

MBR40U150CTW

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MBR40U150CTW

40A Power Ultra Low VF Schottky Barrier Rectifiers 150V

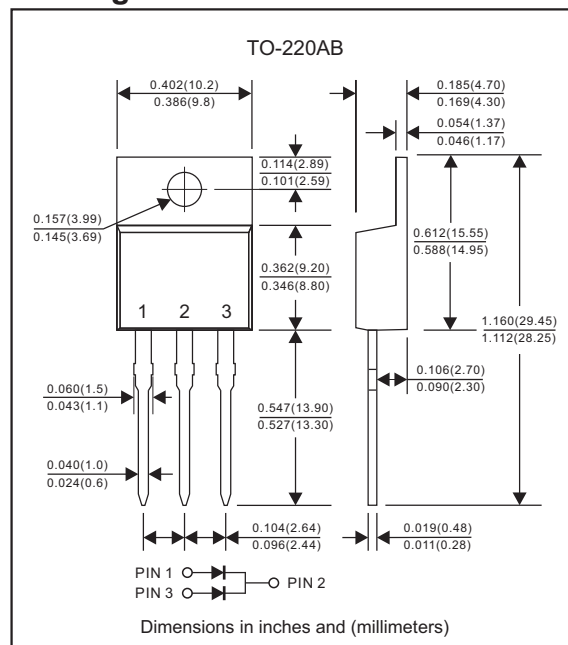
Features

- High current density schottky
- 150°C operating junction temperature
- Offer 20A half wave and 40A full wave rectification
- Low power loss, high efficiency
- Low forward voltage drop
- High current capability
- High surge capability
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates halogen-free part, ex. MBR40U150CTW-H

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC TO-220AB molded plastic body over passivated chip
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: As marked
- Mounting Position : Any
- Weight : Approximated 1.85 gram

Package outline



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

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	150	Volts
RMS voltage	V_{RMS}	105	Volts
DC blocking voltage	V_{DC}	150	Volts
Average forward rectified current per device See Fig.1	I_o	40	A
Peak forward surge current 8.3ms single half sine-wave	I_{FSM}	300	A
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Typ.	Max.	Unit
Instantaneous forward voltage $I_F=20\text{A}$ per leg $T_J=25^\circ\text{C}$ $T_J=125^\circ\text{C}$	V_F	0.87 -	0.90 0.80	Volts
Reverse leakage current at rated V_{DC} per leg $T_J=25^\circ\text{C}$ $T_J=125^\circ\text{C}$	I_R		0.05 20	mA

Thermal characteristics

Parameter	Symbol	Value	Unit
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$

Rating and characteristic curves (MBR40U150CTW)

Fig.1 FORWARD CURRENT DERATING CURVE

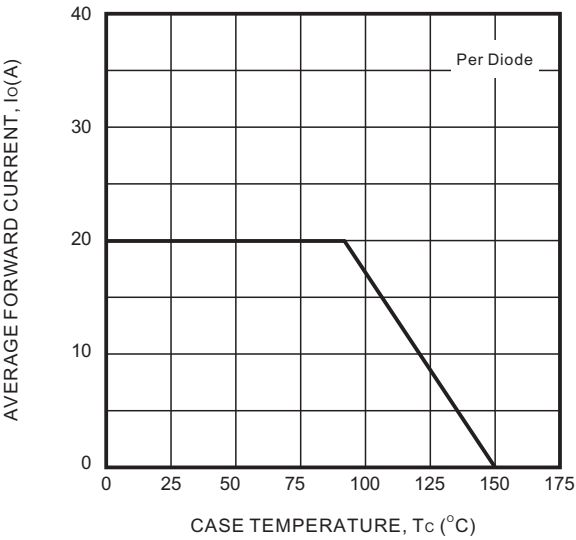


Fig.2 TYPICAL FORWARD CHARACTERISTICS

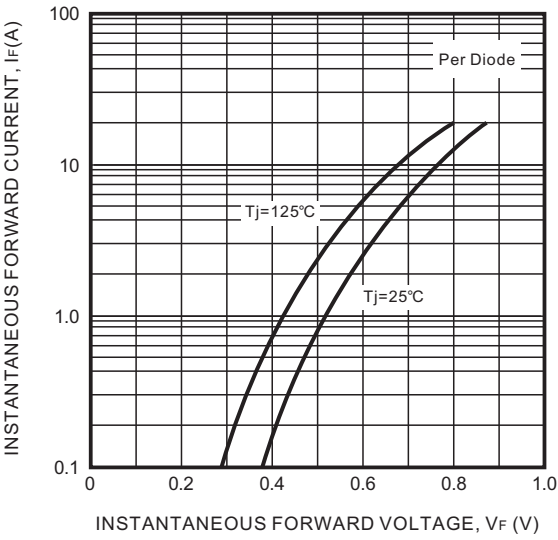


Fig.3 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

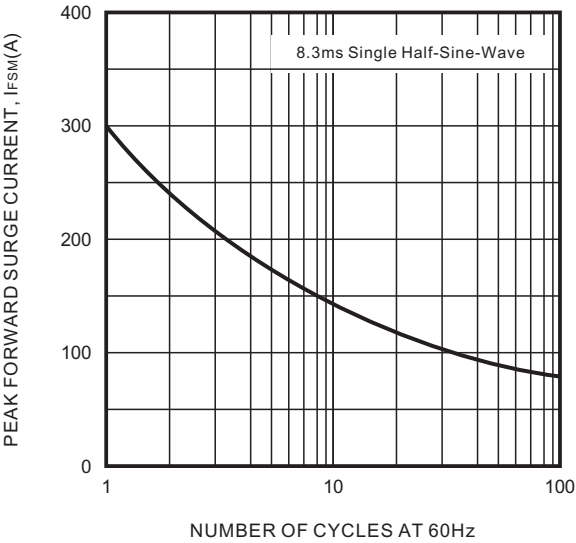
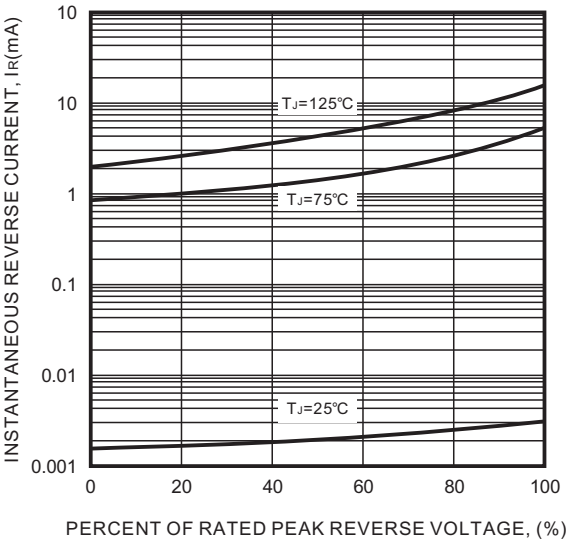
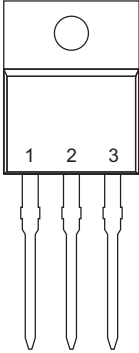
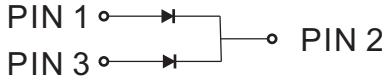


Fig.4 TYPICAL REVERSE CHARACTERISTICS



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Pinning information

Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
MBR40U150CTW	MBR40U150CTW

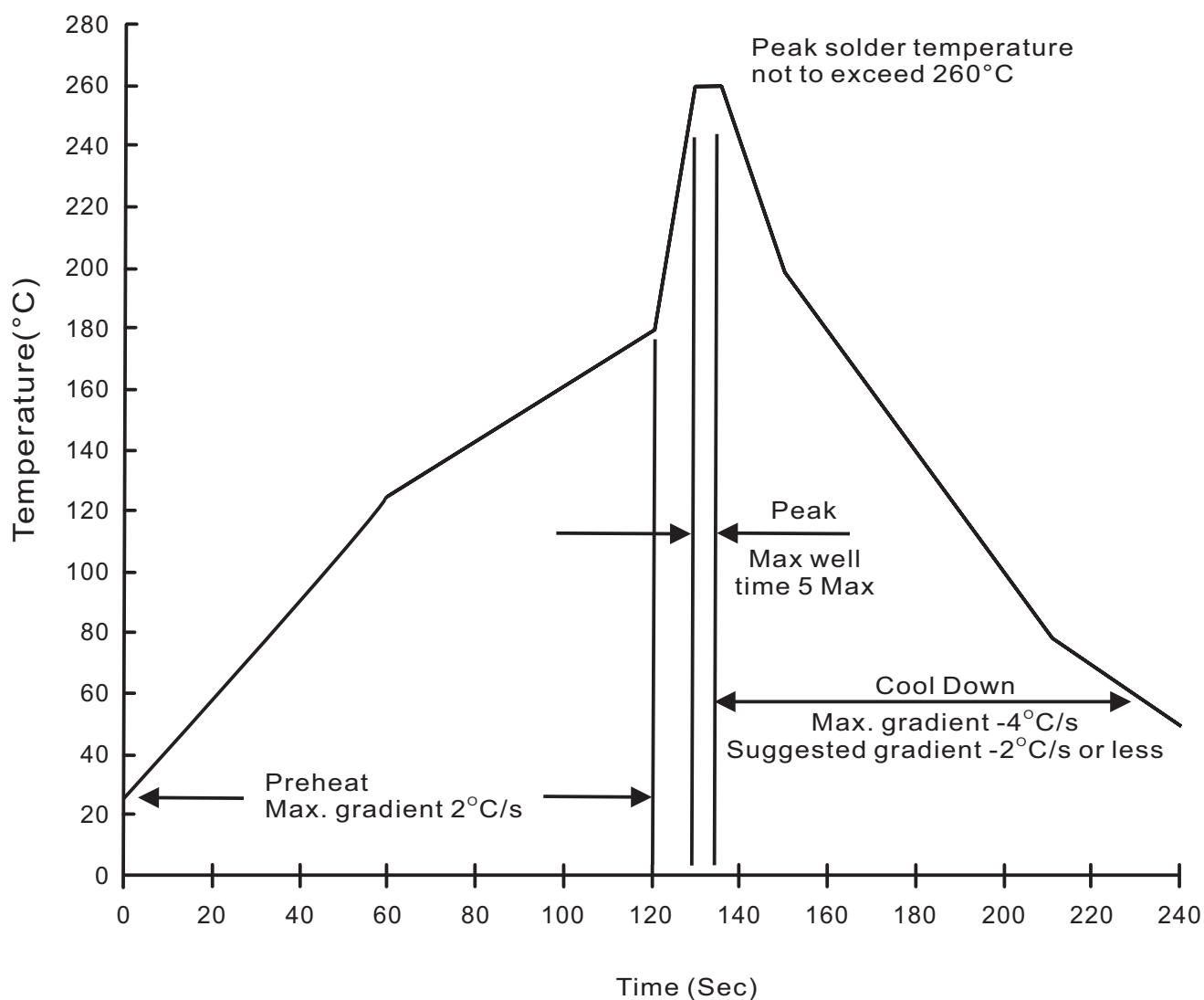
Tube packing

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	1,000	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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031