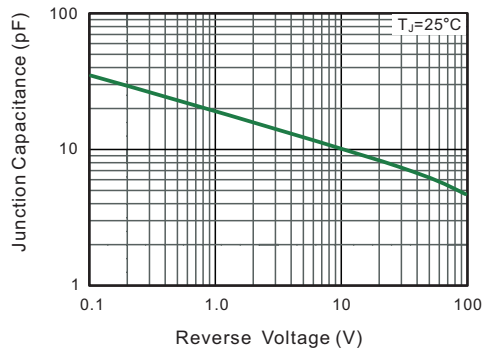


Fig.5 Maximum Non-Repetitive Peak Forward Surge Current

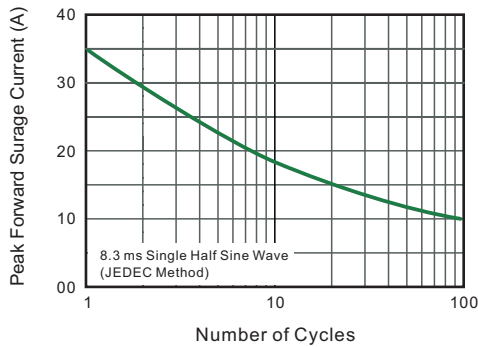


Fig.6 Off-State Current vs. Junction Temperature

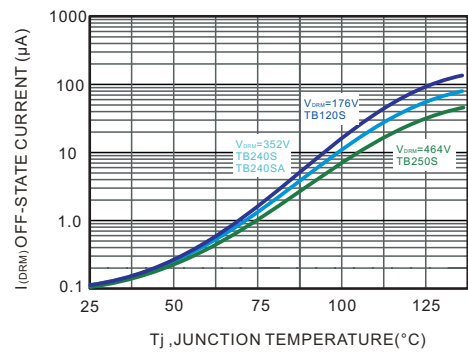


Fig.7 Peak Pulse Power Rating Curve

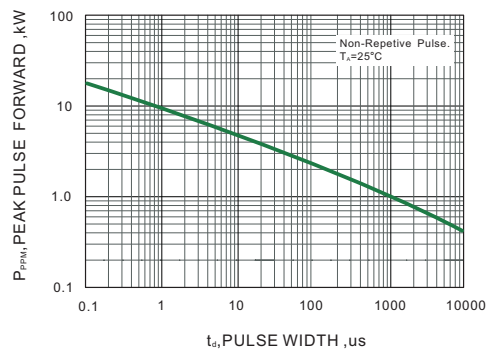




Fig.8 Maximum peak current

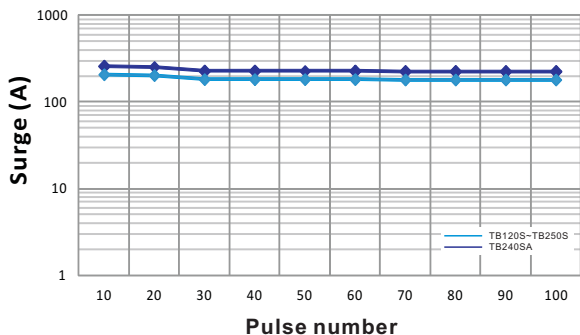


Fig.9 V/I Curve

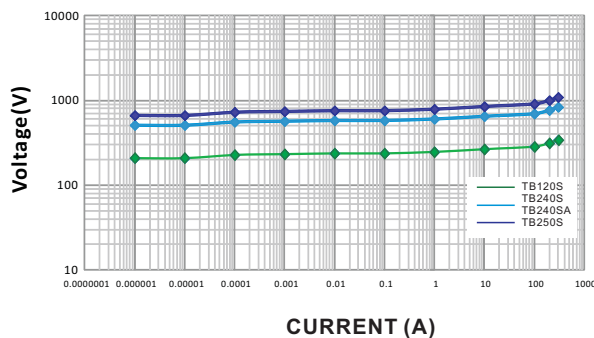
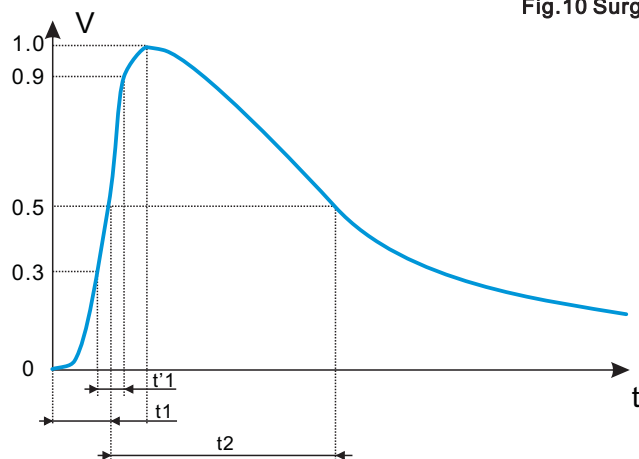


Fig.10 Surge Waveform

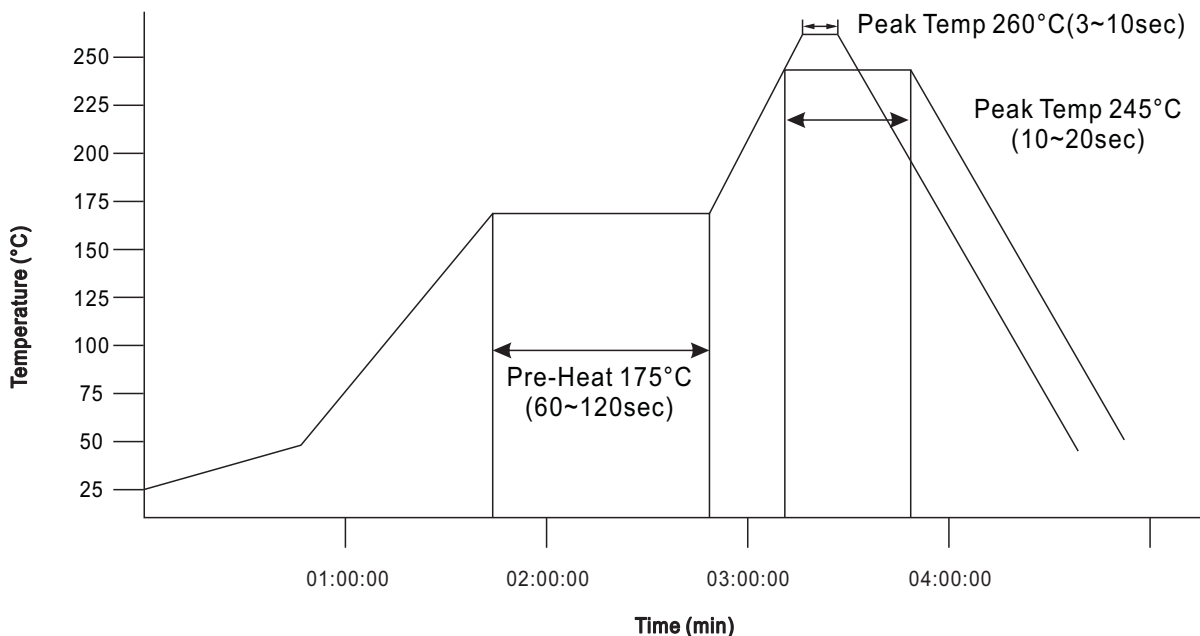


IEC61000-4-5 Standards

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

8/20us waveform current

Fig.11 The Ir reflow and temperature of soldering for Pb free process



IR reflow Pb free process suggestion profile:

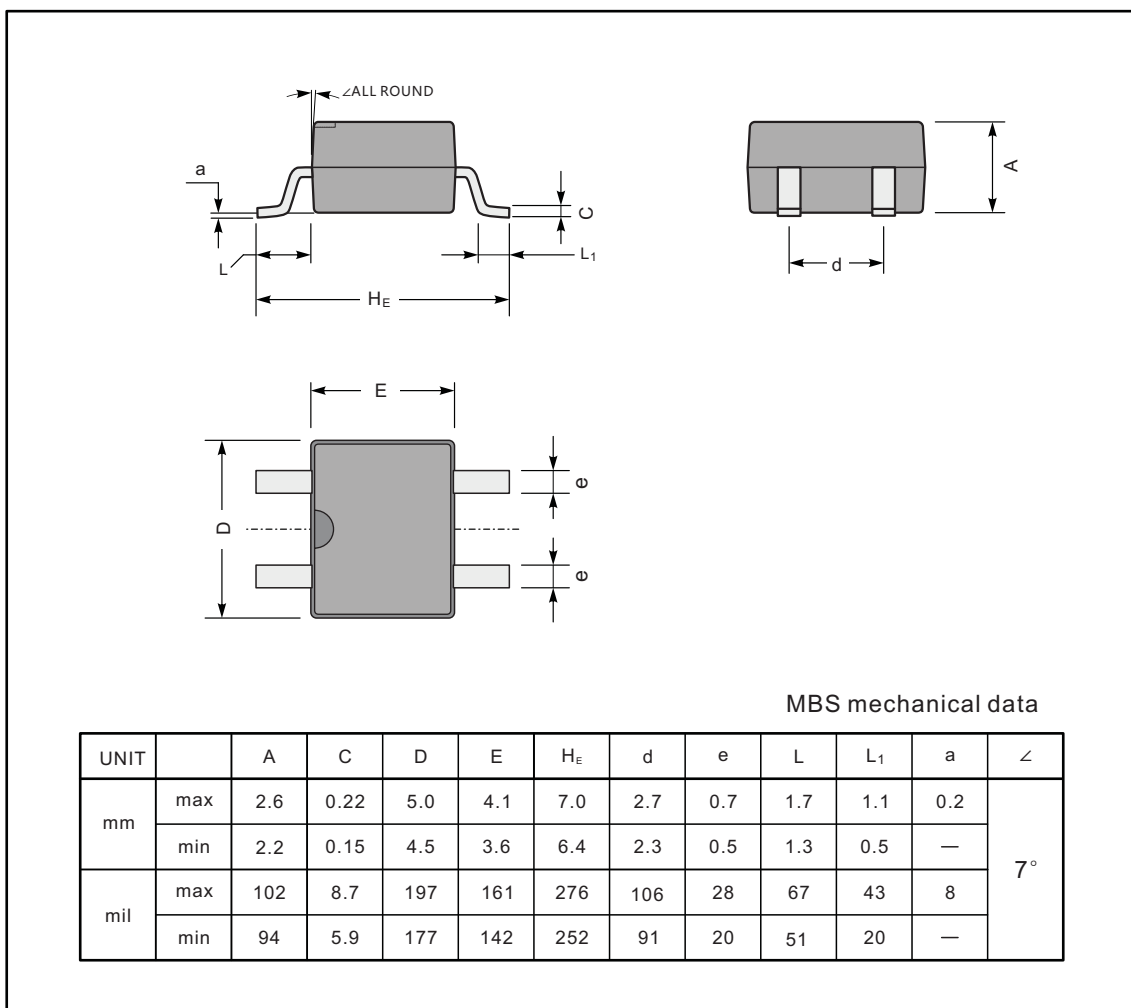
- (1) Ramp-up rate (217°C to peak) +3°C/second max.
- (2) Temp. maintain at 175±25 180seconds max.
- (3) Temp. maintain above 217°C 60~150 seconds
- (4) The peak temperature must be at least 260°C, the time above the 255°C must be within 20s



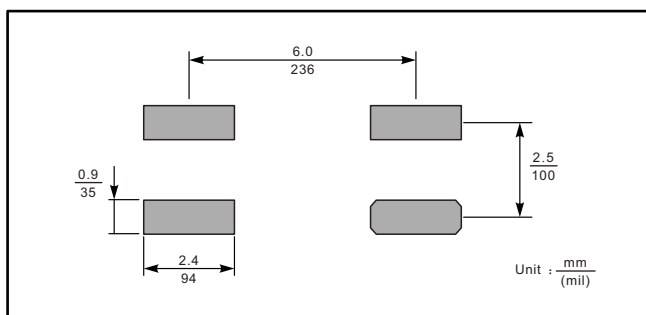
PACKAGE OUTLINE

Plastic surface mounted package; 4 leads

MBS



The recommended mounting pad size



Marking

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