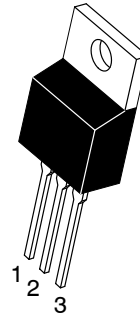




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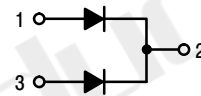
Features

- Metal silicon junction, majority carrier conduction
- Plastic material used carries Underwriters Laboratory Classifications 94V-0
- High surge capability
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- 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
- Green compound with suffix "G" on packing code & prefix "G" on datecode.



Mechanical Data

- Cases: JEDEC TO-220AB molded plastic
- Polarity: As marked
- Terminals: Pure tin plated, lead free. solderable per MIL-STD-750, Method 2026
- Mounting position: Any
- Weight: 1.88grams
- Mounting torque: 5 in. - lbs. max



Marking Diagram



- Y = Year
- A = Assembly Location
- WW = Work Week
- MBR10XX = Specific Device Code

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 1040 CTG | MBR 1045 CTG | MBR 1050 CTG | MBR 1060 CTG | MBR 1080 CTG | MBR 10100 CTG | MBR 10150 CTG | MBR 10200 CTG | Units |
|---|--------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|---------------|---------------|---------------|----------|
| Maximum Recurrent Peak Reverse Voltage | V _{RRM} | 40 | 45 | 50 | 60 | 80 | 100 | 150 | 200 | V |
| Maximum RMS Voltage | V _{RMS} | 28 | 31 | 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 at T _c =125°C | I _{F(AV)} | 10 | | | | | | | | A |
| Peak Repetitive Forward Current (Rated V _R , Square Wave, 20KHz) at T _c =125°C | I _{FRM} | 10 | | | | | | | | A |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) | I _{FSM} | 120 | | | | | | | | A |
| Peak Repetitive Reverse Surge Current (Note 2) | I _{RRM} | 0.5 | | | | | | | | A |
| Maximum Instantaneous Forward Voltage at: I _F =5A, T _A =25°C I _F =5A, T _A =125°C I _F =10A, T _A =25°C I _F =10A, T _A =125°C | V _F | 0.70 0.55 0.80 0.70 | 0.74 0.60 0.85 0.74 | 0.80 0.70 0.90 0.80 | 0.85 0.75 0.95 0.85 | | | | | V |
| Maximum Instantaneous Reverse Current @ T _A =25°C at Rated DC Blocking Voltage (Note 1) @ T _A =125°C | I _R | 0.1 | | | | | | | | mA mA |
| Voltage Rate of Change (Rated V _R) | dV/dt | 10,000 | | | | | | | | V/uS |
| Maximum Typical Thermal Resistance (Note 3) | R _{θJC} | 1.5 | | | | | | | | °C/W |
| Operating Junction Temperature Range | T _J | -55to +150 | | | | | | | | °C |
| Storage Temperature Range | T _{STG} | -55to +175 | | | | | | | | °C |

- Notes: 1. Pulse Test: 300us Pulse Width, 1% Duty Cycle
 2. 2.0us Pulse Width, f=1.0 KHz
 3. Mount on Heatsink Size of 2 in x 3 in x 0.25in Al-Plate.



RATINGS AND CHARACTERISTIC CURVES

FIG.1- FORWARD CURRENT DERATING CURVE

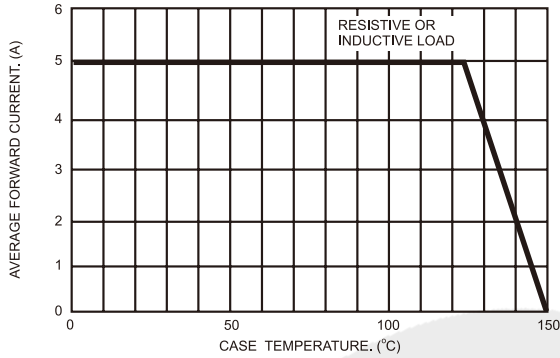


FIG.2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

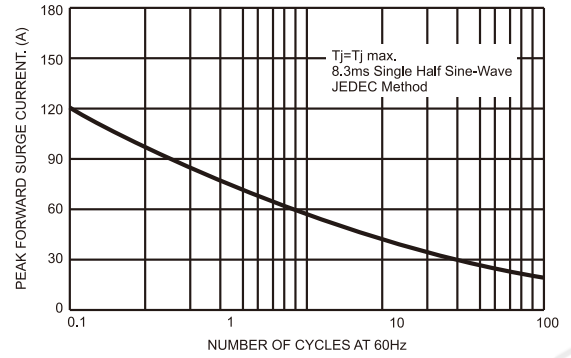


FIG.3- TYPICAL FORWARD CHARACTERISTICS

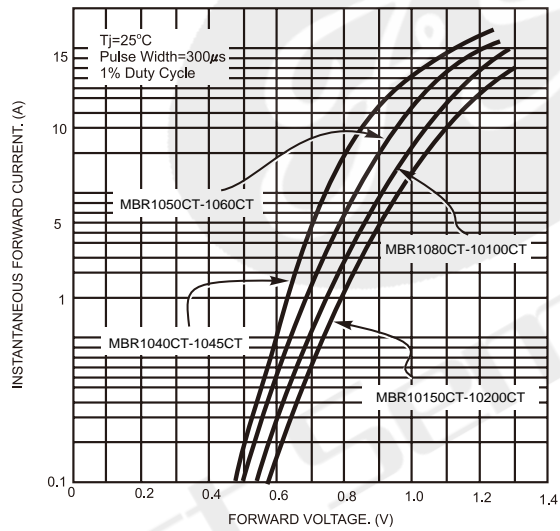
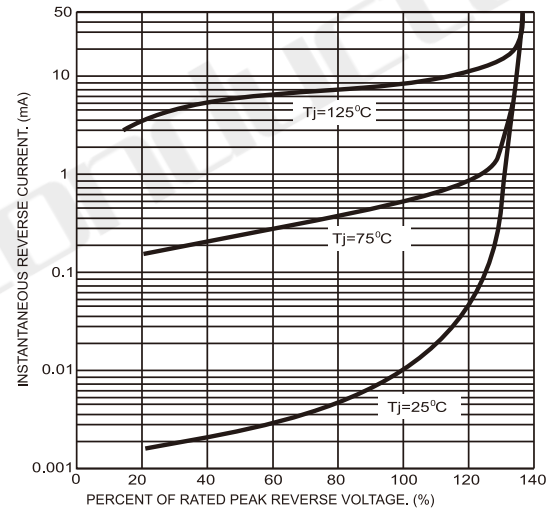


FIG.4- TYPICAL REVERSE CHARACTERISTICS



G C S

FIG.5- TYPICAL JUNCTION CAPACITANCE

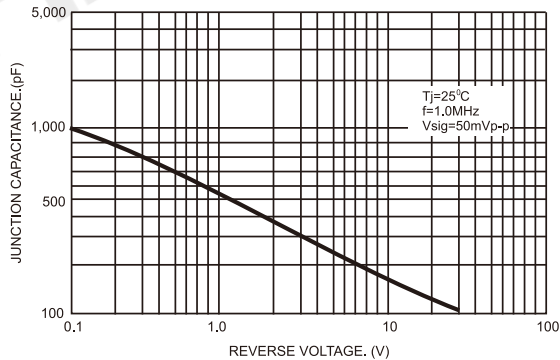
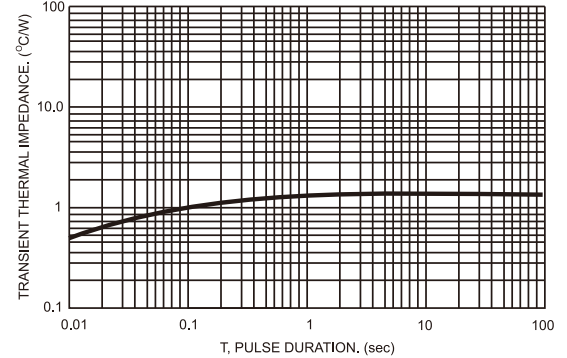


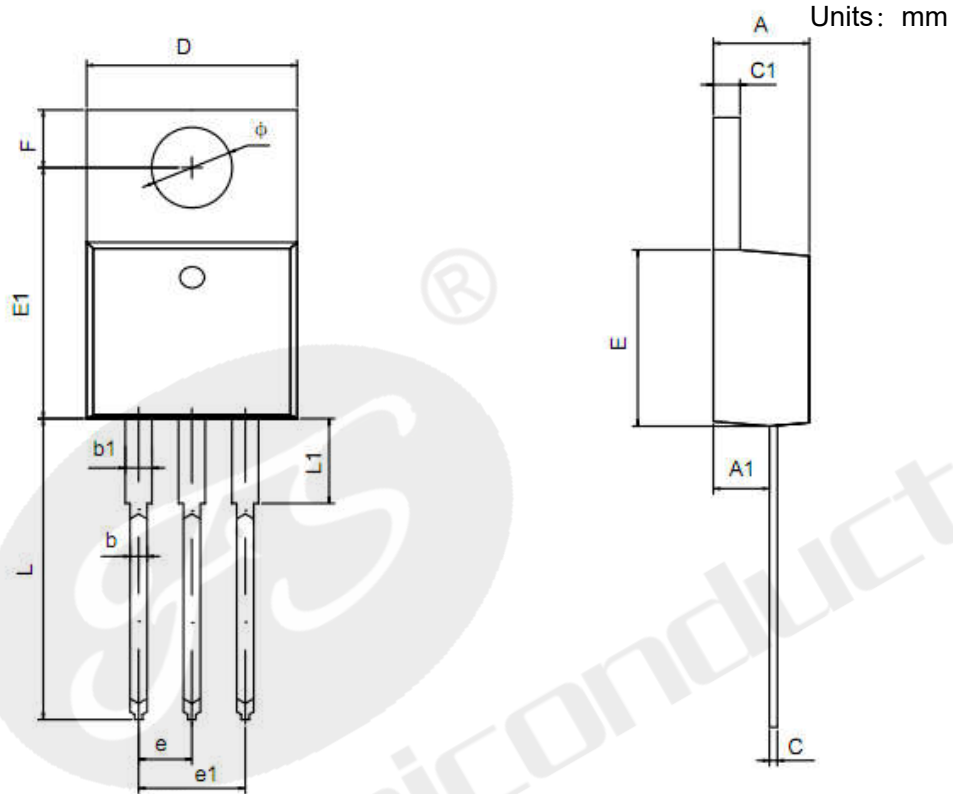
FIG.6- TYPICAL TRANSIENT THERMAL CHARACTERISTICS PER LEG





Package Dimensions

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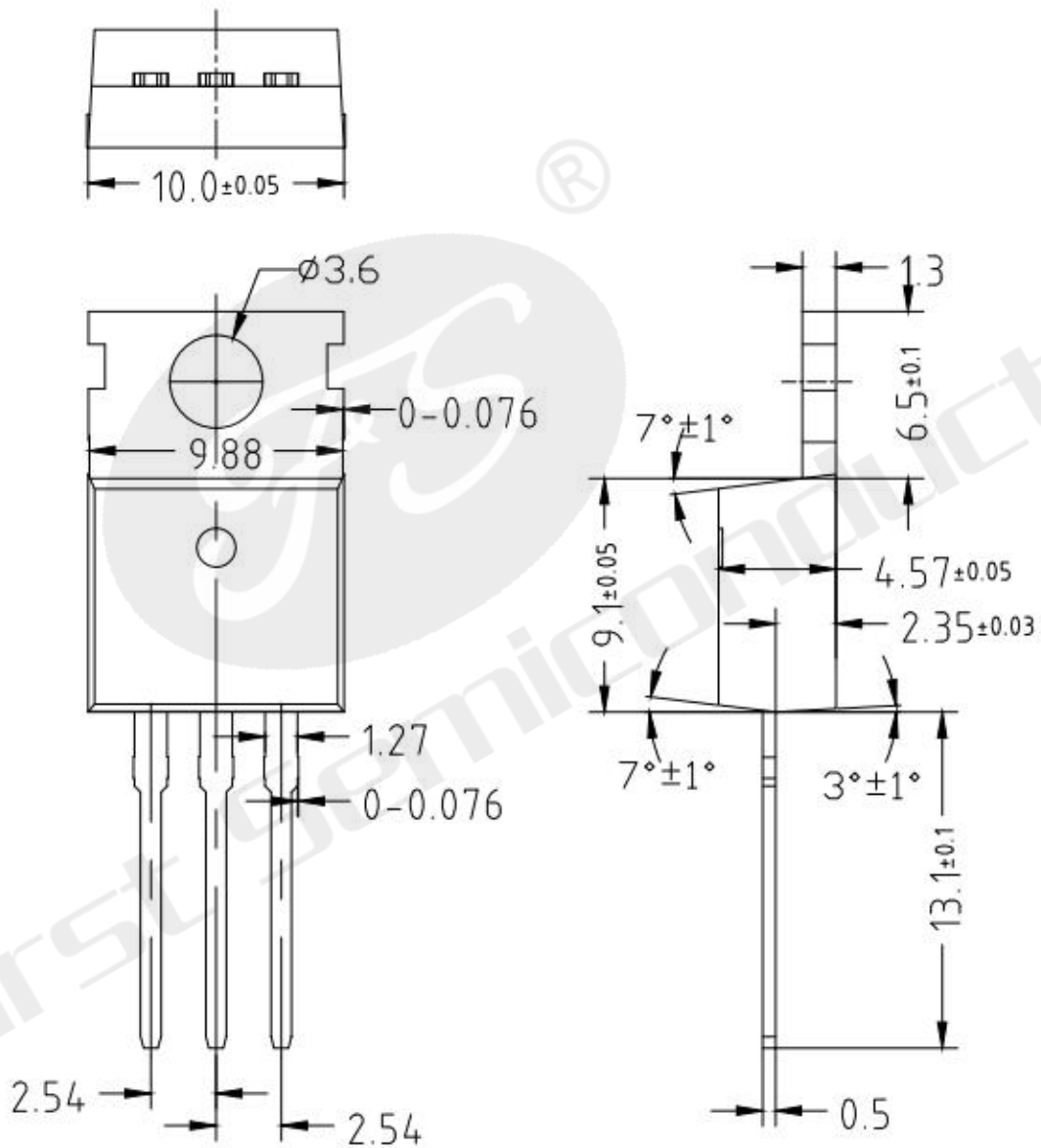
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.42 | 4.72 | 0.174 | 0.188 |
| A1 | 2.52 | 2.82 | 0.099 | 0.111 |
| b | 0.71 | 0.91 | 0.028 | 0.036 |
| b1 | 1.17 | 1.37 | 0.046 | 0.054 |
| c | 0.36 | 0.46 | 0.014 | 0.018 |
| c1 | 1.17 | 1.37 | 0.046 | 0.054 |
| D | 9.95 | 10.25 | 0.392 | 0.404 |
| E | 8.8 | 9.1 | 0.346 | 0.358 |
| E1 | 12.55 | 12.85 | 0.494 | 0.506 |
| e | 2.540TYP | | 0.100TYP | |
| e1 | 4.98 | 5.18 | 0.196 | 0.204 |
| F | 2.59 | 2.89 | 0.102 | 0.114 |
| L | 13.08 | 13.48 | 0.515 | 0.531 |
| L1 | 3.4 | 3.6 | 0.134 | 0.142 |
| Φ | 3.8 | 3.95 | 0.15 | 0.156 |



Package Dimensions

TO-220

Units: mm





Declaration

- FIRST reserves the right to change the specifications, the same specifications of products due to different packaging line mold, the size of the appearance will be slightly different, shipped in kind, without notice! Customers should obtain the latest version information before ordering, and verify whether the relevant information is complete and up-to-date.
- Any semiconductor product under certain conditions has the possibility of failure or failure, The buyer has the responsibility to comply with safety standards and take safety measures when using FIRST products for system design and manufacturing, To avoid To avoid potential failure risks, which may cause personal injury or property damage!
- Product promotion endless, our company will wholeheartedly provide customers with better products!

ATTACHMENT

Revision History

| Date | REV | Description | Page |
|------------|-----|-----------------|------|
| 2022.04.01 | 1.0 | Initial release | |

