

MBR60L150CTW

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MBR60L150CTW

60A, 150V Power Schottky Barrier Rectifiers

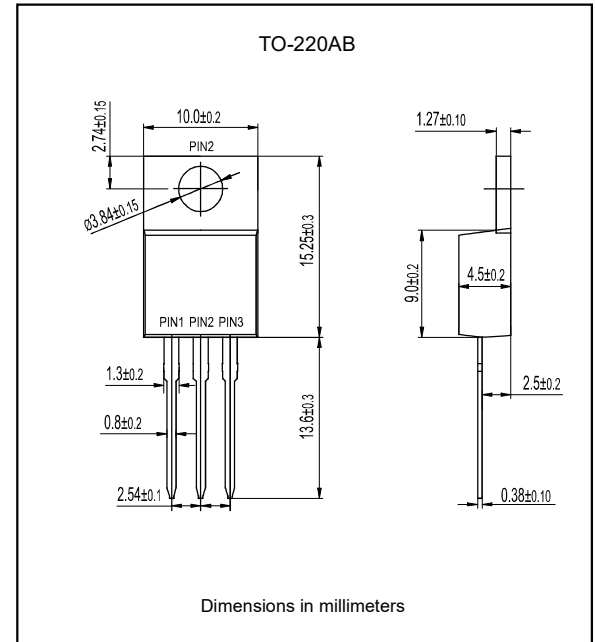
Features

- Ultra low V_F .
- High efficiently operation.
- Low power loss.
- Low stored charge majority carrier conduction.
- High forward surge capability.
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Suffix "-H" indicates Halogen-free parts, ex. MBR60L150CTW-H.

Mechanical data

- Case : JEDEC TO-220AB molded plastic body over passivated chip.
- Leads : Solder able per MIL-STD-202, Method 208 .
- Terminals : Puretin plated.
- Polarity : Polarity symbol marking on body.
- Mounting torque : 5 in-lbs maximum.
- Weight : TO-220AB Approximated 1.85 gram

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	150	V
Maximum RMS voltage	V_{RMS}	105	V
Maximum DC blocking voltage	V_{DC}	150	V
Maximum average forward rectified per device	$I_{(AV)}$	60	A
Maximum average forward rectified per diode		30	
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	320	A
Typical thermal resistance (Note 1)	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
Operating junction temperature range	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Note : 1. Thermal resistance from junction to case

Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Breakdown voltage per diode	V_{BR}	$I_R=0.5\text{mA}$	150			V
Instantaneous forward voltage per diode	V_F	$I_F=15\text{A}$ ($T_J=25^\circ\text{C}$)		0.83	0.86	V
		$I_F=20\text{A}$ ($T_J=25^\circ\text{C}$)		0.88	0.92	
		$I_F=30\text{A}$ ($T_J=25^\circ\text{C}$)			1.08	
		$I_F=30\text{A}$ ($T_J=125^\circ\text{C}$)			0.92	
Reverse current per diode	I_R	$V_R=150\text{V}$ ($T_J=25^\circ\text{C}$)			100	μA
		$V_R=150\text{V}$ ($T_J=125^\circ\text{C}$)			30	mA

Rating and characteristic curves (MBR60L150CTW)

FIG. 1 - TYPICAL FORWARD CURRENT DERATING CURVE

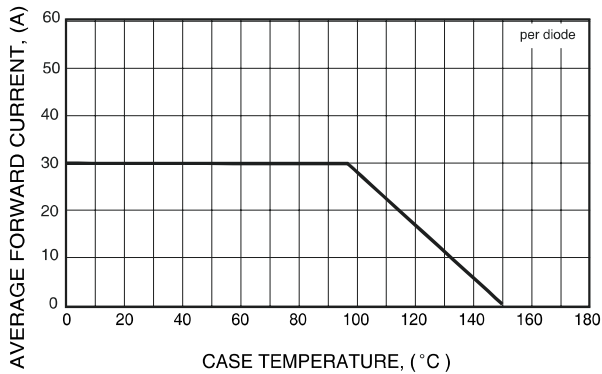


FIG. 2 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

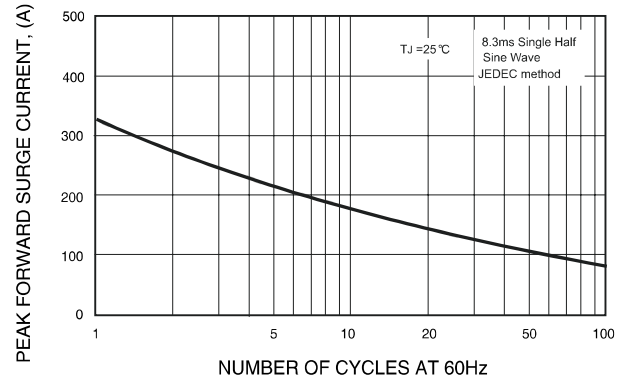


FIG. 3 - TYPICAL REVERSE CHARACTERISTICS

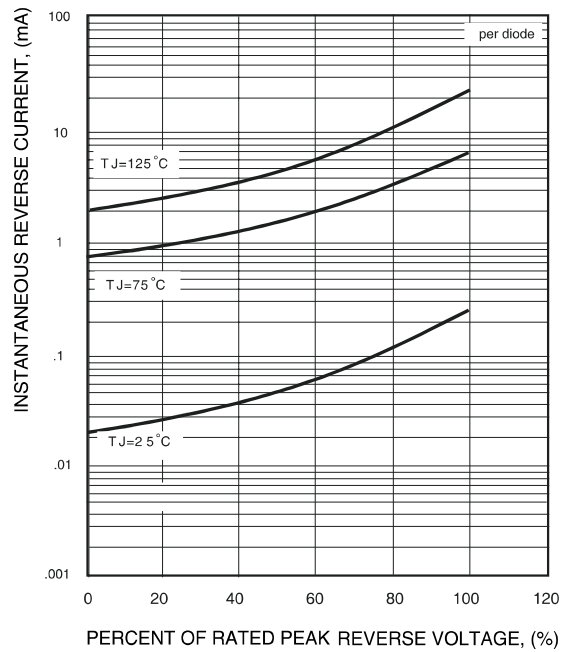
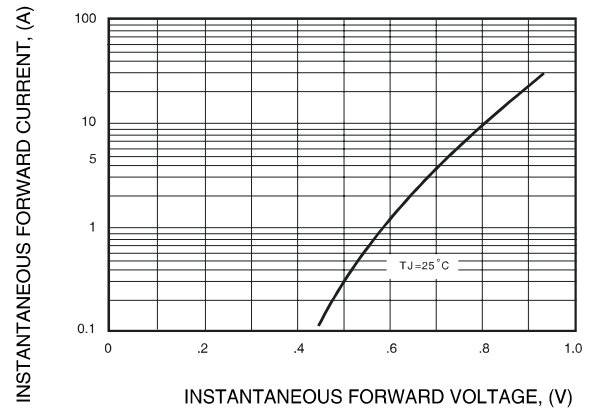
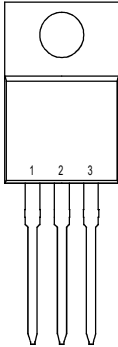
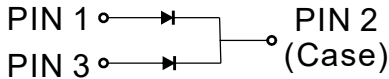


FIG. 4 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

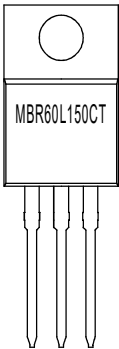


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Pinning information

Pin	Simplified outline	Symbol
Pin1 Anode Pin2 Cathode Pin3 Anode		

Marking



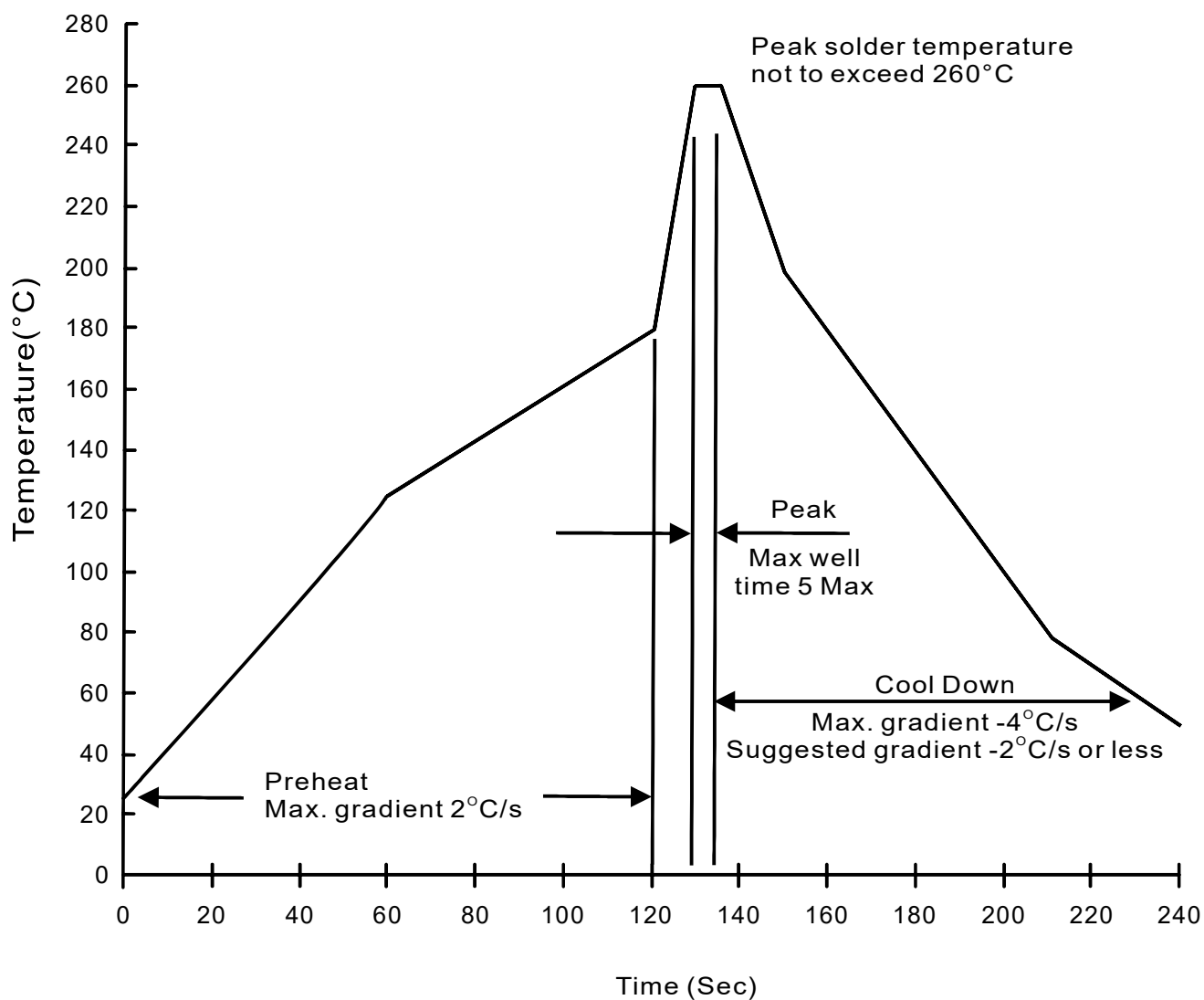
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
TO-220AB	50	525*31.9*6.4	1000	545*150*45	575*245*170	5,000	15.0

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Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031