

MBR3040CTW THRU MBR30200CTW

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MBR3040CTW THRU MBR30200CTW

30A High Barrier Power Schottky Rectifiers : 40V-200V

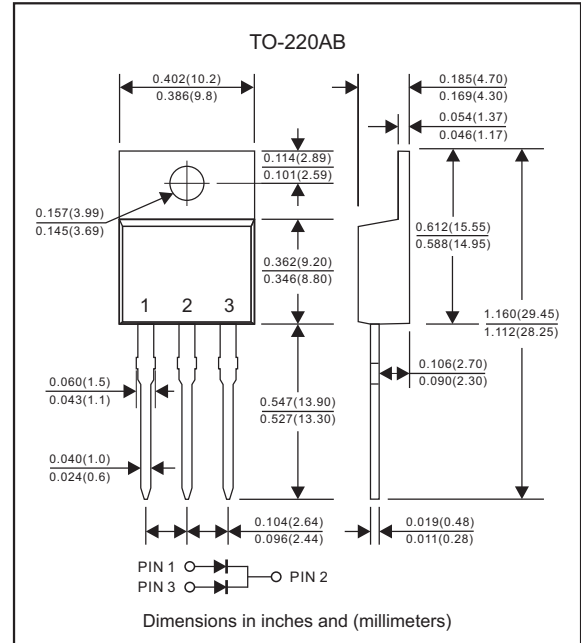
Features

- 150°C operating junction temperature.
- Low power loss, high efficiency.
- High current capability
- High surge capability.
- Guardring for overvoltage protection.
- Low stored charge majority carrier conduction
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free parts, ex. MBR3040CTW-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 : TO-220AB Approximated 1.85 gram

Package outline



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

PARAMETER	SYMBOLS	MBR 3040CTW	MBR 3045CTW	MBR 3060CTW	MBR 30100CTW	MBR 30150CTW	MBR 30200CTW	UNIT
Repetitive peak reverse voltage	V_{RRM}	40	45	60	100	150	200	V
RMS voltage	V_{RMS}	28	31.5	42	70	105	140	V
DC blocking voltage	V_{DC}	40	45	60	100	150	200	V
Average forward rectified current per device per diode	I_O	30 15						A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	280						A
Operating junction temperature range	T_J	-55 to +150				-55 to +175		$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150				-55 to +175		$^\circ\text{C}$

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

PARAMETER	SYMBOLS	MBR 3040CTW	MBR 3045CTW	MBR 3060CTW	MBR 30100CTW	MBR 30150CTW	MBR 30200CTW	UNIT
Forward voltage per leg at If=15A	V _F	0.65		0.75	0.85	0.95		V
DC reverse current at T _J =25°C at rated DC blocking voltage at T _J =125°C	I _R	0.10 15			0.01 8			mA

Thermal Characteristics

PARAMETER	SYMBOLS	MBR 3040CTW	MBR 3045CTW	MBR 3060CTW	MBR 30100CTW	MBR 30150CTW	MBR 30200CTW	UNIT
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	2.0						$^\circ\text{C/W}$

Rating and characteristic curves (MBR3040CTW THRU MBR30200CTW)

FIG.1-DERATING CURVE OUTPUT RECTIFIED CURRENT

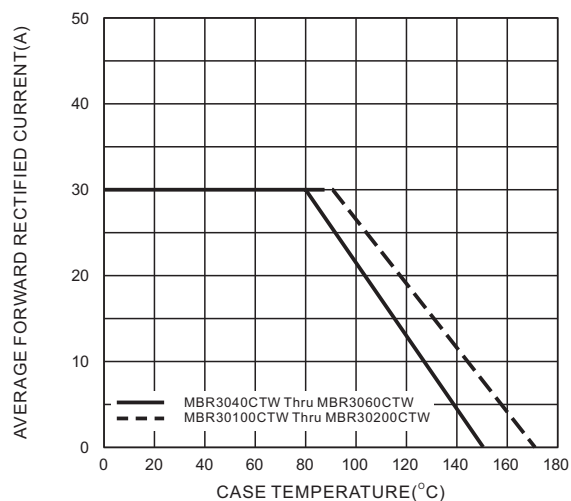


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

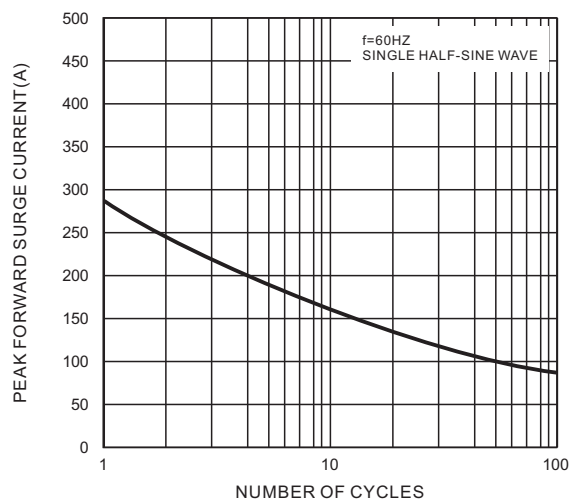


FIG.3-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

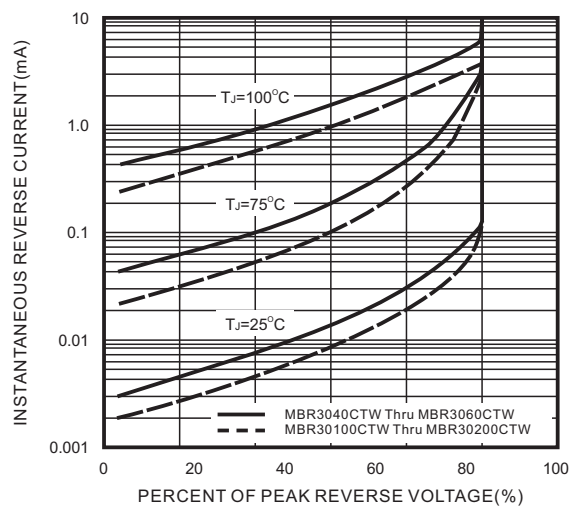
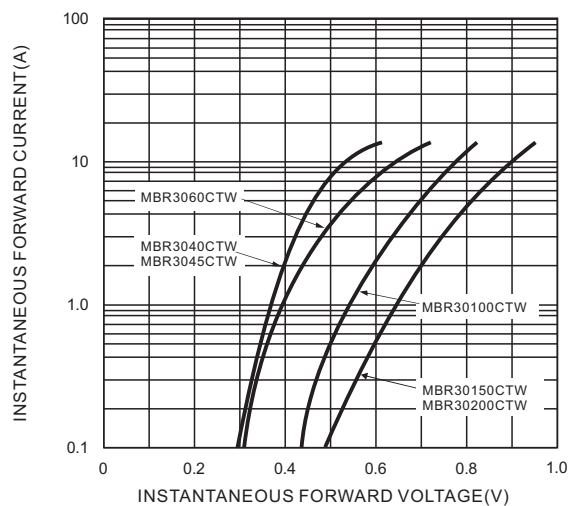
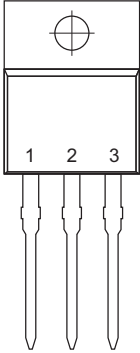
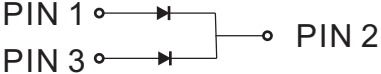


FIG.4-TYPICAL FORWARD VOLTAGE CHARACTERISTICS



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Pinning information

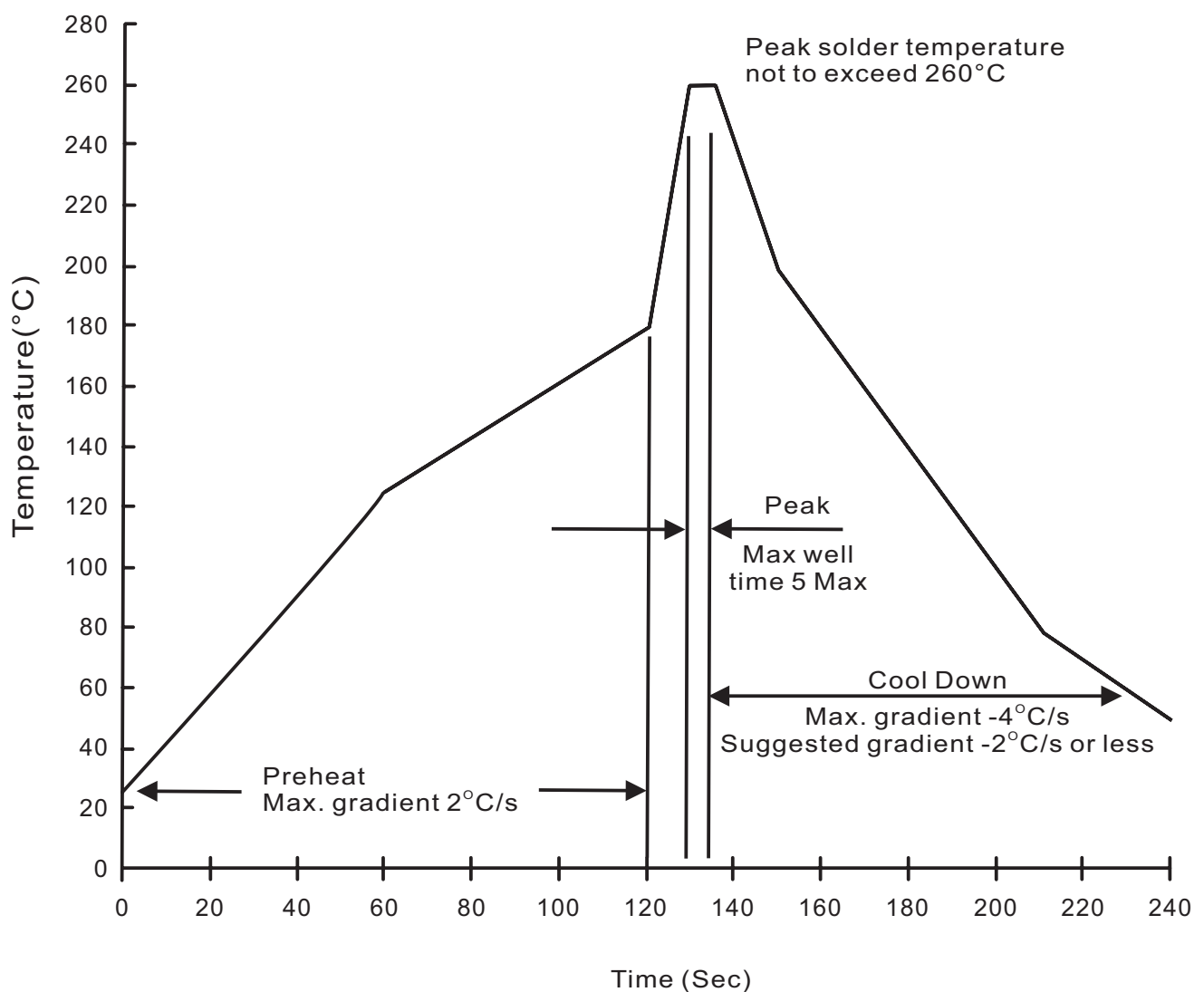
Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
MBR3040CTW	MBR3040CTW
MBR3045CTW	MBR3045CTW
MBR3060CTW	MBR3060CTW
MBR30100CTW	MBR30100CTW
MBR30150CTW	MBR30150CTW
MBR30200CTW	MBR30200CTW

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

MBR3040CTW THRU MBR30200CTW**Suggested thermal profiles for soldering processes****1. Lead free temperature profile wave-soldering**

MBR3040CTW THRU MBR30200CTW**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16'' \pm 1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ 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