

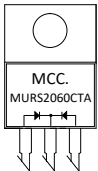
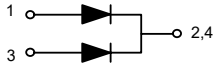
Features

- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix Designates Compliant. See Ordering Information)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Low Switching Losses and High Efficiency
- Low Reverse Leakage
- Ultrafast Recovery Time
- Planar Structure Die and Soft Recovery Characteristics

Maximum Ratings @ 25°C (Unless Otherwise Specified)

| Parameter | Symbol | Value | Unit |
|---|-------------|-------|------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 600 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_R | | |
| RMS Reverse Voltage | V_{RMS} | 420 | V |
| Average Rectified Forward Current | $I_{F(AV)}$ | 10 | A |
| Per Diode Per Device | | 20 | |
| Non-Repetitive Peak Surge Current @8.3ms Half Sine Wave | I_{FSM} | 120 | A |
| Current Squared Time @ 1ms≤t≤8.3ms | I^2t | 59.76 | A ² s |

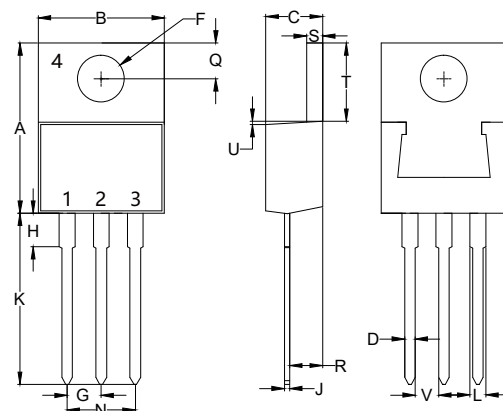
Internal Structure

| Pin | Description | Simplified Outline | Graphic Symbol |
|-----|-------------|---|---|
| 2&4 | Cathode |  |  |
| 1&3 | Anode | | |

Note :1. High Temperature Solder Exemption Applied, See EU Directive Annex 7a.

20 Amp FRED Rectifiers 600 Volts

TO-220AB



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|-------|-------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.560 | 0.625 | 14.22 | 15.88 | |
| B | 0.380 | 0.429 | 9.65 | 10.90 | |
| C | 0.140 | 0.201 | 3.56 | 5.10 | |
| D | 0.020 | 0.045 | 0.51 | 1.14 | |
| F | 0.131 | 0.170 | 3.34 | 4.31 | Φ |
| G | 0.079 | 0.121 | 2.01 | 3.07 | |
| H | ---- | 0.250 | ---- | 6.35 | |
| J | 0.011 | 0.025 | 0.28 | 0.64 | |
| K | 0.500 | 0.580 | 12.70 | 14.73 | |
| L | 0.045 | 0.060 | 1.14 | 1.52 | |
| N | 0.158 | 0.242 | 4.02 | 6.14 | |
| Q | 0.087 | 0.135 | 2.22 | 3.43 | |
| R | 0.080 | 0.126 | 2.04 | 3.19 | |
| S | 0.045 | 0.055 | 1.14 | 1.39 | |
| T | 0.230 | 0.270 | 5.84 | 6.86 | |
| U | ---- | 0.050 | ---- | 1.27 | |
| V | 0.045 | ---- | 1.15 | ---- | |

Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|--|------------|-----|-----|-----|------|
| T_J | Operating Junction Temperature Range | | -55 | | 175 | °C |
| T_{stg} | Storage Temperature Range | | -55 | | 175 | °C |
| $R_{th(J-C)}$ | Thermal Resistance from Junction to Case | | | 2 | | °C/W |

Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------|--------|----------------------------------|-----|------|------|------|
| Forward Voltage | V_F | $I_F=10A; T_J=25^\circ C$ | | 1.40 | 1.60 | V |
| | | $I_F=10A; T_J=150^\circ C$ | | 1.18 | 1.30 | |
| Reverse Current | I_R | $V_R=600V; T_J=25^\circ C$ | | | 5 | uA |
| | | $V_R=600V; T_J=150^\circ C$ | | | 200 | |
| Junction Capacitance | C_J | $V_R=4V; f=1MHz; T_J=25^\circ C$ | | 45 | | pF |

Dynamic Recovery Characteristics @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit | |
|-------------------------|-----------|--|-------------------|-----|------|------|--|
| Reverse Recovery Time | t_{rr} | $I_F=0.5A; I_R=1.0A; I_{RR}=0.25A; T_J=25^\circ C$ | | 20 | 35 | ns | |
| | | | $T_J=25^\circ C$ | | 102 | | |
| | | | $T_J=150^\circ C$ | | 152 | | |
| Peak Recovery Current | I_{RRM} | $I_F=10A$ $d_{IF}/d_t=-200A/\mu s$ $V_{RM}=400V$ | $T_J=25^\circ C$ | | 3.52 | A | |
| | | | $T_J=150^\circ C$ | | 8.18 | | |
| Reverse Recovery Charge | Q_{rr} | | $T_J=25^\circ C$ | | 180 | nC | |
| | | | $T_J=150^\circ C$ | | 623 | | |

Curve Characteristics

Fig. 1 - Forward Current Derating Curve

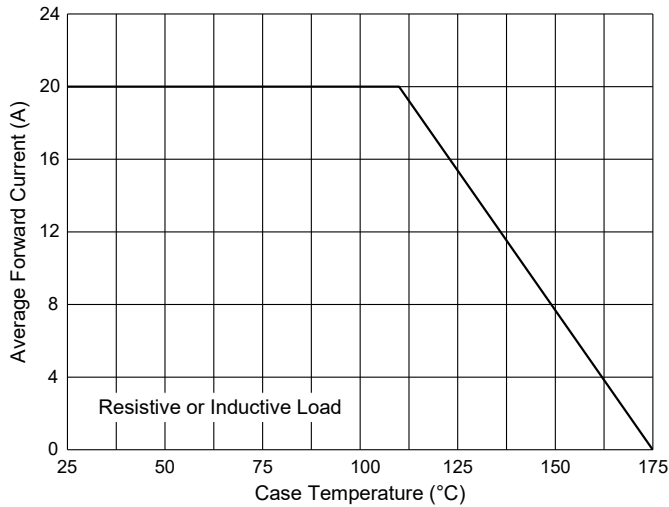


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

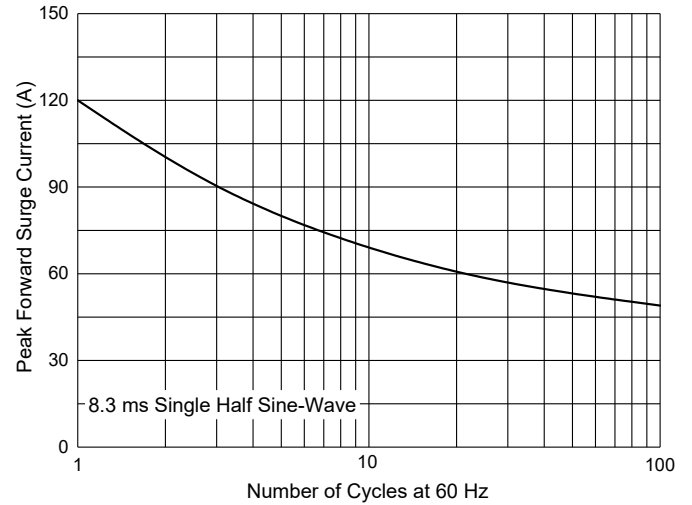


Fig. 3 - Typical Forward Characteristics

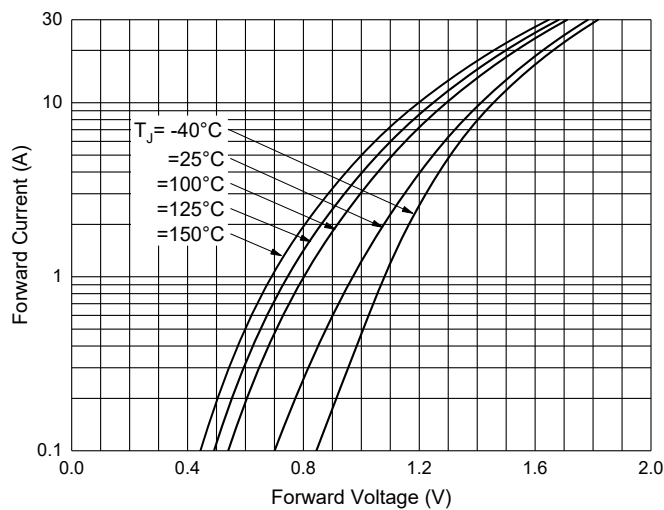


Fig. 4 - Typical Reverse Leakage Characteristics

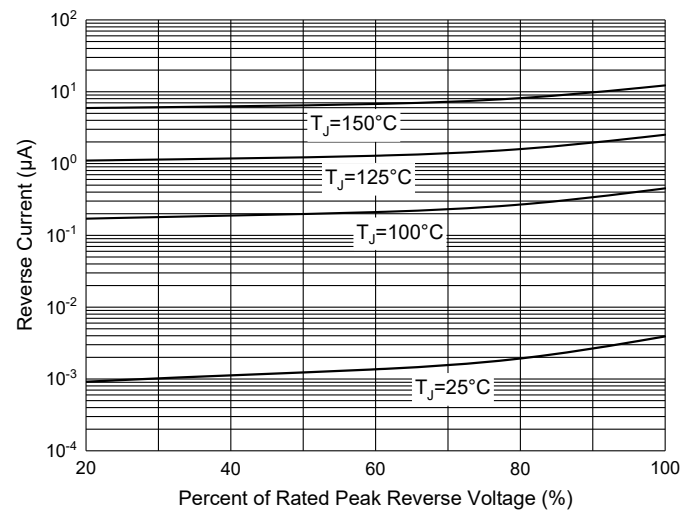


Fig. 5 - Typical Capacitance Characteristics

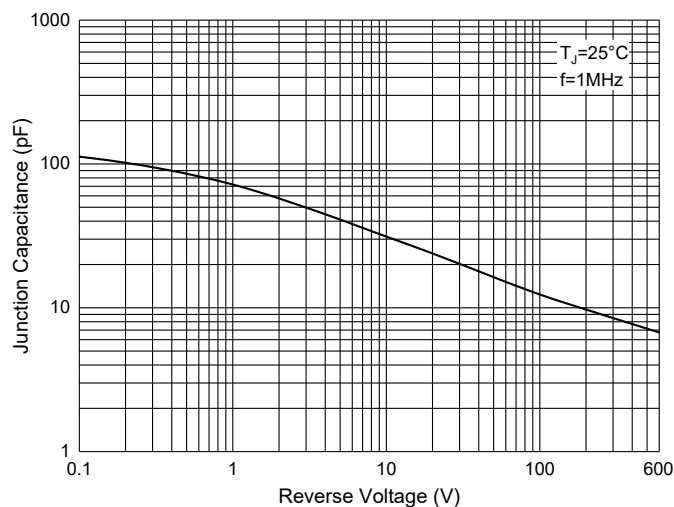
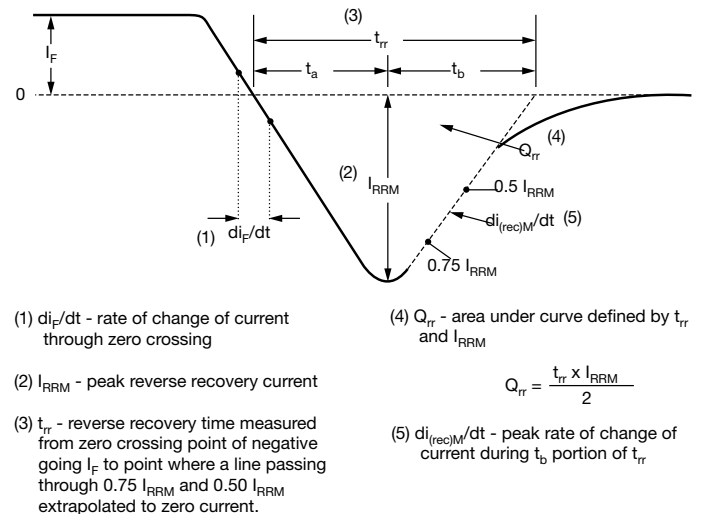


Fig. 6 - Reverse Recovery Waveform and Definitions



Ordering Information

| Device | Packing |
|----------------|--|
| Part Number-BP | Bulk:50pcs/Tube,1Kpcs/Box,5Kpcs/Carton |

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-BP-HF

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