LITE-ON SEMICONDUCTORS

MSB20M

GLASS PASSIVATED SURFACE MOUNT BRIDGE RECTIFIERS

REVERSE VOLTAGE – 1000 Volts FORWARD CURRENT – 2.0 Ampere

GENERAL DESCRIPTION

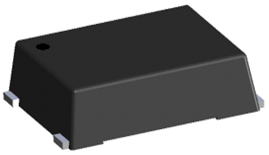
Suitable for AC-to-DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

FEATURES

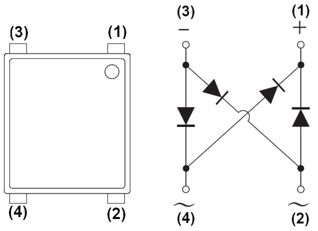
- Rated at 1000V PRV
- Compact, thin profile package design
- Ideal for SMT manufacturing
- Reliable robust construction
- UL recognized file#E364304

MECHANICAL DATA

- Molding compound meets UL 94 V-0 flammability rating, Halogen-free, RoHS-compliant, and commercial grade
- Polarity indicator: As marked on body
- Marking：MB20M
- Weight: 216 mg



Pin Assignment



Maximum Ratings & Thermal Characteristics @ T_A = 25°C unless otherwise specified

Characteristics		Symbol	Limit	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	1000	V
Maximum DC Blocking Voltage		V_{DC}	1000	V
Maximum Average Forward Rectified Current @Tc = 110 ℃		$I_{(AV)}$	2	A
Peak Forward Surge Current 8.3ms single half sine-wave	@T_J=25℃ @T_J=125℃	I_{FSM}	75 60	A
Peak Forward Surge Current 1.0ms single half sine-wave	@T_J=25℃ @T_J=125℃	I_{FSM}	150 120	A
I^2t Rating for fusing (1ms < t < 8.3ms)		I^2t	23.3	A^2S
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristics		Test Condition	Symbol	Min	Typ.	Max	Unit
Maximum Forward Voltage	@Tj=25°C @Tj=125°C	IF = 1A	V_F	--	--- 0.77	1.02 ---	V
Maximum Forward Voltage	@Tj=25°C @Tj=125°C	IF = 2A	V_F	--	--- 0.94	1.1 --	V
Maximum DC Reverse Current at Rated DC Blocking Voltage	@Tj=25°C @Tj=125°C	VR = 1000V	I_R	--	--	5 500	uA
Typical junction capacitance per element		Note(1)	C_J	--	30	--	pF

Thermal Characteristics

Characteristics	Symbol	Min	Typ.	Max	Unit
Maximum Forward Voltage (Note 2)	$R_{\theta JC}$ $R_{\theta JL}$ $R_{\theta JA}$	-- -- --	10 15 55	-- -- --	°C/W

Note :

(1) Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

(2) Thermal Resistance test performed in accordance with JESD-51. Unit mounted on glass-epoxy substrate with 1oz/ft2_15x15 mm copper pad per pin.

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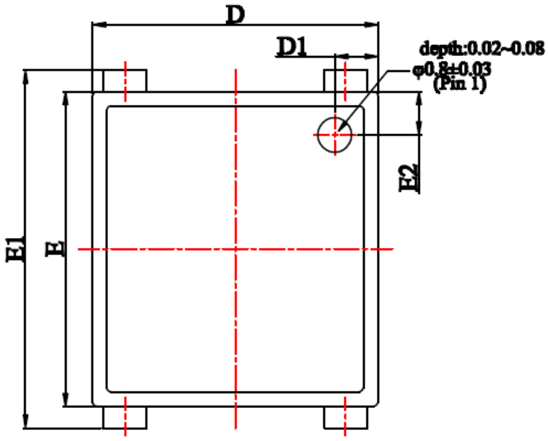
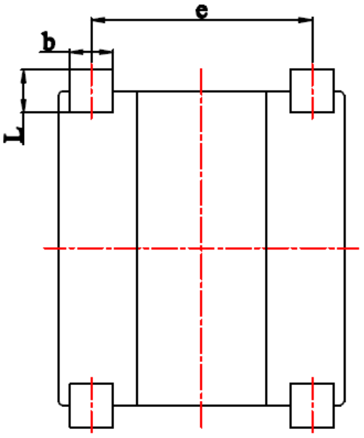
Package Dimension

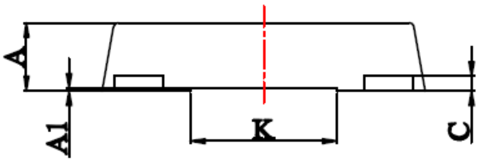
MSBL



Top View



Bottom View



Side View

MSBL			
Dim.	Min.	Typ.	Max.
A	1.30	1.40	1.50
A1	0.04	0.06	0.08
C	0.27	0.30	0.40
D	6.50	6.60	6.70
D1	0.95	1.10	1.25
E	7.20	7.30	7.40
E1	7.90	8.30	8.60
E2	0.95	1.10	1.25
L	0.80	1.00	1.05
b	0.95	1.00	1.15
e	5.00	5.10	5.20
K	2.90	3.00	3.10
All dimensions in millimeter			

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RATING AND CHARACTERISTIC CURVES
MSB20M

FIG.1-FORWARD CURRENT DERATING CURVE

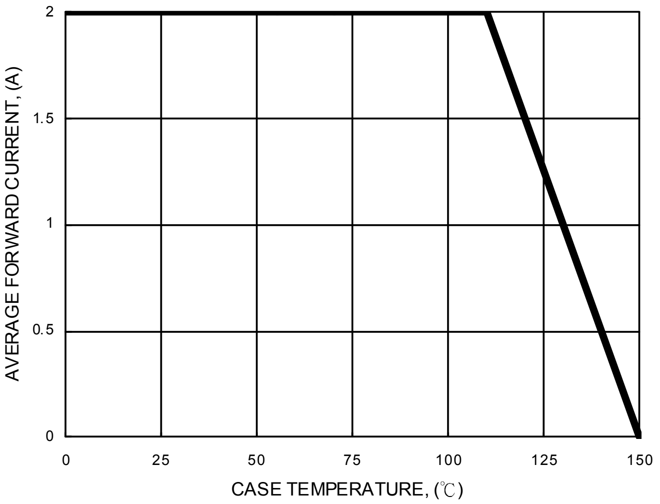


FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

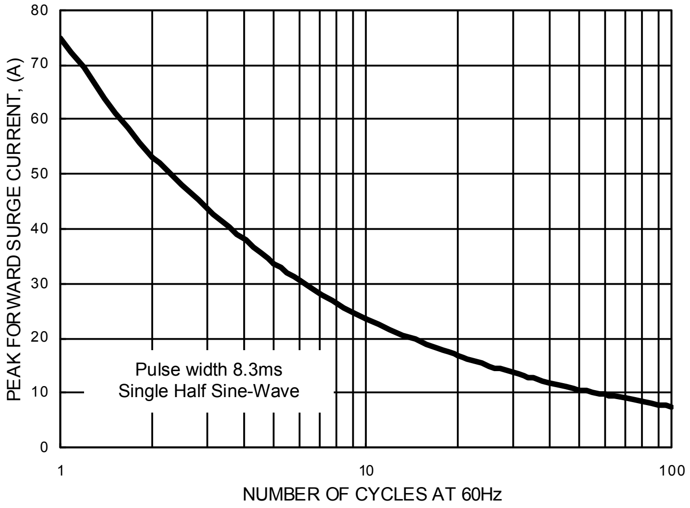


FIG.3- TYPICAL FORWORD CHARACTERISTICS

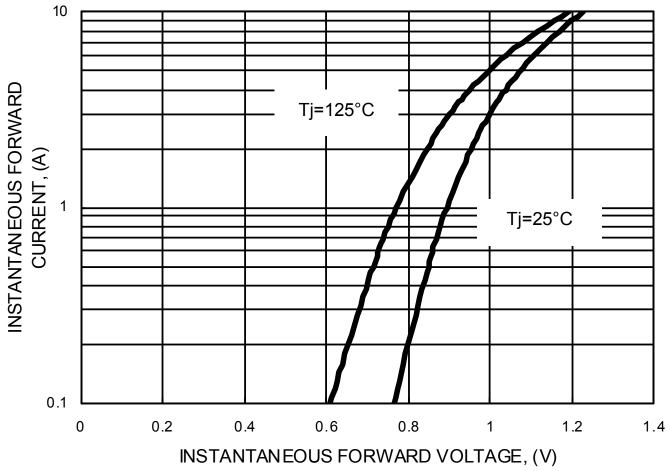


FIG.4- TYPICAL JUNCTION CAPACITANCE

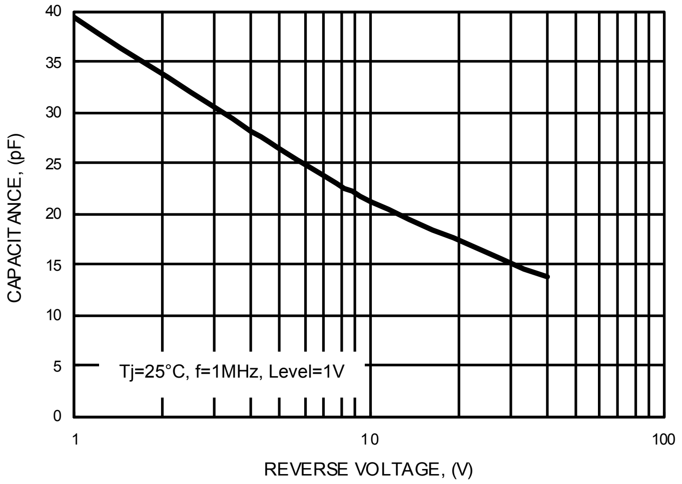


FIG.5- TYPICAL REVERSE CHARACTERISTICS

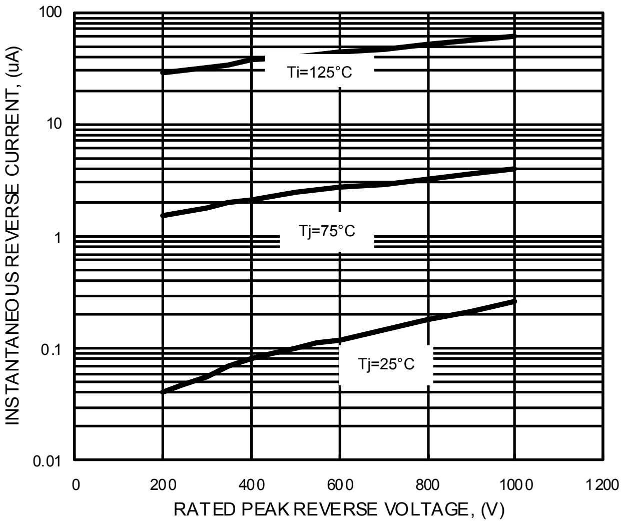
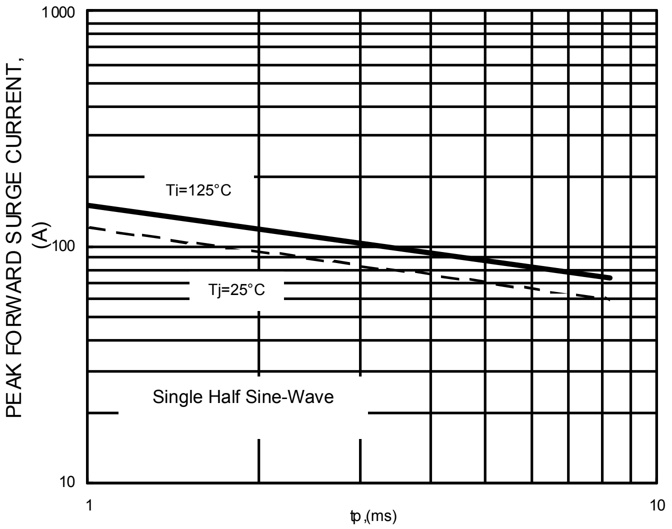


FIG.6- NON-REPETITIVE SURGE CURRENT



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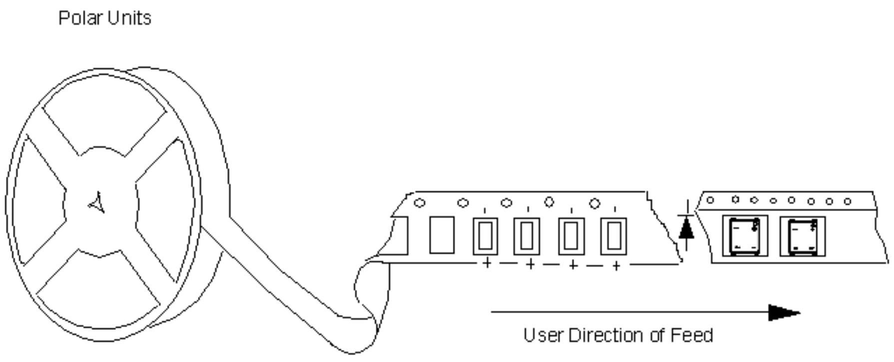
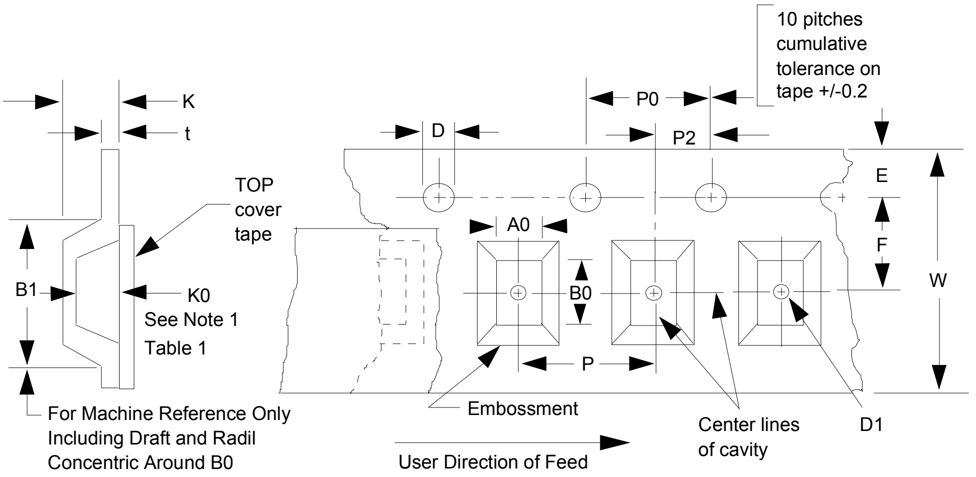
Packaging Information

DEVICE	Q'TY/REEL (PCS)	REEL DIA. (mm)	BOX SIZE (mm)	Q'TY/BOX (PCS)	CARTON SIZE (mm)	Q'TY/CARTON (PCS)	MOQ
MSB20M	2500	330	338x338x26	2500	355x355x275	25K	25K



Embossed Carrier Dimension



TAPE SIZE	D	E	PO	t (MAX)	A0	B0	K0
16mm	1.55+0.10/-0.0	1.75+/-0.10	4.0+/-0.10	0.4	7.0+/-0.1	8.4+/-0.1	1.7+/-0.1
	B1 (MAX)	D1 (MIN)	F	K (MAX)	P2	W	P
	8.2	1.5	5.5+/-0.1	2.2	2.0+/-0.05	12.0+/-.30	8.0+/-0.1

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Typical IR Reflow Soldering Thermal Profile

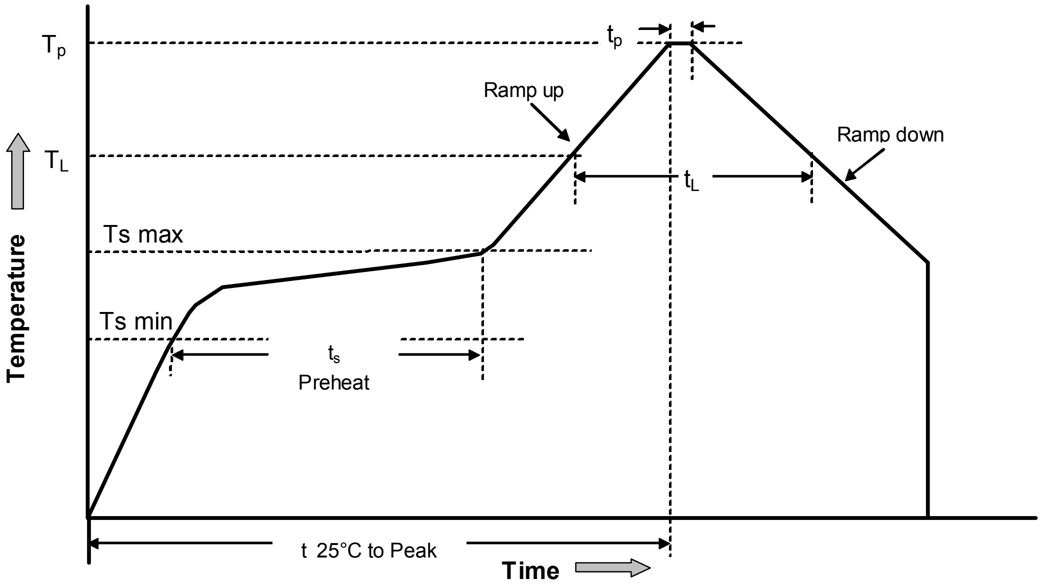

Table 1- Reflow profile

Reflow condition	Sn-Pb assembly	Pb-free assembly
Average ramp-up rate (Liquidus Temperautre (TL) to Peak)	3 °C/second max.	3 °C/second max.
Preheat --Tempautre Min, Ts (Min) --Temperature Max, Ts (Max) --Time (min to max, ts)	 100 °C 150 °C 60-120 seconds	 150 °C 200 °C 60-180 seconds
Ts(max) to TL - Ramp-up Rate		3 °C/second max.
Time maintained above: --Temperature(TL) --Time(tL)	 183 °C 60-150 seconds	 217 °C 60-150 seconds
Peak Temperature (Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5 °C of actual Peak Temperature(tp)	10-30 seconds	20-40 seconds
Ramp-down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature.	6 minutes max.	8 minutes max.

Note: All temperatures refer to topside of the package, measured on the package body surface

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