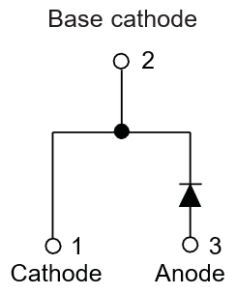


## Ultra-Fast Recovery Diodes 30A FRED



### 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-247AC  
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             | MUR3060PL  |
|------------------------------------------------------------------------------------------|------------------|------------------|------------|
| Device marking code                                                                      |                  |                  | MUR3060PL  |
| Repetitive Peak Reverse Voltage                                                          | VRRM             | V                | 600        |
| Average Rectified Output Current @60Hz sine wave, R-load, T <sub>c</sub> (FIG.1)         | I <sub>O</sub>   | A                | 30         |
| Surge(Non-repetitive)Forward Current @60Hz half sine-wave, 1 cycle, T <sub>a</sub> =25°C | I <sub>FSM</sub> | A                | 300        |
| Current Squared Time @1ms≤t≤8.3ms T <sub>j</sub> =25°C,                                  | I <sup>2</sup> t | A <sup>2</sup> s | 373        |
| Single Pulse Avalanche Energy @ T <sub>p</sub> =40uS, T <sub>j</sub> =25°C,L=15mH        | EAS              | mJ               | 210        |
| 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               | 160        |

## ■Electrical Characteristics

| PARAMETER                                                 | SYMBOL     | UNIT | TEST CONDITIONS                                            | Min | Typ    | Max  |
|-----------------------------------------------------------|------------|------|------------------------------------------------------------|-----|--------|------|
| Instantaneous forward voltage drop per diode              | $V_{FM}$   | V    | $I_{FM}=30.0A$ @ $T_J=25^{\circ}C$                         | -   | 2.0    | 2.50 |
|                                                           |            |      | $I_{FM}=30.0A$ @ $T_J=125^{\circ}C$                        |     | 1.65   | 2.0  |
| DC reverse current at rated DC blocking voltage per diode | $I_{RRM1}$ | uA   | $V_{RM}=V_{RRM}$<br>$T_J=25^{\circ}C$                      | -   | -      | 5.0  |
|                                                           | $I_{RRM2}$ |      | $V_{RM}=V_{RRM}$<br>$T_J=125^{\circ}C$                     | -   | -      | 200  |
| Reverse Recovery Time                                     | $T_{rr}$   | ns   | $I_F=0.5A$ $I_{RM}=1A$<br>$I_{RR}=0.25A$ $T_J=25^{\circ}C$ | -   | 28     | 50   |
|                                                           |            |      | $T_J=25^{\circ}C$                                          | -   | 60.5   | -    |
|                                                           |            |      | $T_J=125^{\circ}C$                                         | -   | 96.98  | -    |
| Peak recovery current                                     | $I_{RRM}$  | A    | $T_J=25^{\circ}C$                                          | -   | 3.53   | -    |
|                                                           |            |      | $T_J=125^{\circ}C$                                         | -   | 11.3   | -    |
| Reverse recovery charge                                   | $Q_{rr}$   | nC   | $T_J=25^{\circ}C$                                          | -   | 106.7  | -    |
|                                                           |            |      | $T_J=125^{\circ}C$                                         | -   | 537.25 | -    |

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

| PARAMETER          |                           | SYMBOL           | UNIT          | MUR3060PL |
|--------------------|---------------------------|------------------|---------------|-----------|
| Thermal Resistance | Between junction and case | $R_{\theta J-C}$ | $^{\circ}C/W$ | 1.0       |
|                    | Between junction and Air  | $R_{\theta J-A}$ | $^{\circ}C/W$ | 50        |

## ■ Characteristics(Typical)

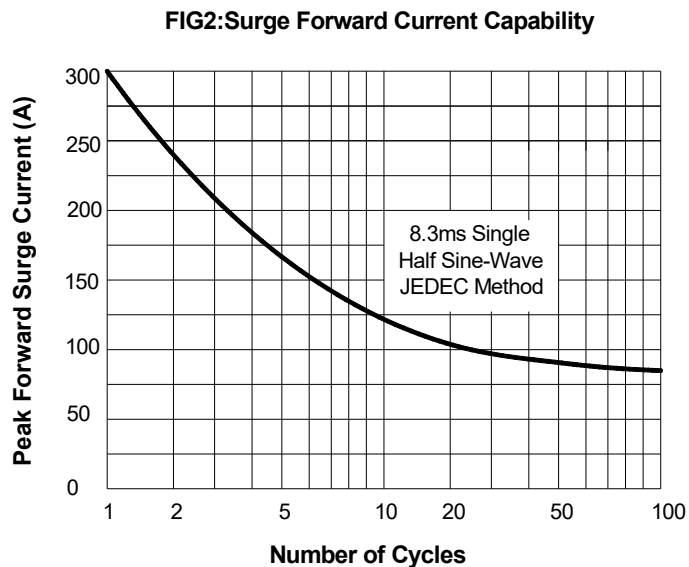
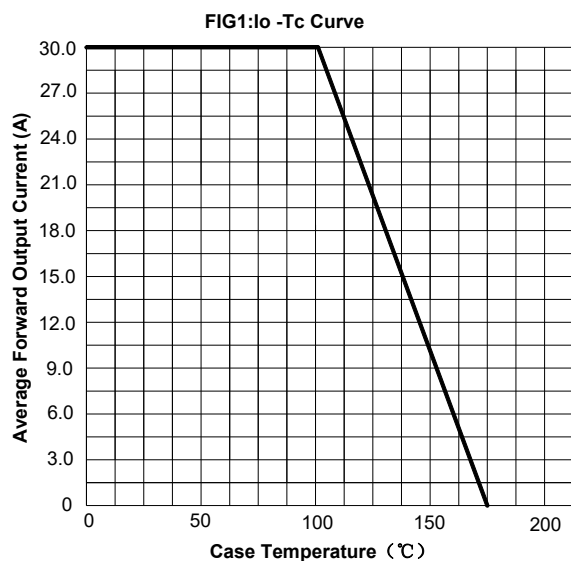


FIG3: Forward Voltage

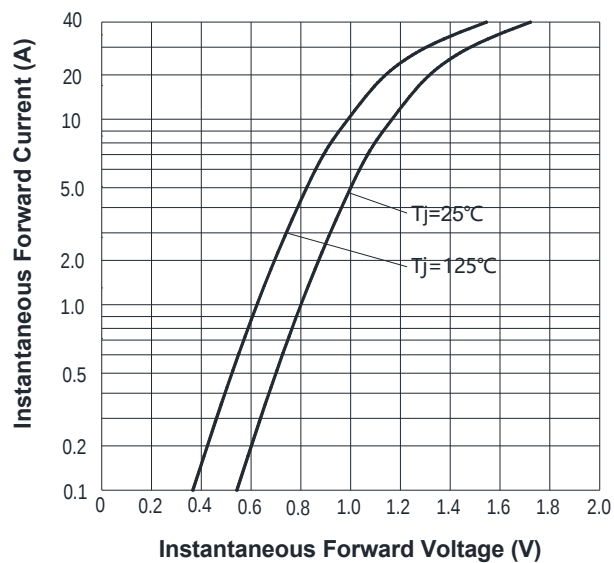


FIG.4: Instantaneous Reverse Characteristics

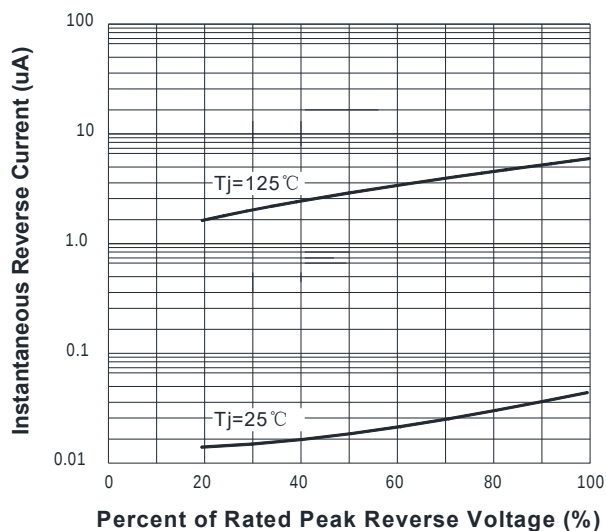
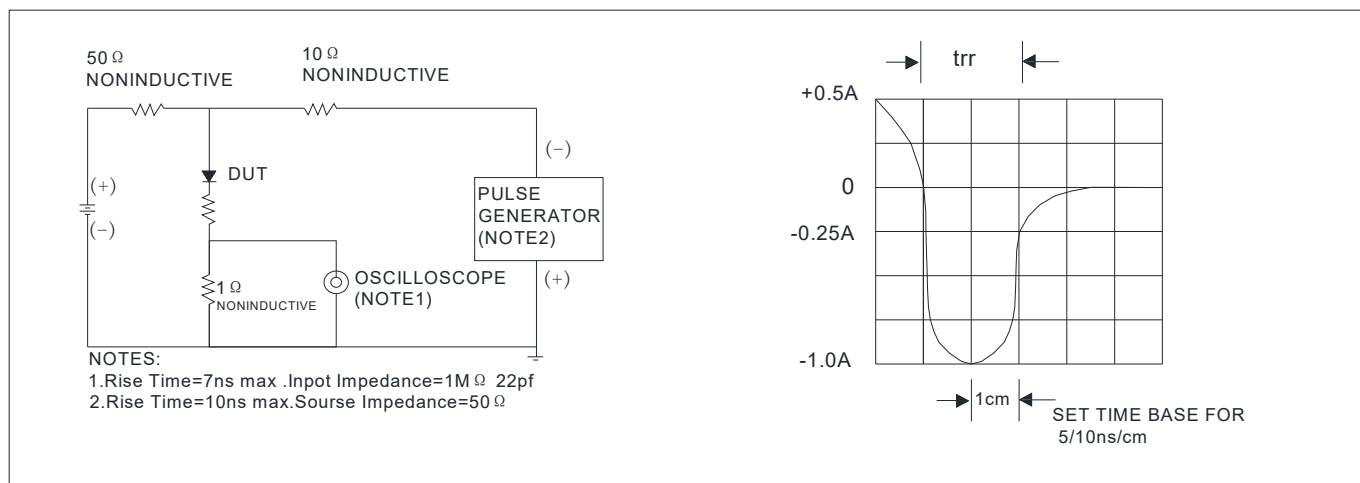
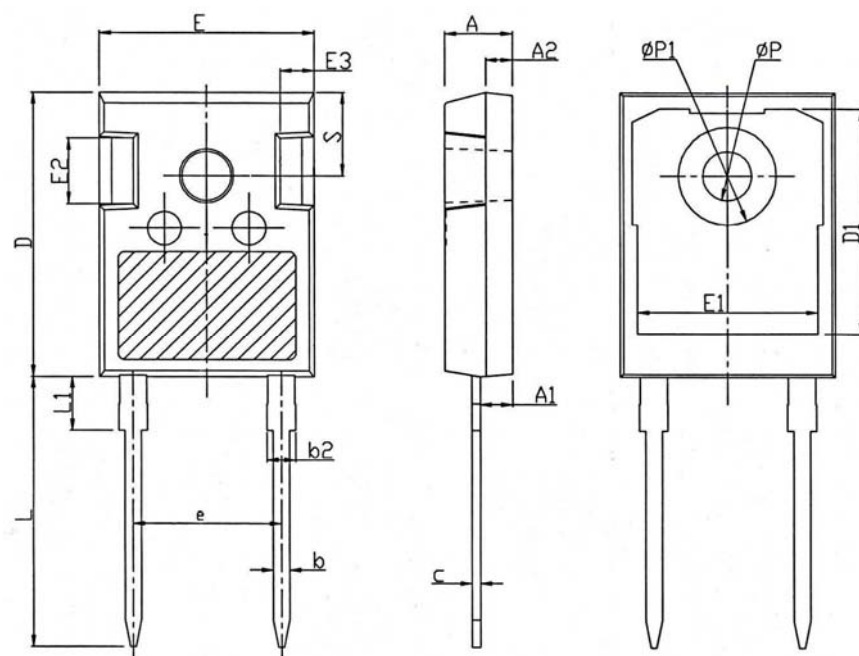


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



■ Outline Dimensions



| TO247-AC |           |       |
|----------|-----------|-------|
| Dim      | Min       | Max   |
| A        | 4.80      | 5.20  |
| A1       | 2.21      | 2.61  |
| A2       | 1.85      | 2.15  |
| b        | 1.11      | 1.36  |
| b2       | 1.91      | 2.21  |
| c        | 0.51      | 0.75  |
| D        | 20.70     | 21.30 |
| D1       | 16.25     | 16.85 |
| E        | 15.50     | 16.10 |
| E1       | 13.00     | 13.60 |
| E2       | 4.80      | 5.20  |
| E3       | 2.30      | 2.70  |
| e        | 10.88 TYP |       |
| L        | 19.62     | 20.22 |
| L1       | -         | 4.30  |
| φP       | 3.40      | 3.80  |
| φP1      | -         | 7.30  |
| S        | 6.15 TYP  |       |

**Disclaimer**

The information presented in this document is for reference only. Shanghai Sunco Electronics Co., Ltd reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Russiansunco or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.russiansunco.com](http://www.russiansunco.com) , or consult your nearest Russiansunco's sales office for further assistance.