

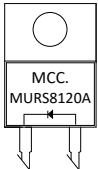

## Features

- 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                         | $V_{RRM}$   | 1200  | V                |
| Working Peak Reverse Voltage                            | $V_{RWM}$   |       |                  |
| DC Blocking Voltage                                     | $V_R$       |       |                  |
| RMS Reverse Voltage                                     | $V_{RMS}$   | 840   | V                |
| Average Rectified Forward Current                       | $I_{F(AV)}$ | 8     | A                |
| Non-Repetitive Peak Surge Current @8.3ms Half Sine Wave | $I_{FSM}$   | 60    | A                |
| Current Squared Time @ 1ms≤t≤8.3ms                      | $I^2t$      | 14.94 | A <sup>2</sup> s |

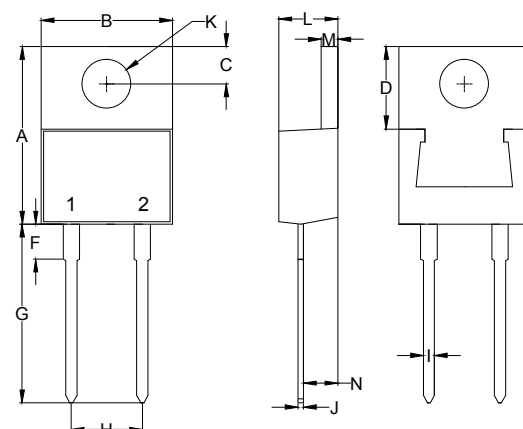
## Internal Structure

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

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

# 8 Amp FRED Rectifiers 1200 Volts

## TO-220AC



| DIMENSIONS |        |       |       |       |      |
|------------|--------|-------|-------|-------|------|
| DIM        | INCHES |       | MM    |       | NOTE |
|            | MIN    | MAX   | MIN   | MAX   |      |
| A          | 0.560  | 0.625 | 14.22 | 15.88 |      |
| B          | 0.380  | 0.420 | 9.65  | 10.67 |      |
| C          | 0.100  | 0.135 | 2.54  | 3.43  |      |
| D          | 0.230  | 0.270 | 5.84  | 6.86  |      |
| F          | -----  | 0.250 | ----- | 6.35  |      |
| G          | 0.500  | 0.580 | 12.70 | 14.73 |      |
| H          | 0.190  | 0.210 | 4.83  | 5.33  |      |
| I          | 0.020  | 0.045 | 0.51  | 1.14  |      |
| J          | 0.012  | 0.025 | 0.30  | 0.64  |      |
| K          | 0.139  | 0.161 | 3.53  | 4.09  | Φ    |
| L          | 0.140  | 0.190 | 3.56  | 4.83  |      |
| M          | 0.045  | 0.055 | 1.14  | 1.40  |      |
| N          | 0.080  | 0.115 | 2.03  | 2.92  |      |

## Thermal characteristics

| Symbol        | Parameter                                | Conditions | Min | Typ | Max | Unit |
|---------------|--|------------|-----|-----|-----|------|
| $T_J$         | Operating Junction Temperature Range     |            | -55 |     | 150 | °C   |
| $T_{stg}$     | Storage Temperature Range                |            | -55 |     | 150 | °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      | $V_F$  | $I_F=8A; T_J=25^{\circ}C$         |     | 2.0 | 2.5 | V    |
|                      |        | $I_F=8A; T_J=125^{\circ}C$        |     | 1.7 | 2.1 |      |
| Reverse Current      | $I_R$  | $V_R=1200V; T_J=25^{\circ}C$      |     |     | 5   | uA   |
|                      |        | $V_R=1200V; T_J=125^{\circ}C$     |     |     | 200 |      |
| Junction Capacitance | $C_J$  | $V_R=4V; f=1MHz; T_J=25^{\circ}C$ |     | 26  |     | pF   |

## Dynamic Recovery Characteristics @ 25°C Unless Otherwise Specified

| Parameter               | Symbol    | Test Conditions                                     | Min | Typ  | Max | Unit |
|-------------------------|-----------|---|-----|------|-----|------|
| Reverse Recovery Time   | $t_{rr}$  | $I_F=0.5A; I_R=1.0A; I_{RR}=0.25A; T_J=25^{\circ}C$ |     | 44   | 75  | ns   |
|                         |           | $T_J=25^{\circ}C$                                   |     | 249  |     |      |
|                         |           | $T_J=125^{\circ}C$                                  |     | 438  |     |      |
| Peak Recovery Current   | $I_{RRM}$ | $I_F=8A$<br>$dI_F/dt=-200A/\mu s$<br>$V_{RM}=400V$  |     | 5.2  |     | A    |
|                         |           | $T_J=125^{\circ}C$                                  |     | 7.3  |     |      |
| Reverse Recovery Charge | $Q_{rr}$  | $T_J=25^{\circ}C$                                   |     | 645  |     | nC   |
|                         |           | $T_J=125^{\circ}C$                                  |     | 1555 |     |      |

## Curve Characteristics

Fig. 1 - Forward Current Derating Curve

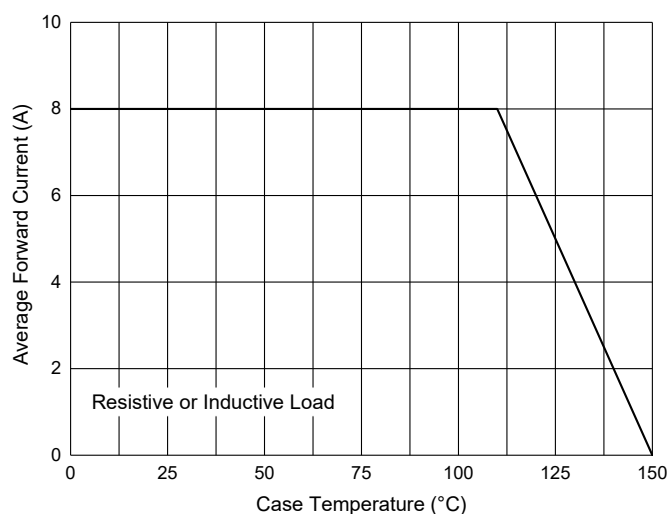


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

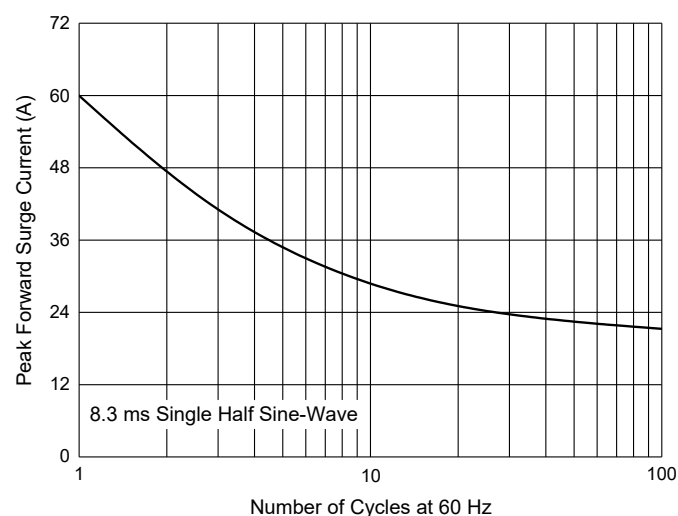


Fig. 3 - Typical Forward Characteristics

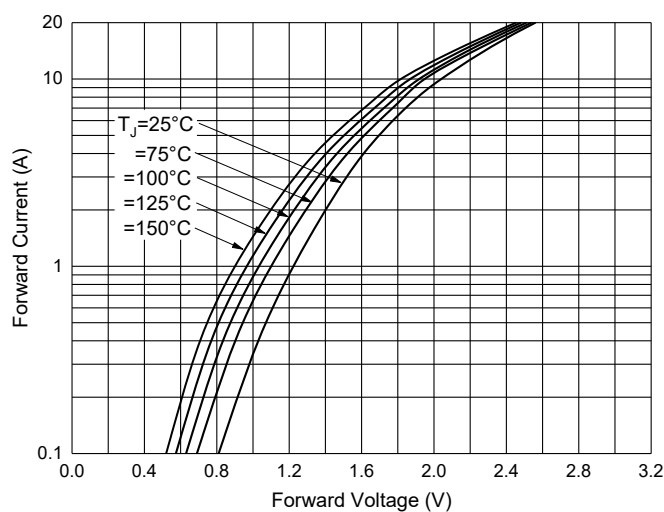


Fig. 4 - Typical Reverse Leakage Characteristics

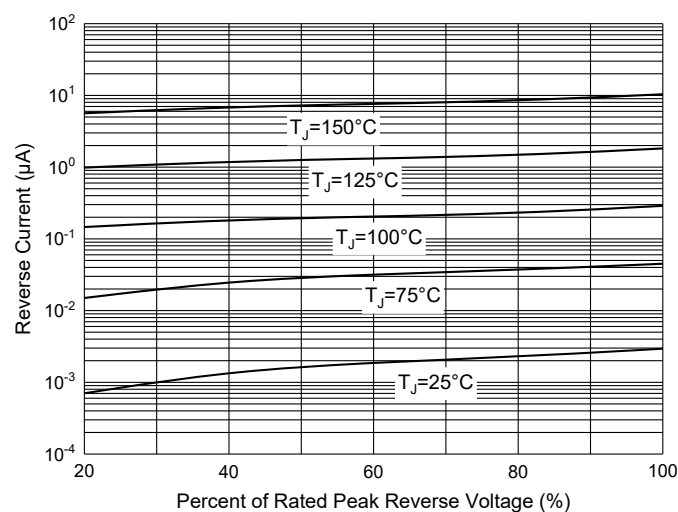
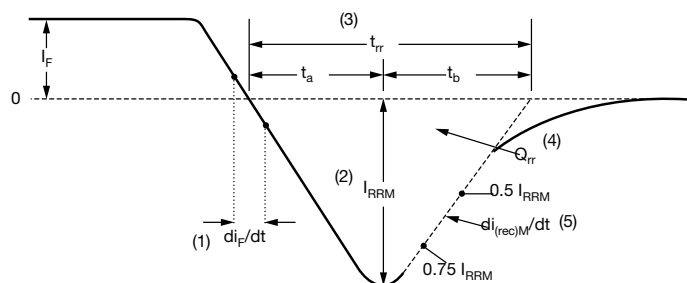


Fig. 5 - Reverse Recovery Waveform and Definitions



(1)  $di_F/dt$  - rate of change of current through zero crossing

(2)  $I_{RRM}$  - peak reverse recovery current

(3)  $t_{rr}$  - reverse recovery time measured from zero crossing point of negative going  $I_F$  to point where a line passing through  $0.75 I_{RRM}$  and  $0.50 I_{RRM}$  extrapolated to zero current.

(4)  $Q_{rr}$  - area under curve defined by  $t_{rr}$  and  $I_{RRM}$

$$Q_{rr} = \frac{t_{rr} \times I_{RRM}}{2}$$

(5)  $di_{(rec)}/dt$  - peak rate of change of current during  $t_b$  portion of  $t_{rr}$

## 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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