

MBR2040FCTW THRU MBR20200FCTW

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MBR2040FCTW THRU MBR20200FCTW

20A High Barrier Power Schottky Rectifiers : 40V-200V

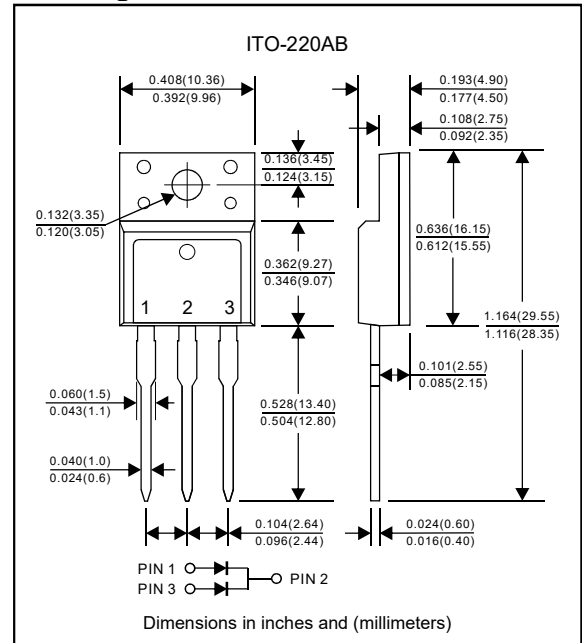
Features

- 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. MBR2040FCTW-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC ITO-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 1.70 gram

Package outline



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

PARAMETER	SYMBOLS	MBR 2040FCTW	MBR 2045FCTW	MBR 2060FCTW	MBR 20100FCTW	MBR 20150FCTW	MBR 20200FCTW	UNIT
Repetitive peak reverse voltage	VRRM	40	45	60	100	150	200	V
RMS voltage	VRMS	28	32	42	70	105	140	V
DC blocking voltage	VDC	40	45	60	100	150	200	V
Average forward rectified current per device per diode	Io	20 10						A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	IFSM	220						A
Operating junction temperature range	TJ	-55 to +150				-55 to +175		°C
Storage temperature range	TSTG	-55 to +175						°C

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

PARAMETER	SYMBOLS	MBR 2040FCTW	MBR 2045FCTW	MBR 2060FCTW	MBR 20100FCTW	MBR 20150FCTW	MBR 20200FCTW	UNIT
Forward voltage per leg at $I_F=10A$	V_F	0.65		0.75	0.85	0.95		V
DC reverse current at $T_J=25^{\circ}C$ at rated DC blocking voltage at $T_J=125^{\circ}C$	I_R	0.10 15			0.01 6			mA

Thermal Characteristics

PARAMETER	SYMBOLS	MBR 2040FCTW	MBR 2045FCTW	MBR 2060FCTW	MBR 20100FCTW	MBR 20150FCTW	MBR 20200FCTW	UNIT
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	4.5						$^\circ\text{C/W}$

Rating and characteristic curves (MBR2040FCTW THRU MBR20200FCTW)

FIG.1-DERATING CURVE OUTPUT RECTIFIED CURRENT

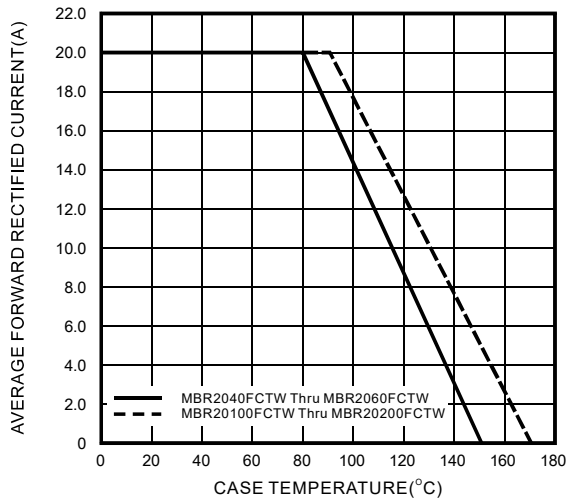


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

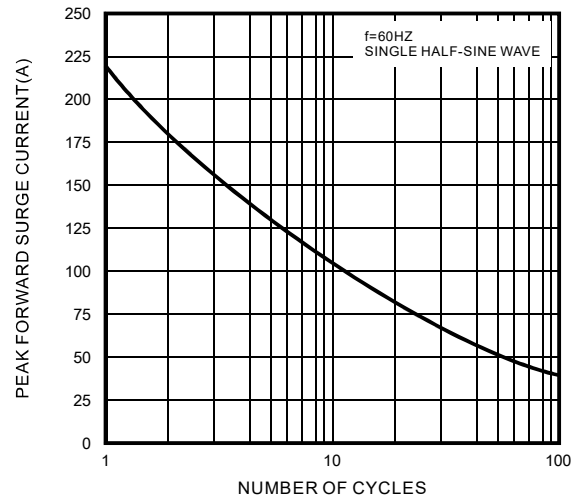


FIG.3-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

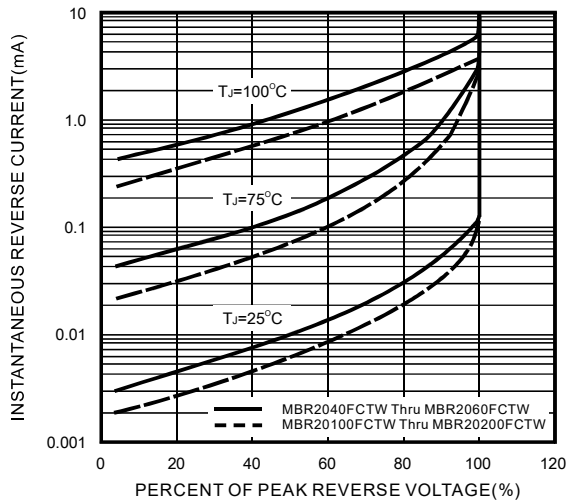
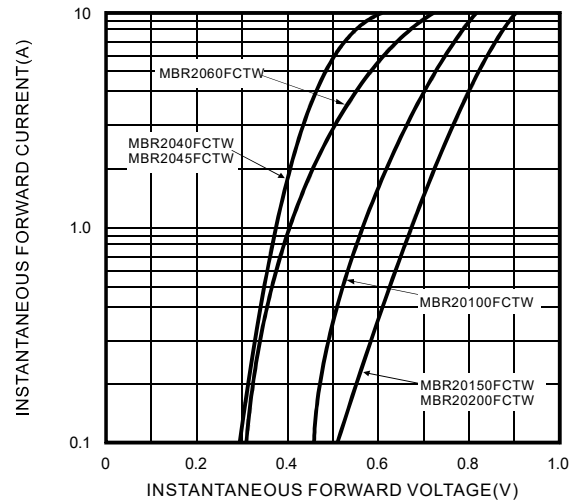
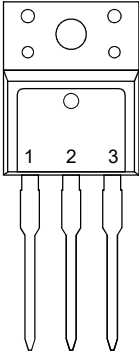
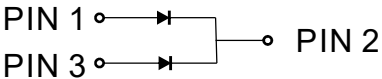


FIG.4-TYPICAL FORWARD VOLTAGE CHARACTERISTICS



MBR2040FCTW THRU MBR20200FCTW**Pinning information**

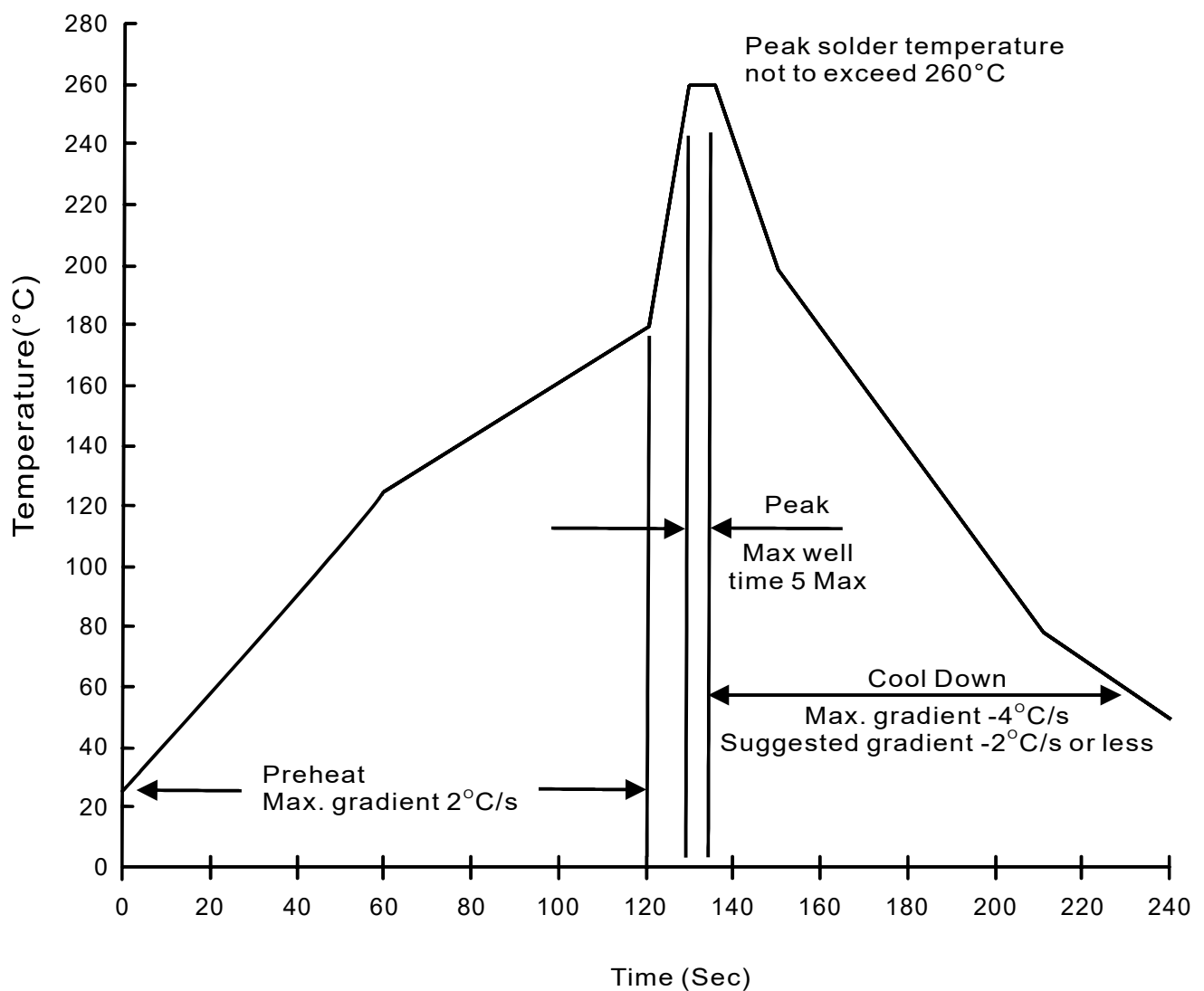
Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
MBR2040FCTW	MBR2040FCTW
MBR2045FCTW	MBR2045FCTW
MBR2060FCTW	MBR2060FCTW
MBR20100FCTW	MBR20100FCTW
MBR20150FCTW	MBR20150FCTW
MBR20200FCTW	MBR20200FCTW

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)
ITO-220AB	50	525*31.9*6.4	1000	545*150*45	575*245*170	5,000	15.0

MBR2040FCTW THRU MBR20200FCTW**Suggested thermal profiles for soldering processes****1. Lead free temperature profile wave-soldering**

MBR2040FCTW THRU MBR20200FCTW**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