

# MBR1040 THRU MBR10200

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# MBR1040 THRU MBR10200

## 10A High Barrier Power Schottky Rectifiers - 40V-200V

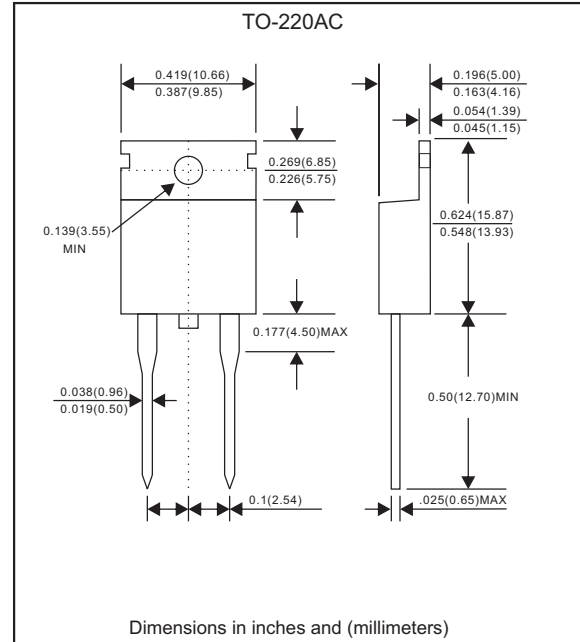
### Features

- 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. MBR1040-H.

### Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC TO-220AC 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 2.05 gram

### Package outline



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

PARAMETER	SYMBOLS	MBR 1040	MBR 1045	MBR 1050	MBR 1060	MBR 1080	MBR 10100	MBR 10150	MBR 10200	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	40	45	50	60	80	100	150	200	V
Maximum RMS voltage	$V_{RMS}$	28	31.5	35	42	56	70	105	140	V
Maximum DC blocking voltage	$V_{DC}$	40	45	50	60	80	100	150	200	V
Maximum average forward rectified current	$I_o$	10								A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	$I_{FSM}$	150								A
Operating junction temperature range	$T_J$	-55 to +150								$^\circ\text{C}$
Storage temperature range	$T_{STG}$	-65 to +175								$^\circ\text{C}$

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

PARAMETER	SYMBOLS	MBR 1040	MBR 1045	MBR 1050	MBR 1060	MBR 1080	MBR 10100	MBR 10150	MBR 10200	UNIT	
Maximum forward voltage at $I_F=10\text{A}$	$V_F$	0.70		0.80		0.85		0.95		V	
Maximum DC reverse current at $T_J=25^\circ\text{C}$ at rated DC blocking voltage at $T_J=125^\circ\text{C}$	$I_R$	0.1				15					mA mA

### Thermal Characteristics

PARAMETER	SYMBOLS	MBR 1040	MBR 1045	MBR 1050	MBR 1060	MBR 1080	MBR 10100	MBR 10150	MBR 10200	UNIT
Typical thermal resistance junction to case	$R_{\theta JC}$	2.0								$^\circ\text{C}/\text{W}$

# Rating and characteristic curves (MBR1040 THRU MBR10200)

FIG. 1 - FORWARD CURRENT DERATING CURVE

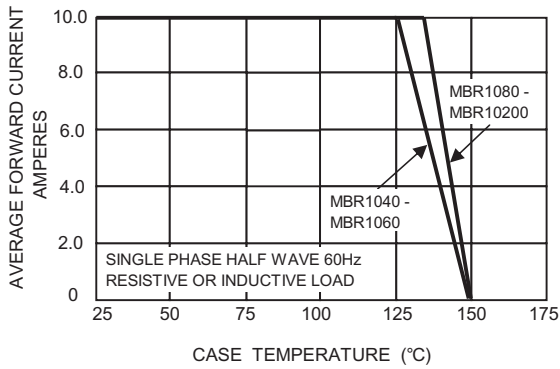


FIG. 2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

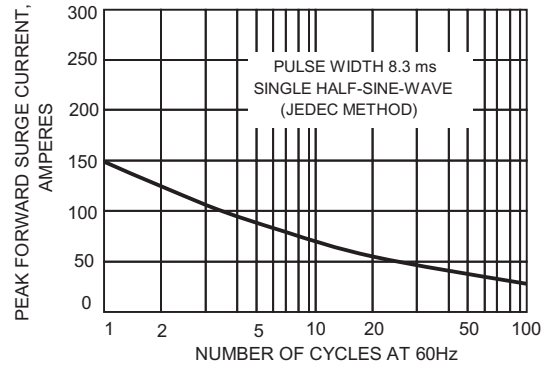


FIG.3-TYPICAL REVER CHARACTERISTICS

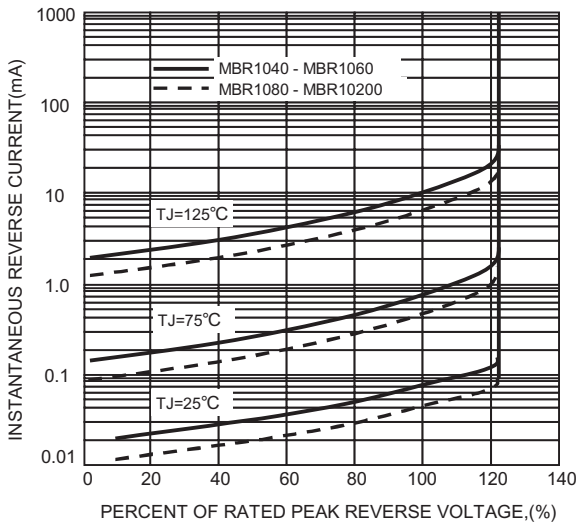


FIG.4-TYPICAL FORWARD CHARACTERISTICS

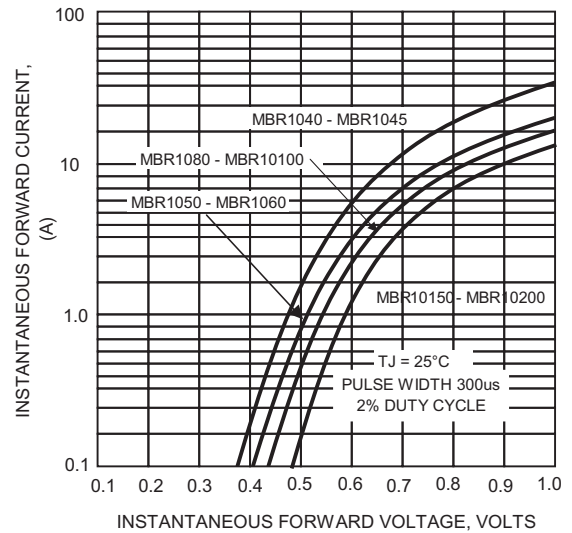
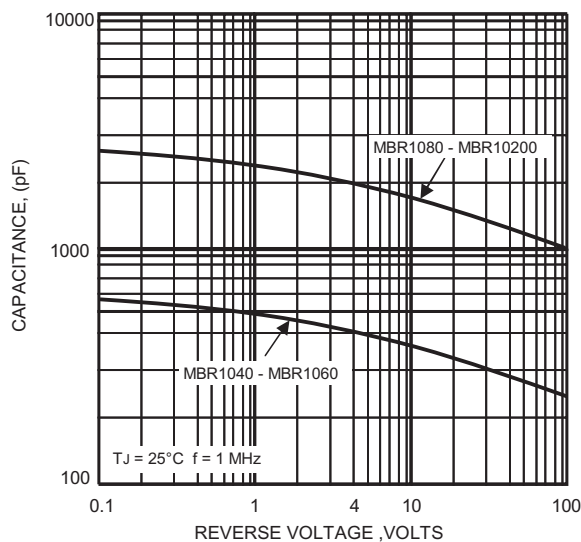
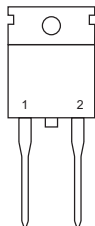



FIG.5 - TYPICAL JUNCTION CAPACITANCE



# MBR1040 THRU MBR10200

## Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

## Marking

Type number	Marking code
MBR1040	MBR1040
MBR1045	MBR1045
MBR1050	MBR1050
MBR1060	MBR1060
MBR1080	MBR1080
MBR10100	MBR10100
MBR10150	MBR10150
MBR10200	MBR10200

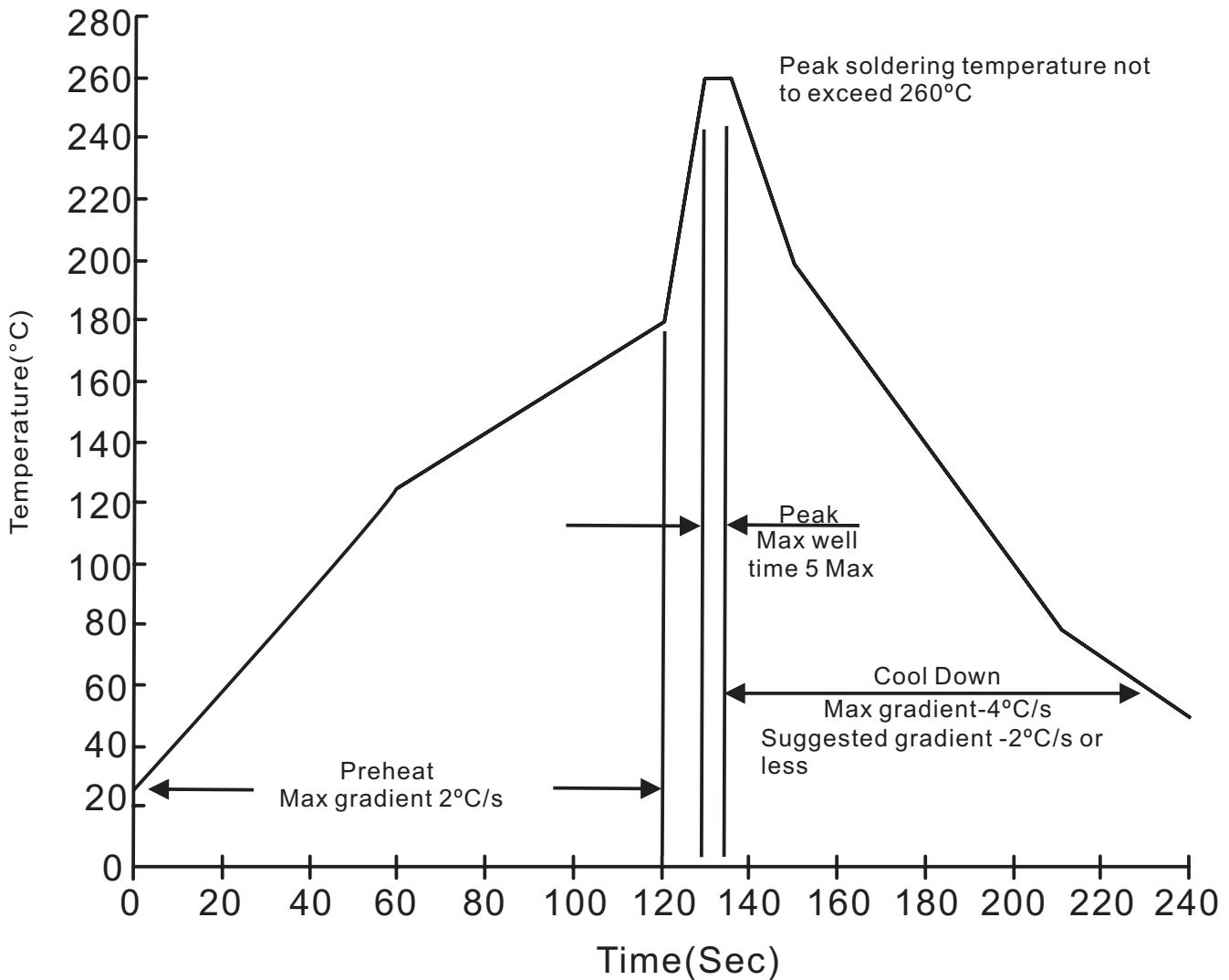
## Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
TO-220AC	50	525*32*7.5	1000	555*150*40	580*230*175	5,000	15.0

# MBR1040 THRU MBR10200

## Suggested thermal profiles for soldering processes

### 1. Lead free temperature profile wave-soldering



**MBR1040 THRU MBR10200****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	$-55^{\circ}\text{C}$ 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 $175^{\circ}\text{C}$ for 1000 hrs.	MIL-STD-750D METHOD-1031