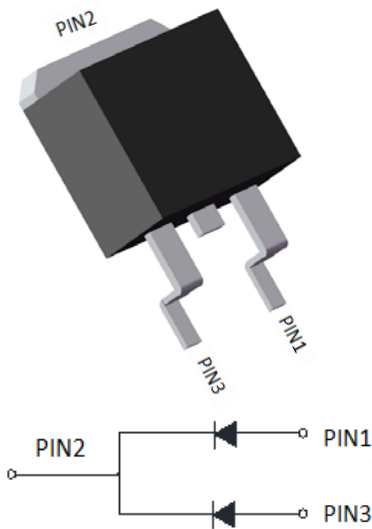


## Ultra-Fast Recovery Diodes 5A\*2 FRED



### 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, RoHS-compliant
- **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             | MURB1040CT |
|--|------------------|------------------|------------|
| Device marking code  |                  |                  | MURB1040CT |
| Repetitive Peak Reverse Voltage  | V <sub>RRM</sub> | V                | 400        |
| Average Rectified Output Current @60Hz sine wave, R-load, T <sub>c</sub> (FIG.1)         | I <sub>O</sub>   | A                | 10         |
| Surge(Non-repetitive)Forward Current @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         |



# MURB1040CT

## ■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 | $I_{RRM1}$ | uA   | $V_{RM}=V_{RRM}$<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   | $I_F=0.5A I_{RM}=1A$<br>$I_{RR}=0.25A T_j=25^{\circ}C$ | -   | 25    | 35   |
|   |            |      | $T_j=25^{\circ}C$                                      | -   | 29.5  | -    |
|   |            |      | $T_j=125^{\circ}C$                                     | -   | 46.6  | -    |
| Peak recovery current                                     | $I_{RRM}$  | A    | $T_j=25^{\circ}C$                                      | -   | 3.49  | -    |
|   |            |      | $T_j=125^{\circ}C$                                     |     |       |      |
| Reverse recovery charge                                   | $Q_{rr}$   | nC   | $T_j=25^{\circ}C$                                      | -   | 55.22 | -    |
|   |            |      | $T_j=125^{\circ}C$                                     | -   | 130   | -    |

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

| PARAMETER          |                           | SYMBOL           | UNIT          | MURB1040CT |
|--------------------|---------------------------|------------------|---------------|------------|
| Thermal Resistance | Between junction and case | $R_{\theta J-C}$ | $^{\circ}C/W$ | 2.0        |
| Thermal Resistance | Between junction and Air  | $R_{\theta J-A}$ | $^{\circ}C/W$ | 50         |

## ■Ordering Information (Example)

| PREFERRED P/N | UNIT WEIGHT(g)   | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|------------------|----------------------|-------------------------|----------------------------|---------------|
| MURB1040CT    | Approximate 1.43 | 50                   | 2000                    | 8000                       | Tube          |
| MURB1040CT    | Approximate 1.43 | 1000                 | 2000                    | 10000                      | Reel          |



# MURB1040CT

## ■ Characteristics (Typical)

FIG1:  $I_o$  -  $T_c$  Curve

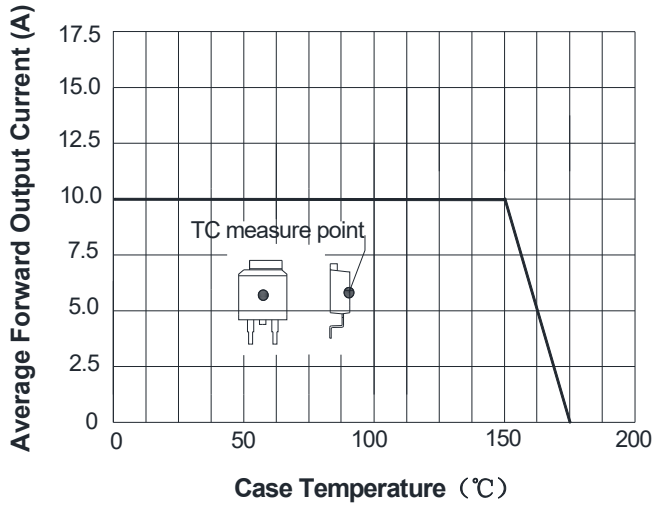


FIG2: Surge Forward Current Capability

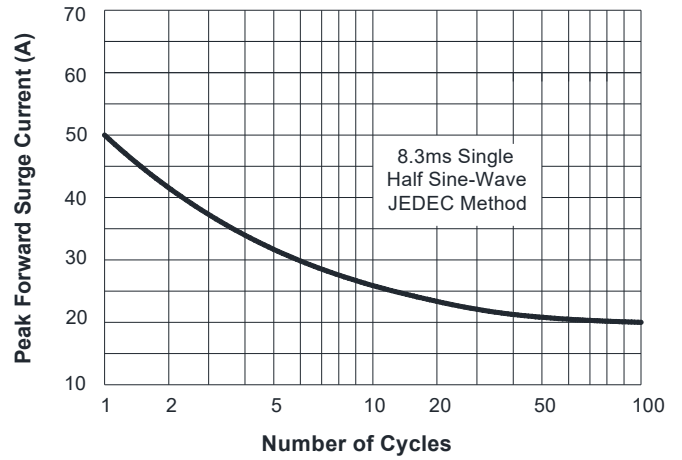


FIG3: Forward Voltage

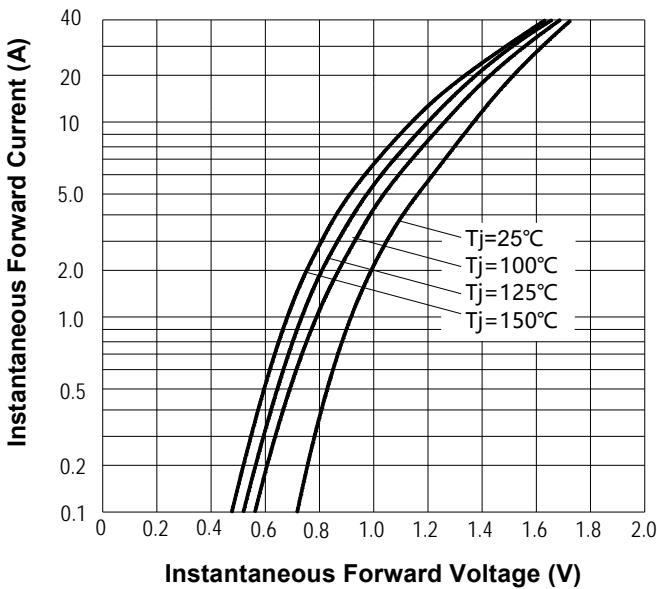


FIG.4: Instantaneous Reverse Characteristics

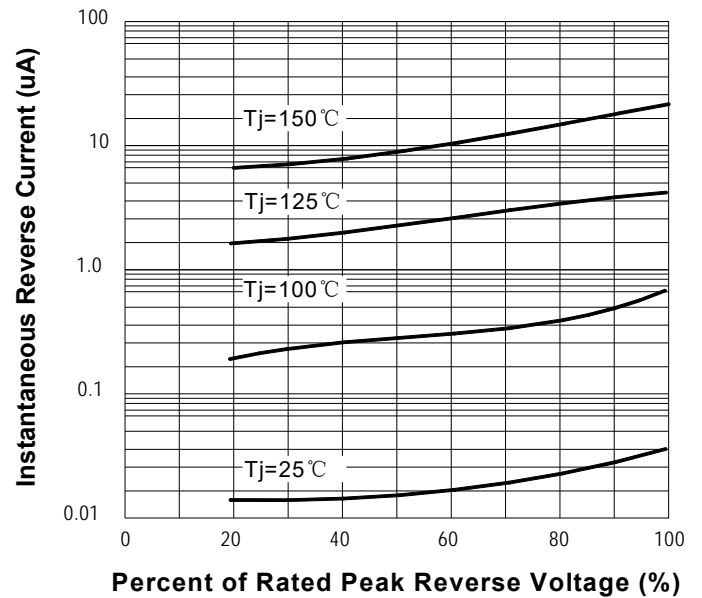
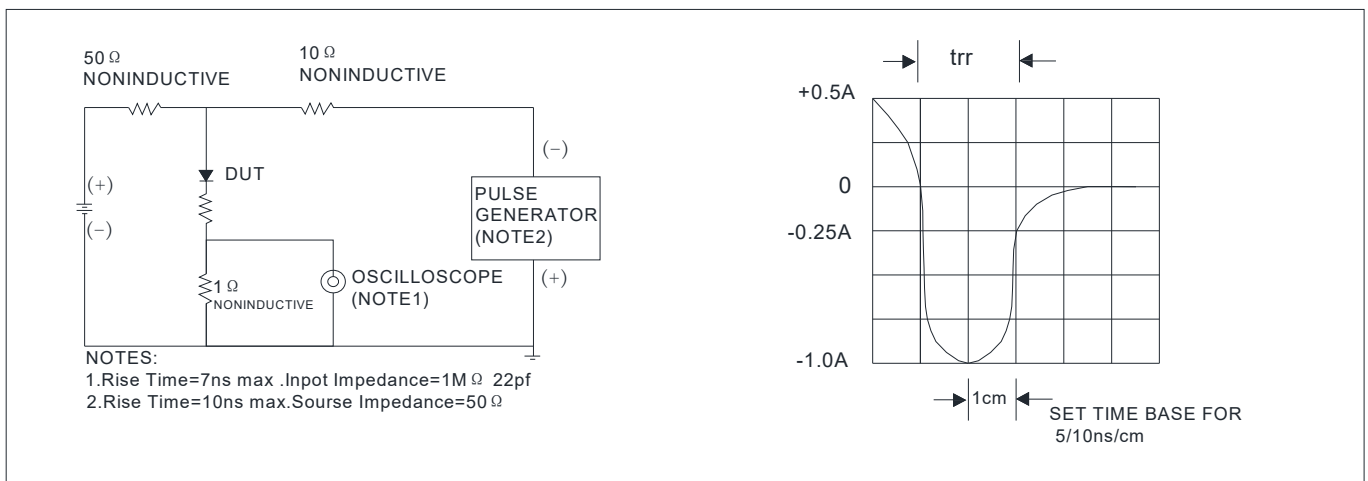


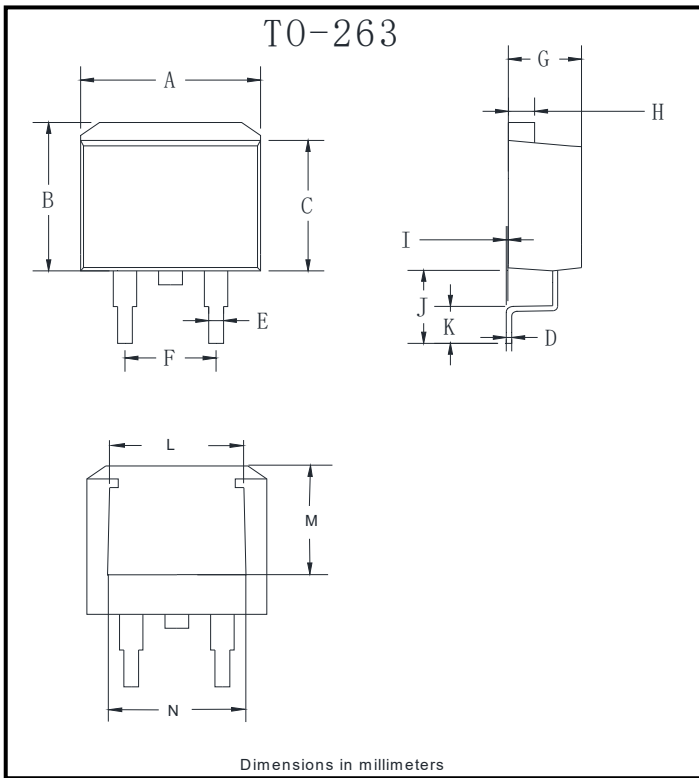
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time





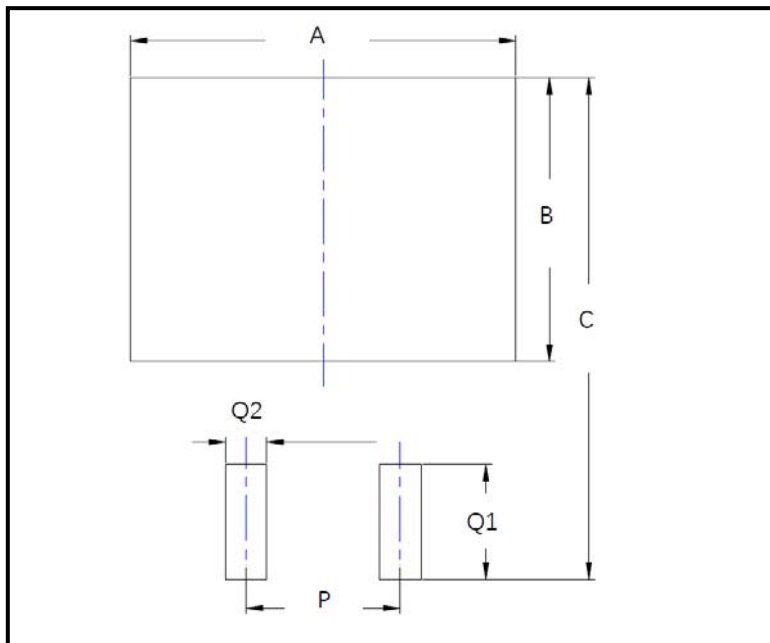
# MURB1040CT

## ■Outline Dimensions



| TO-263 |      |      |
|--------|------|------|
| 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



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



## MURB1040CT

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