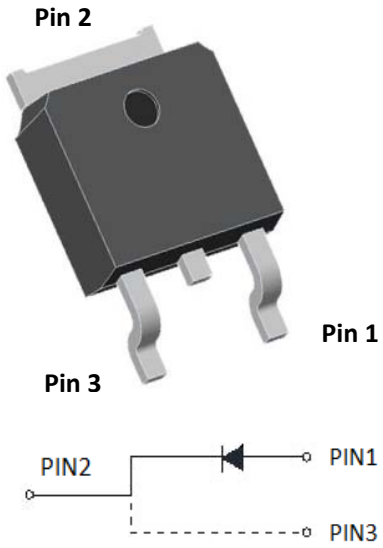
# Ultra-Fast Recovery Diodes 10A FRED




## 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-252
  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 (Tj=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | MUR1020D |
|---|---|---|---|
| Device marking code | | | MUR1020D |
| Repetitive Peak Reverse Voltage | $V_{RRM}$ | V | 200 |
| Average Rectified Output Current @60Hz sine wave, R-load, Tc(FIG.1) | $I_O$ | A | 10 |
| Surge(Non-repetitive)Forward Current @60Hz half sine-wave, 1 cycle, Tj=25℃ | $I_{FSM}$ | A | 120 |
| Current Squared Time @1ms≤t≤8.3ms Tj=25℃, | $I^2t$ | $A^2s$ | 60 |
| Storage Temperature | $T_{stg}$ | ℃ | -55 ~ +175 |
| Junction Temperature | Tj | ℃ | -55 ~ +175 |
| Typical Junction capacitance @4V,1MHz | Cj | pF | 150 |

## ■Electrical Characteristics

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | | Min | Typ | Max |
|---|---|---|---|---|---|---|---|
| Instantaneous forward voltage drop per diode | $V_{FM}$ | V | $I_{FM}$=10.0A @Tj=25℃ | | - | 0.90 | 1.0 |
| | | | $I_{FM}$=10.0A @Tj=150℃ | | | 0.78 | 0.9 |
| DC reverse current at rated DC blocking voltage per diode | $I_{RRM1}$ | uA | $V_{RM}$=$V_{RRM}$ Tj=25℃ | | - | - | 5 |
| | $I_{RRM2}$ | | $V_{RM}$=$V_{RRM}$ Tj=150℃ | | - | 30 | 50 |
| Reverse Recovery Time | $T_{RR}$ | ns | $I_F$=0.5A $I_{RM}$=1A $I_{RR}$=0.25A Tj=25℃ | | - | 25 | 35 |
| | | | Tj=25℃ | $I_F$=10A di/dt=-200A/us $V_{RM}$=100V | - | 30 | - |
| | | | Tj=125℃ | | - | 47 | - |
| Peak recovery current | $I_{RRM}$ | A | Tj=25℃ | | | 4.67 | - |
| | | | Tj=125℃ | | - | 7.85 | - |
| Reverse recovery charge | Qrr | nC | Tj=25℃ | | - | 70 | - |
| | | | Tj=125℃ | | - | 180 | - |

## ■Thermal Characteristics （Tj=25℃ Unless otherwise specified）

| PARAMETER | | SYMBOL | UNIT | MUR1020D |
|---|---|---|---|---|
| Thermal Resistance | Between junction and case | $R_{\theta J-C}$ | ℃/W | 5.0 |
| | Between junction and Air | $R_{\theta J-A}$ | ℃/W | 50 |

## ■Ordering Information (Example)

| PREFERED P/N | UNIT WEIGHT(g) | MINIIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|
| MUR1020D | Approximate 0.31 | 2500 | 2500 | 25000 | Reel |

## ■Characteristics (Typical)

**FIG1:Io -Tc Curve**

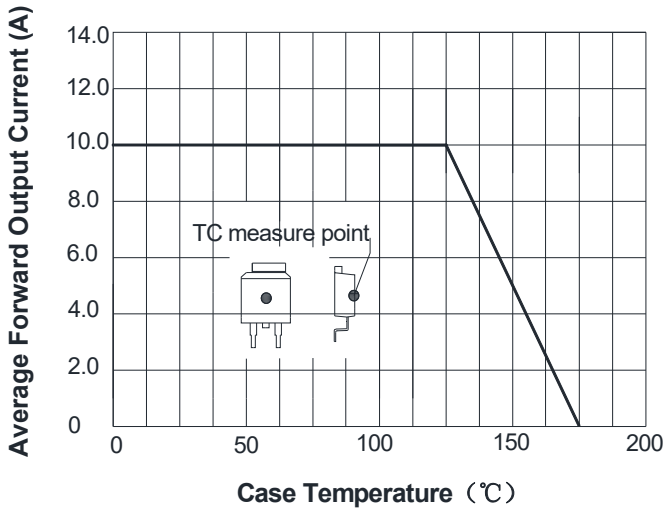



**FIG2:Surge Forward Current Capability**

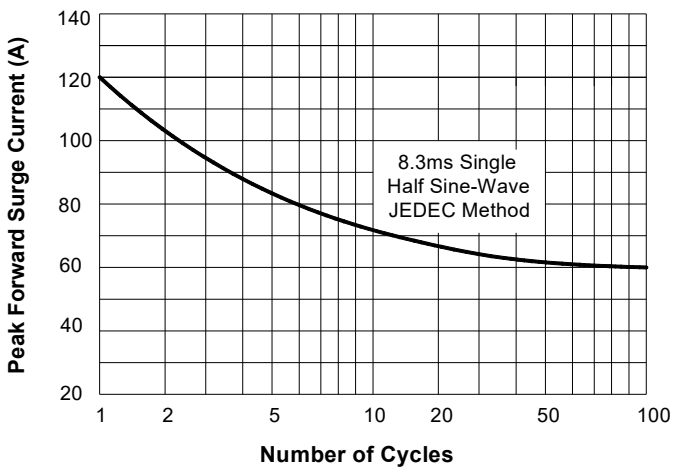



**FIG3: Forward Voltage**

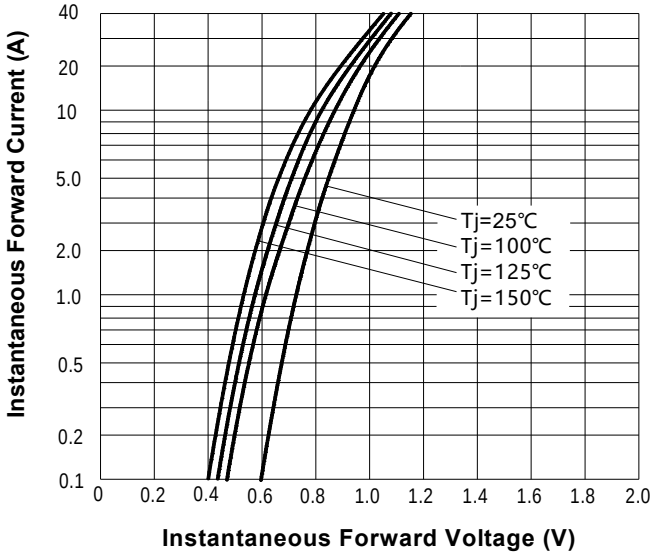



**FIG.4: Instantaneous Reverse Characteristics**

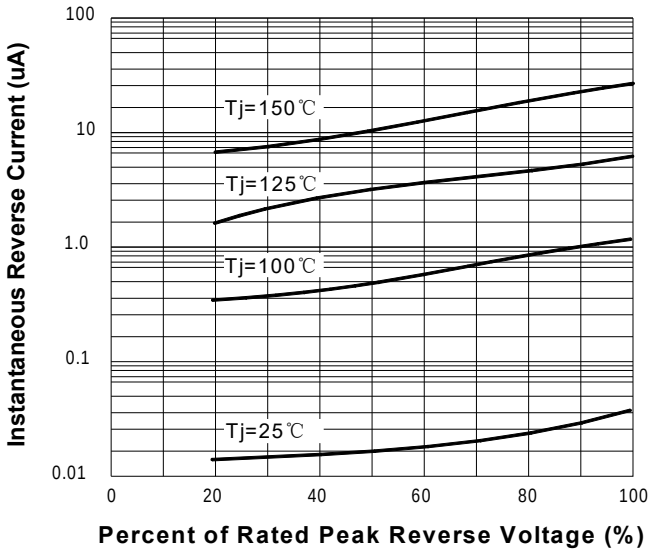
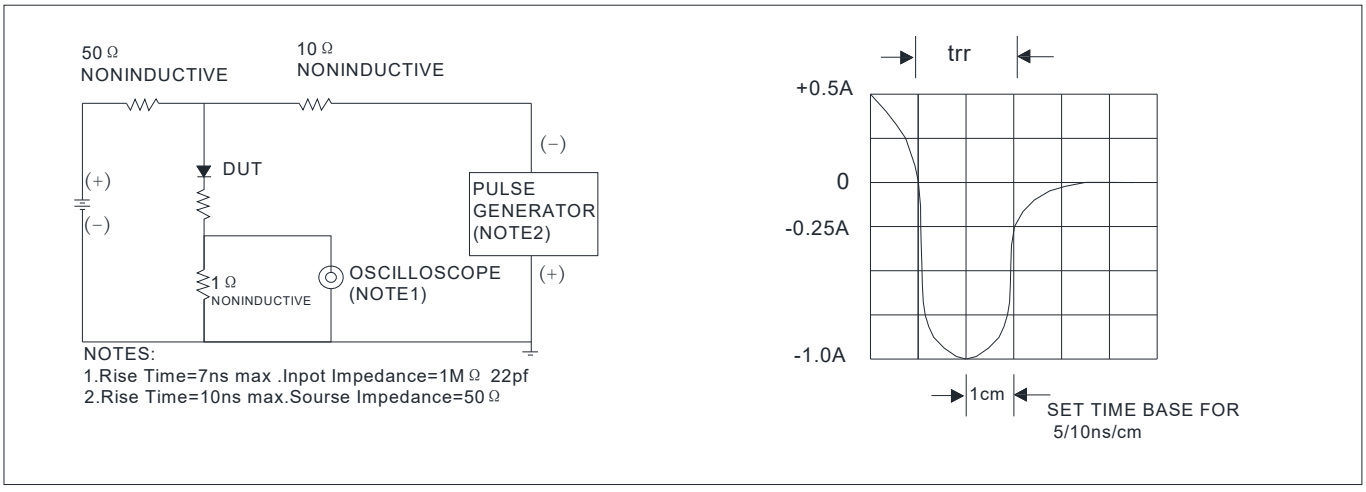
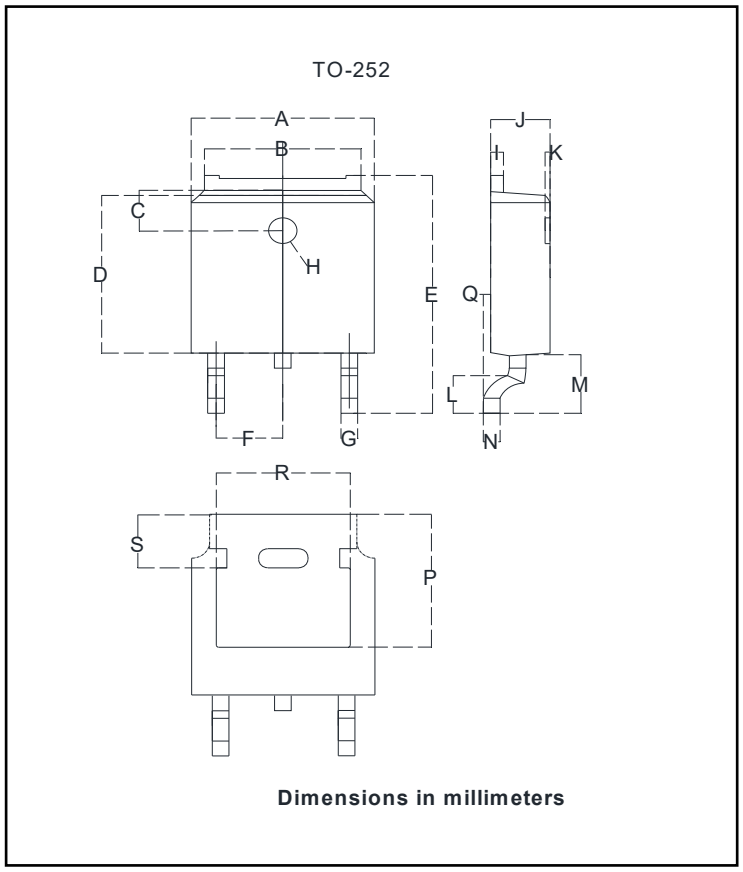



**FIG.5: Diagram of circuit and Testing wave form of reverse recovery time**

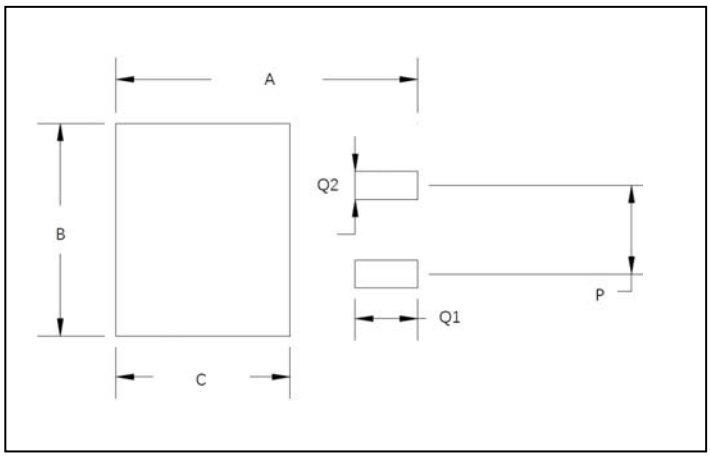


## ■Outline Dimensions




| TO-252 | | |
|---|---|---|
| Dim | Min | Max |
| A | 6.500 | 6.700 |
| B | 5.100 | 5.460 |
| C | 1.400 | 1.800 |
| D | 6.000 | 6.200 |
| E | 10.000 | 10.400 |
| F | 2.166 | 2.366 |
| G | 0.660 | 0.860 |
| H | Φ1.050 | Φ1.350 |
| I | 0.460 | 0.580 |
| J | 2.200 | 2.400 |
| K | 0 | 0.300 |
| L | 0.890 | 2.290 |
| M | 2.730 | 3.080 |
| N | 0.430 | 0.580 |
| P | 5.15 | 5.45 |
| Q | 0 | 0.2 |
| R | 4.50 | 5.10 |
| S | 1.60 | 2.40 |

## ■ Suggested Pad Layout




| Dim | Millimeters |
|---|---|
| A | 11.4 |
| B | 6.74 |
| C | 6.23 |
| P | 4.56 |
| Q1 | 2.28 |
| Q2 | 1.52 |

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