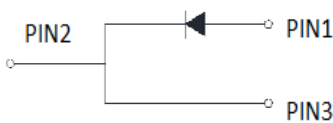
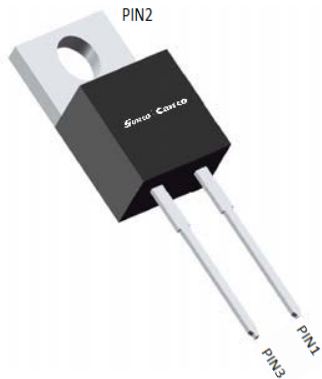


## Ultra-Fast Recovery Diodes 10A FRED



### Features

- Adopt FRED chip
- Low forward Voltage drop
- Fast reverse recovery time
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability

### Typical Applications

Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

### Mechanical Data

- **Package:** TO-220AC  
Molding compound meets UL 94 V-0 flammability rating, -
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** As marked

### ■Maximum Ratings (T<sub>j</sub>=25°C Unless otherwise specified )

| PARAMETER                                                                                   | SYMBOL           | UNIT             | MUR1020    |
|---------------------------------------------------------------------------------------------|------------------|------------------|------------|
| Device marking code                                                                         |                  |                  | MUR1020    |
| Repetitive Peak Reverse Voltage                                                             | V <sub>RRM</sub> | V                | 200        |
| Average Rectified Output Current<br>@60Hz sine wave, R-load, T <sub>c</sub> (FIG.1)         | I <sub>O</sub>   | A                | 10         |
| Surge(Non-repetitive)Forward Current<br>@60Hz half sine-wave, 1 cycle, T <sub>j</sub> =25°C | I <sub>FSM</sub> | A                | 120        |
| Current Squared Time @1ms≤t≤8.3ms T <sub>j</sub> =25°C,                                     | I <sup>2</sup> t | A <sup>2</sup> s | 60         |
| Storage Temperature                                                                         | T <sub>stg</sub> | °C               | -55 ~ +175 |
| Junction Temperature                                                                        | T <sub>j</sub>   | °C               | -55 ~ +175 |
| Typical Junction capacitance @4V,1MHz                                                       | C <sub>j</sub>   | pF               | 150        |

# MUR1020

## ■Electrical Characteristics

| PARAMETER                                                 | SYMBOL     | UNIT    | TEST CONDITIONS                                            | Min | Typ  | Max |
|-----------------------------------------------------------|------------|---------|------------------------------------------------------------|-----|------|-----|
| Instantaneous forward voltage drop per diode              | $V_{FM}$   | V       | $I_{FM}=10.0A$ @ $T_j=25^{\circ}C$                         | -   | 0.90 | 1.0 |
|                                                           |            |         | $I_{FM}=10.0A$ @ $T_j=150^{\circ}C$                        |     | 0.78 | 0.9 |
| DC reverse current at rated DC blocking voltage per diode | $I_{RRM1}$ | $\mu A$ | $V_{RM}=V_{RRM}$<br>$T_j=25^{\circ}C$                      | -   | -    | 5.0 |
|                                                           | $I_{RRM2}$ |         | $V_{RM}=V_{RRM}$<br>$T_j=150^{\circ}C$                     | -   | 30   | 50  |
| Reverse Recovery Time                                     | $T_{RR}$   | ns      | $I_F=0.5A$ $I_{RM}=1A$ $I_{RR}=0.25A$<br>$T_j=25^{\circ}C$ | -   | 25   | 35  |
|                                                           |            |         | $T_j=25^{\circ}C$                                          | -   | 30   | -   |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 47   | -   |
| Peak recovery current                                     | $I_{RRM}$  | A       | $T_j=25^{\circ}C$                                          |     | 4.67 | -   |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 7.85 | -   |
| Reverse recovery charge                                   | $Q_{rr}$   | nC      | $T_j=25^{\circ}C$                                          | -   | 70   | -   |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 180  | -   |

## ■Thermal Characteristics ( $T_j=25^{\circ}C$ Unless otherwise specified )

| PARAMETER          |                           | SYMBOL           | UNIT          | MUR1020 |
|--------------------|---------------------------|------------------|---------------|---------|
| Thermal Resistance | Between junction and case | $R_{\theta J-C}$ | $^{\circ}C/W$ | 2.0     |
|                    | Between junction and Air  | $R_{\theta J-A}$ | $^{\circ}C/W$ | 50      |

## ■Ordering Information (Example)

| PREFERED P/N | UNIT WEIGHT(g)  | MINIIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|--------------|-----------------|-----------------------|-------------------------|----------------------------|---------------|
| MUR1020      | Approximate 1.8 | 50                    | 1000                    | 5000                       | Tube          |

## ■ Characteristics (Typical)

FIG1:  $I_o$  -  $T_c$  Curve

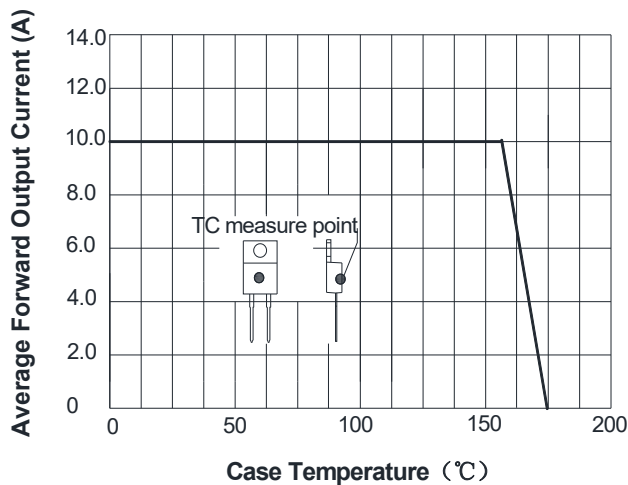


FIG2: Surge Forward Current Capability

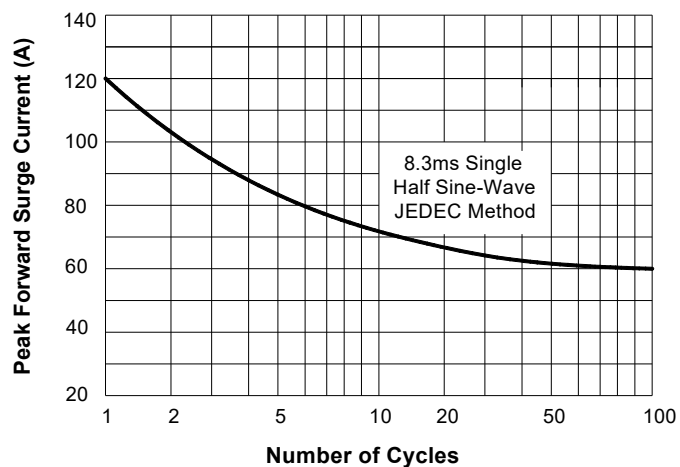


FIG3: Forward Voltage

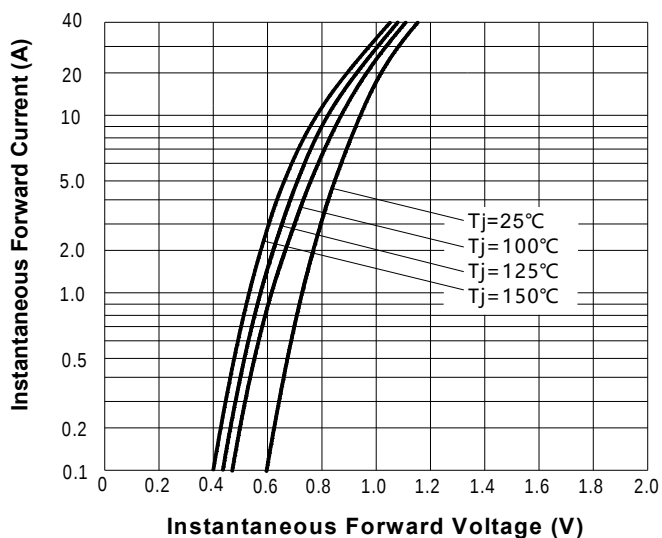


FIG4: Instantaneous Reverse Characteristics

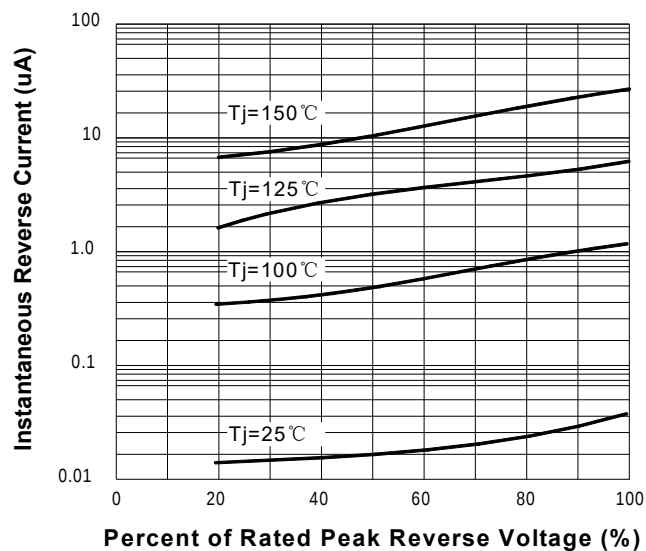
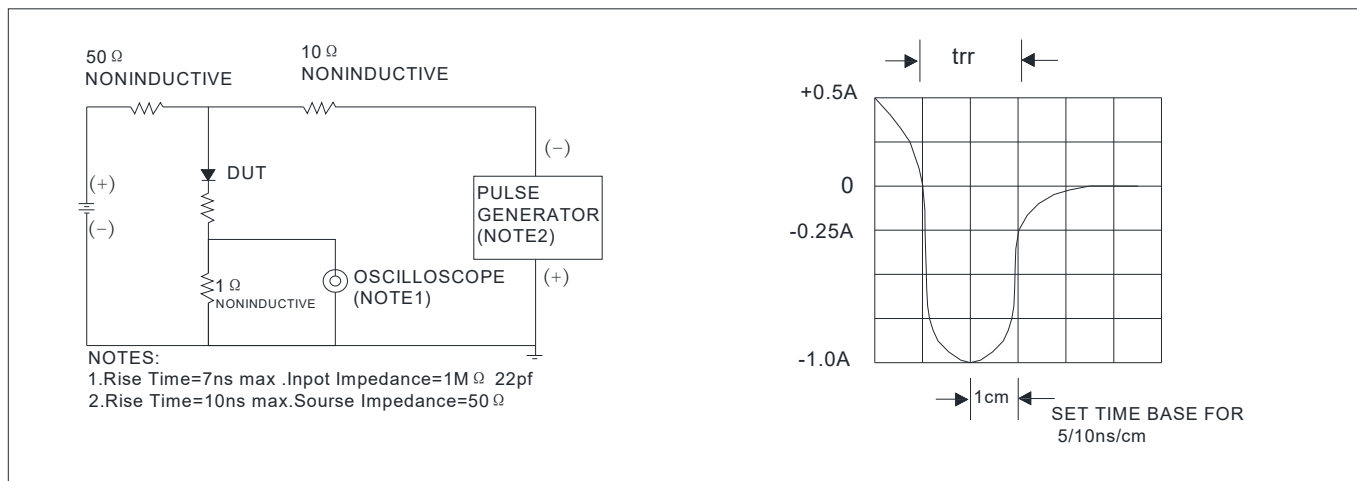
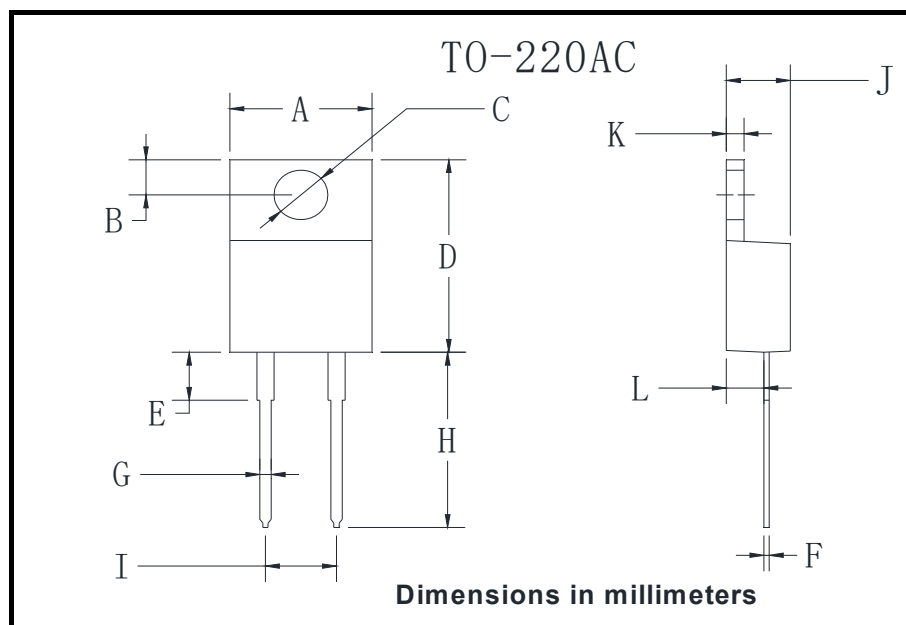


FIG5: Diagram of circuit and Testing wave form of reverse recovery time



■ Outline Dimensions



| TO-220AC |       |       |
|----------|-------|-------|
| Dim      | Min   | Max   |
| A        | 9.95  | 10.35 |
| B        | 2.55  | 2.95  |
| C        | 3.75  | 4.05  |
| D        | 14.95 | 15.25 |
| E        | 3.75  | 4.25  |
| F        | 0.26  | 0.5   |
| G        | 0.68  | 0.94  |
| H        | 13.3  | 13.9  |
| I        | 4.86  | 5.26  |
| J        | 4.38  | 4.78  |
| K        | 1.14  | 1.4   |
| L        | 2.37  | 2.79  |

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