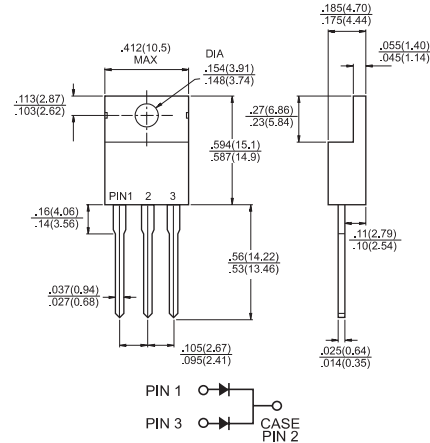




### TO-220AB

## Features

- ✦ Plastic material used carries Underwriters Laboratory Classifications 94V-0
- ✦ Metal silicon junction, majority carrier conduction
- ✦ Low power loss, high efficiency
- ✦ High current capability, low forward voltage drop
- ✦ High surge capability
- ✦ For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- ✦ Guardring for overvoltage protection
- ✦ High temperature soldering guaranteed: 260°C/10 seconds, 0.25" (6.35mm) from case



## Mechanical Data

- ✦ Cases: JEDEC TO-220AB molded plastic
- ✦ Polarity: As marked
- ✦ Mounting position: Any
- ✦ Mounting torque: 5 in. - lbs. max
- ✦ Weight: 2.24 grams

Dimensions in inches and (millimeters)

## Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load.

For capacitive load, derate current by 20%

| Type Number   | Symbol          | MBR 3035 CT                | MBR 3045 CT | MBR 3050 CT  | MBR 3060 CT | MBR 3090 CT                  | MBR 30100 CT | MBR 30150 CT                 | Units                     |
|---|-----------------|----------------------------|-------------|--------------|-------------|------------------------------|--------------|------------------------------|---------------------------|
| Maximum Recurrent Peak Reverse Voltage  | $V_{RRM}$       | 35                         | 45          | 50           | 60          | 90                           | 100          | 150                          | V                         |
| Maximum RMS Voltage   | $V_{RMS}$       | 24                         | 31          | 35           | 42          | 63                           | 70           | 105                          | V                         |
| Maximum DC Blocking Voltage   | $V_{DC}$        | 35                         | 45          | 50           | 60          | 90                           | 100          | 150                          | V                         |
| Maximum Average Forward Rectified Current at $T_c=130^\circ\text{C}$  | $I_{(AV)}$      |                            |             |              | 30          |                              |              |                              | A                         |
| Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20KHz) at $T_c=130^\circ\text{C}$   | $I_{FRM}$       |                            |             |              | 30          |                              |              |                              | A                         |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)  | $I_{FSM}$       |                            |             |              | 200         |                              |              |                              | A                         |
| Peak Repetitive Reverse Surge Current (Note 1)  | $I_{RRM}$       | 1.0                        |             |              | 0.5         |                              |              |                              | A                         |
| Maximum Instantaneous Forward Voltage at (Note 2)<br>$I_F=15\text{A}, T_c=25^\circ\text{C}$<br>$I_F=15\text{A}, T_c=125^\circ\text{C}$<br>$I_F=30\text{A}, T_c=25^\circ\text{C}$<br>$I_F=30\text{A}, T_c=125^\circ\text{C}$ | $V_F$           | 0.7<br>0.6<br>0.82<br>0.73 |             | 0.77<br>0.67 |             | 0.84<br>0.70<br>0.94<br>0.82 |              | 0.95<br>0.92<br>1.02<br>0.98 | V                         |
| Maximum Instantaneous Reverse Current @ $T_c=25^\circ\text{C}$ at Rated DC Blocking Voltage Per Leg @ $T_c=125^\circ\text{C}$ (Note 2)  | $I_R$           | 0.2<br>15                  |             | 0.2<br>10    |             | 0.2<br>7.5                   |              | 0.1<br>5.0                   | mA<br>mA                  |
| Voltage Rate of Change, (Rated $V_R$ )  | $dV/dt$         |                            |             |              | 1,000       |                              |              |                              | V/ $\mu\text{S}$          |
| Typical Junction Capacitance  | $C_j$           | 600                        |             | 460          |             | 320                          |              |                              | pF                        |
| Maximum Thermal Resistance Per Leg (Note 3)   | $R_{\theta JC}$ | 1.0                        |             |              | 1.5         |                              |              |                              | $^\circ\text{C}/\text{W}$ |
| Operating Junction Temperature Range  | $T_J$           |                            |             |              | -65 to +150 |                              |              |                              | $^\circ\text{C}$          |
| Storage Temperature Range   | $T_{STG}$       |                            |             |              | -65 to +175 |                              |              |                              | $^\circ\text{C}$          |

- Notes:
1. 2.0us Pulse Width,  $f=1.0\text{ KHz}$
  2. Pulse Test: 300us Pulse Width, 1% Duty Cycle
  3. Thermal Resistance from Junction to Case Per Leg, with Heatsink size (4"x6"x0.25") Al-Plate

### RATINGS AND CHARACTERISTIC CURVES (MBR3035CT THRU MBR30150CT)

FIG.1- FORWARD CURRENT DERATING CURVE

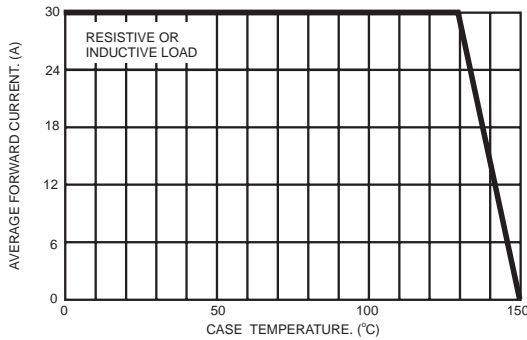


FIG.2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT PER LEG

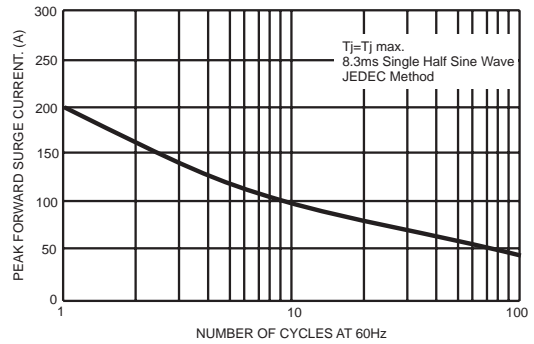


FIG.3- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS PER LEG

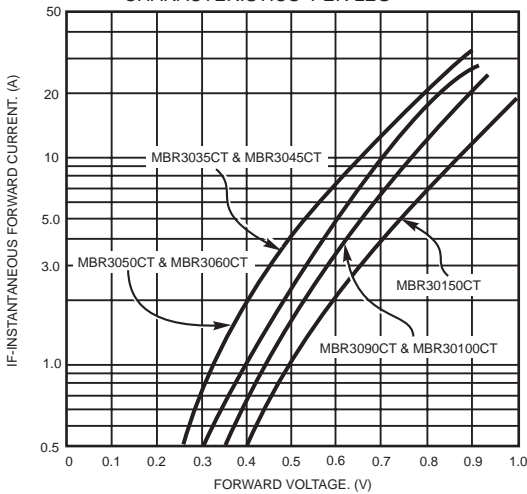


FIG.4- TYPICAL REVERSE CHARACTERISTICS PER LEG

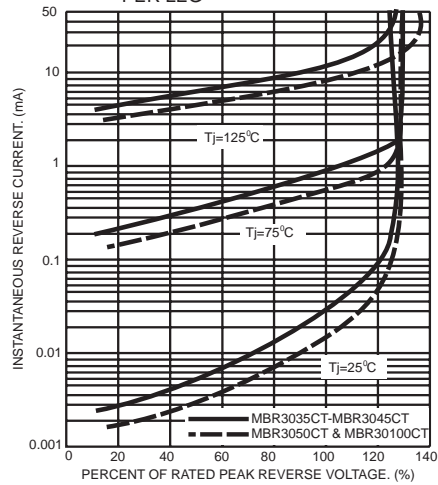


FIG.5- TYPICAL JUNCTION CAPACITANCE PER LEG

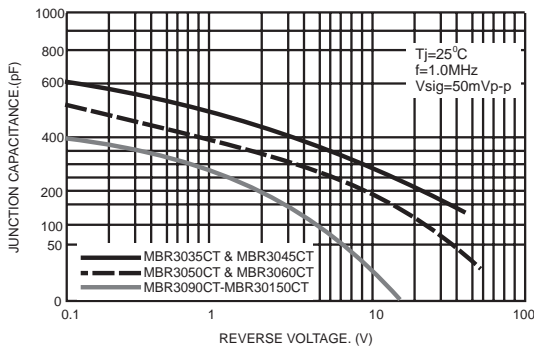


FIG.6- TYPICAL TRANSIENT THERMAL IMPEDANCE PER LEG

