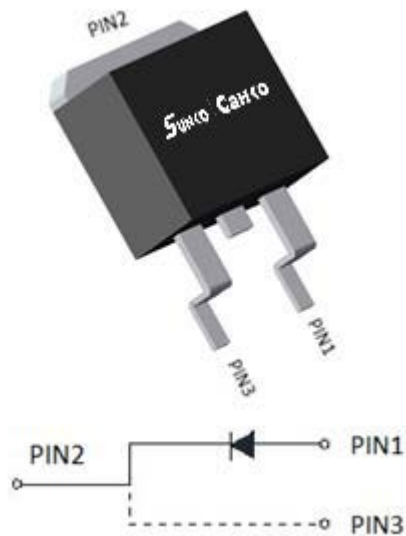


## Ultra-Fast Recovery Diodes 5A FRED



### 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-263  
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             | MURB540    |
|---------------------------------------------------------------------------------------------|------------------|------------------|------------|
| Device marking code                                                                         |                  |                  | MURB540    |
| Repetitive Peak Reverse Voltage                                                             | V <sub>RRM</sub> | V                | 400        |
| Average Rectified Output Current<br>@60Hz sine wave, R-load, T <sub>c</sub> (FIG.1)         | I <sub>O</sub>   | A                | 5          |
| Surge(Non-repetitive)Forward Current<br>@60Hz half sine-wave, 1 cycle, T <sub>j</sub> =25°C | I <sub>FSM</sub> | A                | 50         |
| Current Squared Time @1ms≤t≤8.3ms T <sub>j</sub> =25°C,                                     | I <sup>2</sup> t | A <sup>2</sup> s | 10         |
| 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               | 50         |

# MURB540

## ■Electrical Characteristics

| PARAMETER                                                 | SYMBOL     | UNIT    | TEST CONDITIONS                                            | Min | Typ   | Max  |
|-----------------------------------------------------------|------------|---------|------------------------------------------------------------|-----|-------|------|
| Instantaneous forward voltage drop per diode              | $V_{FM}$   | V       | $I_{FM}=5.0A$ @ $T_j=25^{\circ}C$                          | -   | 1.15  | 1.30 |
|                                                           |            |         | $I_{FM}=5.0A$ @ $T_j=150^{\circ}C$                         |     | 0.9   | 1.0  |
| 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>$T_j=150^{\circ}C$                     | -   | 25    | 100  |
| 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   |
|                                                           |            |         | $T_j=25^{\circ}C$                                          | -   | 30.3  | -    |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 46.5  | -    |
| Peak recovery current                                     | $I_{RRM}$  | A       | $T_j=25^{\circ}C$                                          | -   | 3.1   | -    |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 5.1   | -    |
| Reverse recovery charge                                   | $Q_{rr}$   | nC      | $T_j=25^{\circ}C$                                          | -   | 47.2  | -    |
|                                                           |            |         | $T_j=125^{\circ}C$                                         | -   | 120.2 | -    |

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

| PARAMETER          |                           | SYMBOL           | UNIT          | MURB540 |
|--------------------|---------------------------|------------------|---------------|---------|
| 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 |
|--------------|------------------|-----------------------|-------------------------|----------------------------|---------------|
| MURB540      | Approximate 1.43 | 50                    | 2000                    | 8000                       | Tube          |
| MURB540      | Approximate 1.43 | 1000                  | 2000                    | 10000                      | Reel          |

## ■ Characteristics (Typical)

FIG1:  $I_o$  -  $T_c$  Curve

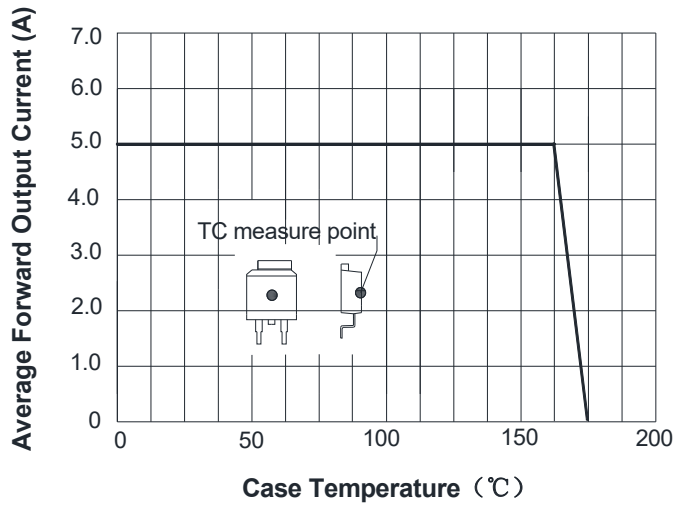


FIG2: Surge Forward Current Capability

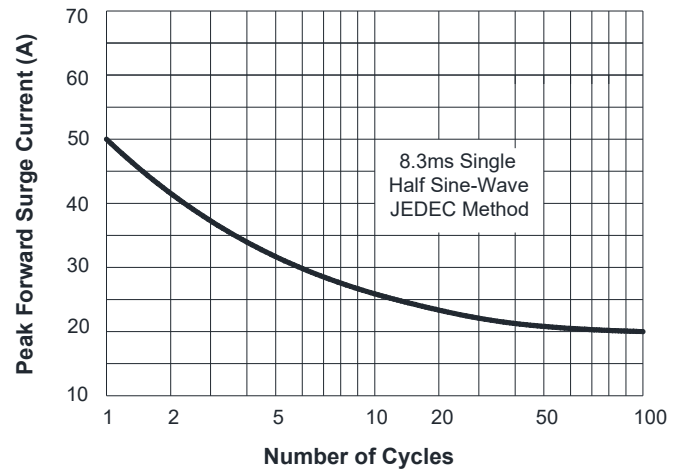


FIG3: Forward Voltage

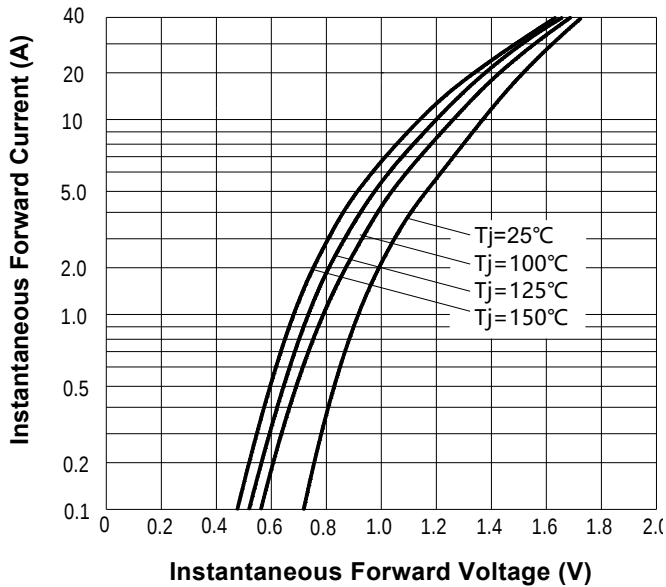


FIG4: Instantaneous Reverse Characteristics

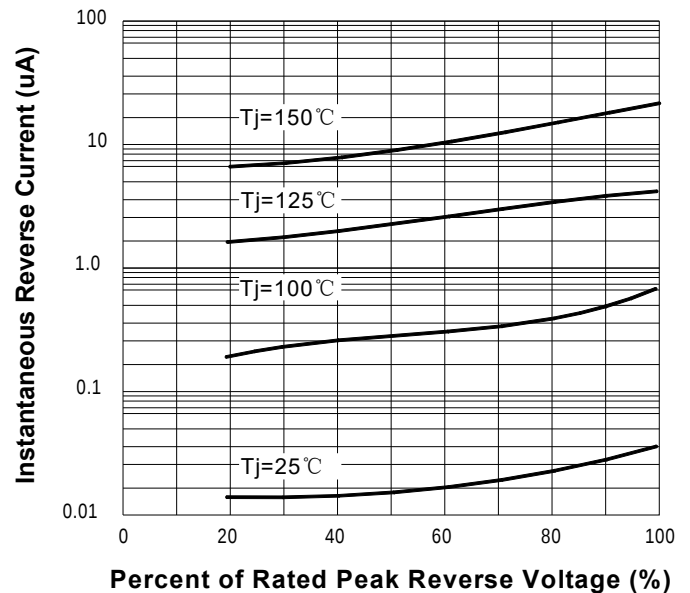
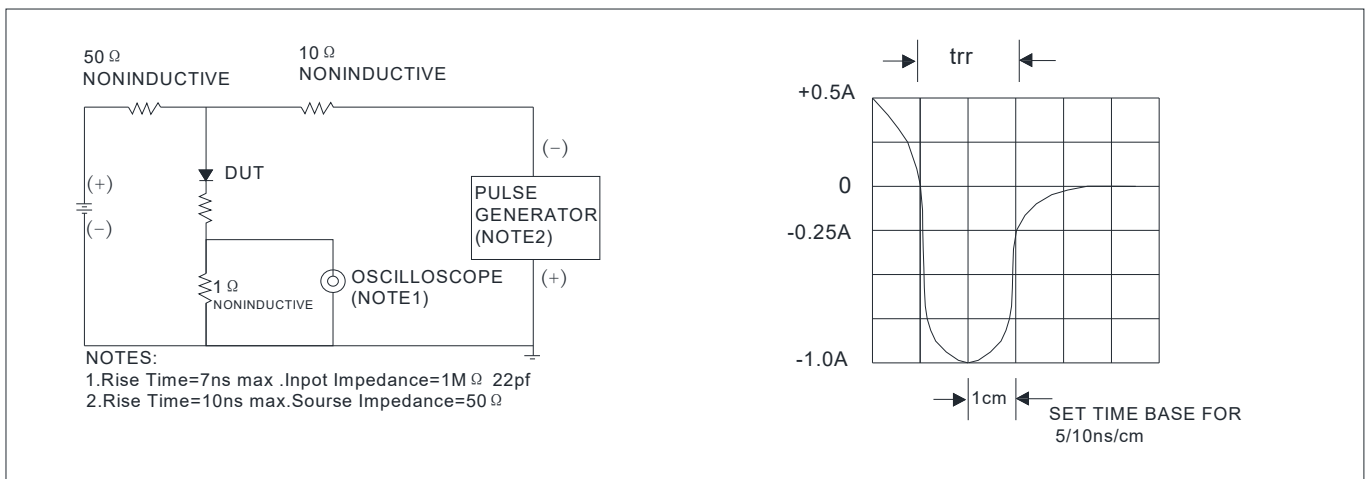
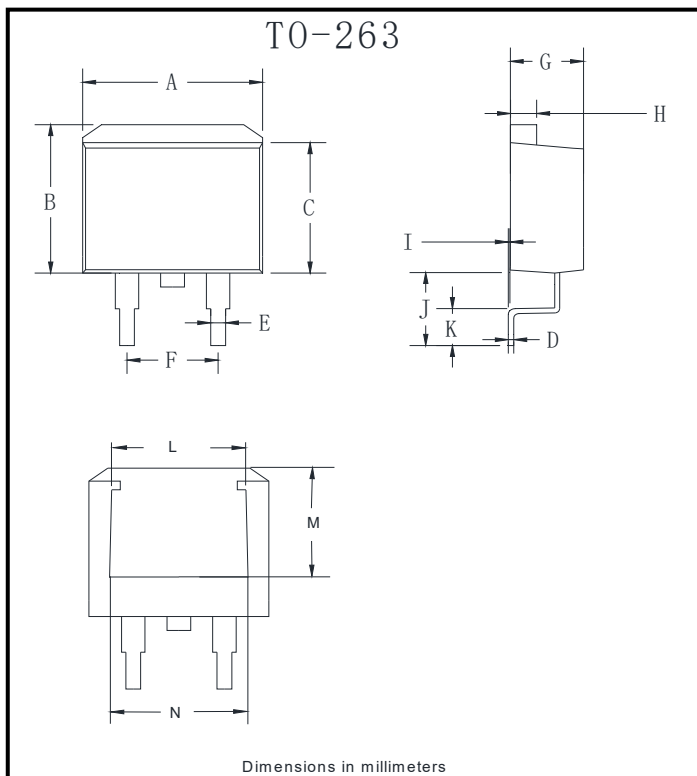


FIG5: Diagram of circuit and Testing wave form of reverse recovery time

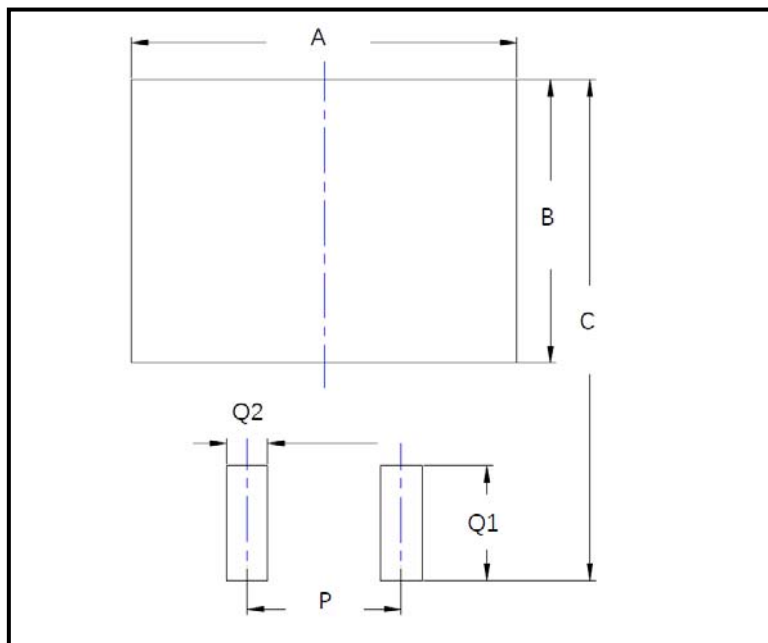


■ **Outline Dimensions**



| <b>T0-263</b> |      |      |
|---------------|------|------|
| Dim           | Min  | Max  |
| A             | 9.5  | 11.5 |
| B             | 9.7  | 10.5 |
| C             | 8.4  | 9.0  |
| D             | 0.28 | 0.64 |
| E             | 0.68 | 0.94 |
| F             | 4.55 | 5.6  |
| G             | 4.04 | 5.10 |
| H             | 1.14 | 1.4  |
| I             | 0    | 0.2  |
| J             | 4.9  | 6.05 |
| K             | 1.79 | 2.79 |
| L             | 7.3  | 7.9  |
| M             | 6.2  | 6.8  |
| N             | 7.6  | 8.2  |

■ **Suggested Pad Layout**



| <b>Dim</b> | <b>Millimeters</b> |
|------------|--------------------|
| A          | 12.7               |
| B          | 9.4                |
| C          | 16.6               |
| P          | 5.08               |
| Q1         | 3.8                |
| Q2         | 1.35               |

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