# MUR6030PT

## Ultra-Fast Recovery Diodes 30A*2 FRED Pt

### 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-247-3L
  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

| TYPE | $V_{RSM}$ V | $V_{RRM}$ V |
|---|---|---|
| MUR6030PT | 300 | 300 |

### ■Maximum Ratings (Tj=25℃ Unless otherwise specified)

| Symbol | Test Conditions | | Maximum Ratings | Unit |
|---|---|---|---|---|
| $I_{FRMS}$<br>$I_{FAVM}$<br>$I_{FRM}$ | $T_{VJ}=T_{VJM}$<br>$T_C=115^oC$; rectangular, d=0.5<br>$t_p$<10us; rep. rating, pulse width limited by $T_{VJM}$ | | 50<br>60<br>375 | A |
| $I_{FSM}$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 325<br>350 | A |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 290<br>310 | |
| $I^2t$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 530<br>510 | $A^2s$ |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 420<br>400 | |
| $T_{VJ}$<br>$T_{VJM}$<br>$T_{stg}$ | | | -40...+150<br>150<br>-40...+150 | $^oC$ |
| $P_{tot}$ | $T_C=25^oC$ | | 125 | W |
| $M_d$ | Mounting torque | | 0.8...1.2 | Nm |
| Weight | | | 6 | g |

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## ■Electrical Characteristics（$T_j$=25℃ Unless otherwise specified）

| Symbol | Test Conditions | Characteristic Values typ. | Characteristic Values max. | Unit |
|---|---|---|---|---|
| $I_R$ | $T_{VJ}$=25°C; $V_R$=$V_{RRM}$<br>$T_{VJ}$=25°C; $V_R$=0.8·$V_{RRM}$<br>$T_{VJ}$=125°C; $V_R$=0.8·$V_{RRM}$ | | 200<br>50<br>5 | uA<br>uA<br>mA |
| $V_F$ | $I_F$=30A; $T_{VJ}$=150°C<br>$T_{VJ}$=25°C | | 1.05<br>1.20 | V |
| $V_{TO}$ | For power-loss calculations only | | 0.72 | V |
| $r_T$ | $T_{VJ}$=$T_{VJM}$ | | 4.2 | mΩ |
| $R_{thJC}$<br>$R_{thCH}$ | | 0.25 | 1 | K/W |
| $t_{rr}$ | $I_F$=1A; -di/dt=100A/us; $V_R$=30V; $T_{VJ}$=25°C | 30 | 35 | ns |
| $I_{RM}$ | $V_R$=100V; $I_F$=30A; -di$_F$/dt=100A/us; L≤0.05uH; $T_{VJ}$=100°C | 4 | 5 | A |

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

| PARAMETER | | SYMBOL | UNIT | MUR6030PT |
|---|---|---|---|---|
| Thermal Resistance | Between junction and case | $R_{\theta J-C}$ | ℃/W | 1.0 |
| | Between junction and Air | $R_{\theta J-A}$ | ℃/W | 50 |

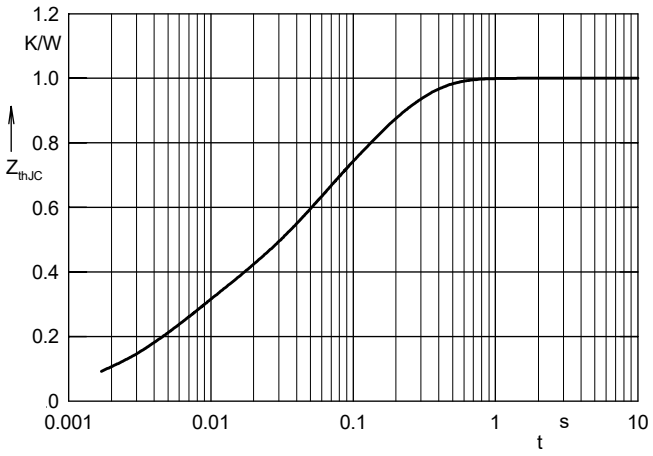


Fig. 7 Transient thermal impedance junction to case

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## ■ **Characteristics**(Typical)

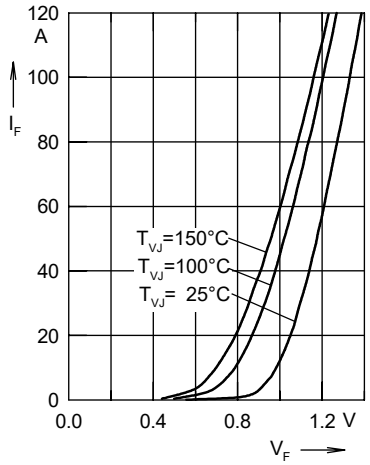



Fig. 1 Forward current $I_F$ versus $V_F$

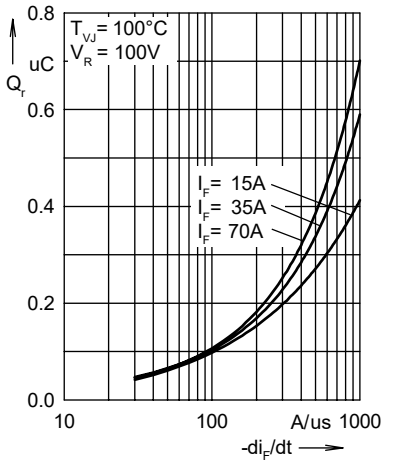



Fig. 2 Typ. reverse recovery charge $Q_r$ versus -$di_F$/dt

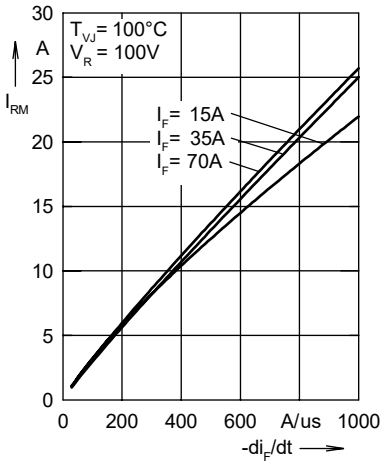



Fig. 3 Typ. peak reverse current $I_{RM}$ versus -$di_F$/dt

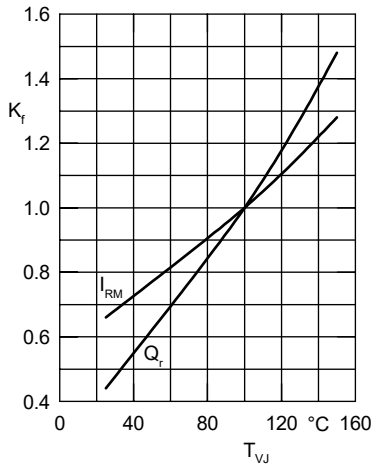



Fig. 4 Dynamic parameters $Q_r$, $I_{RM}$ versus $T_{VJ}$

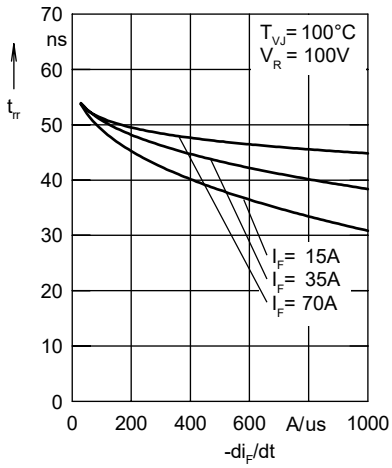



Fig. 5 Typ. recovery time $t_{rr}$ versus -$di_F$/dt

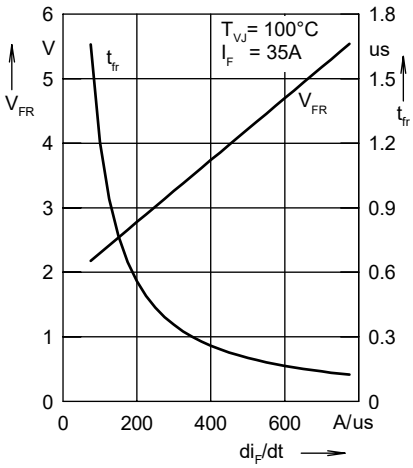
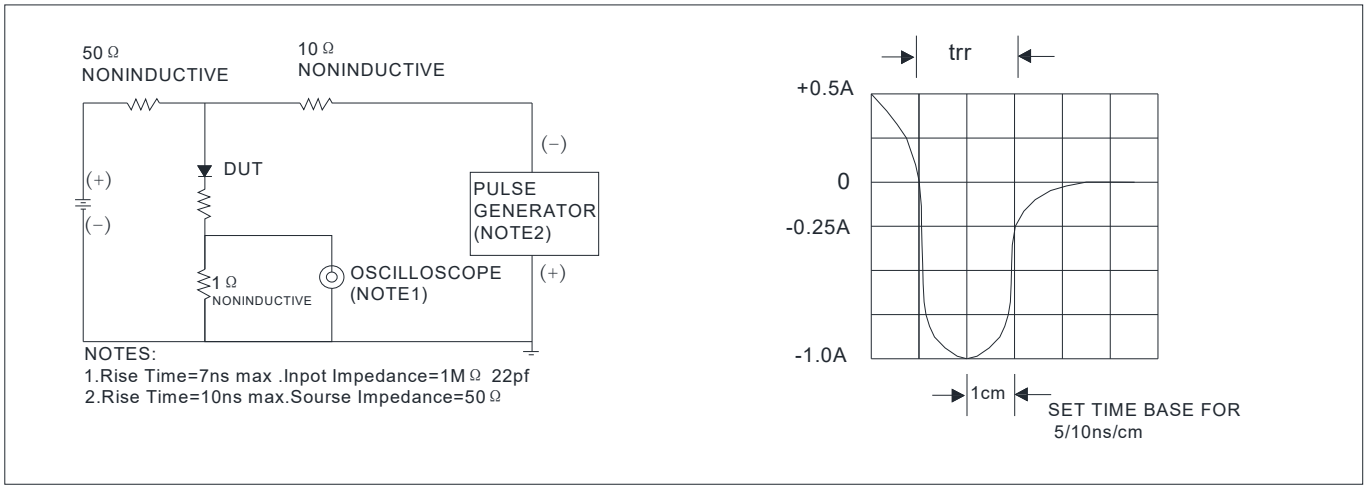



Fig. 6 Typ. peak forward voltage $V_{FR}$ and $t_{fr}$ versus $di_F$/dt

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



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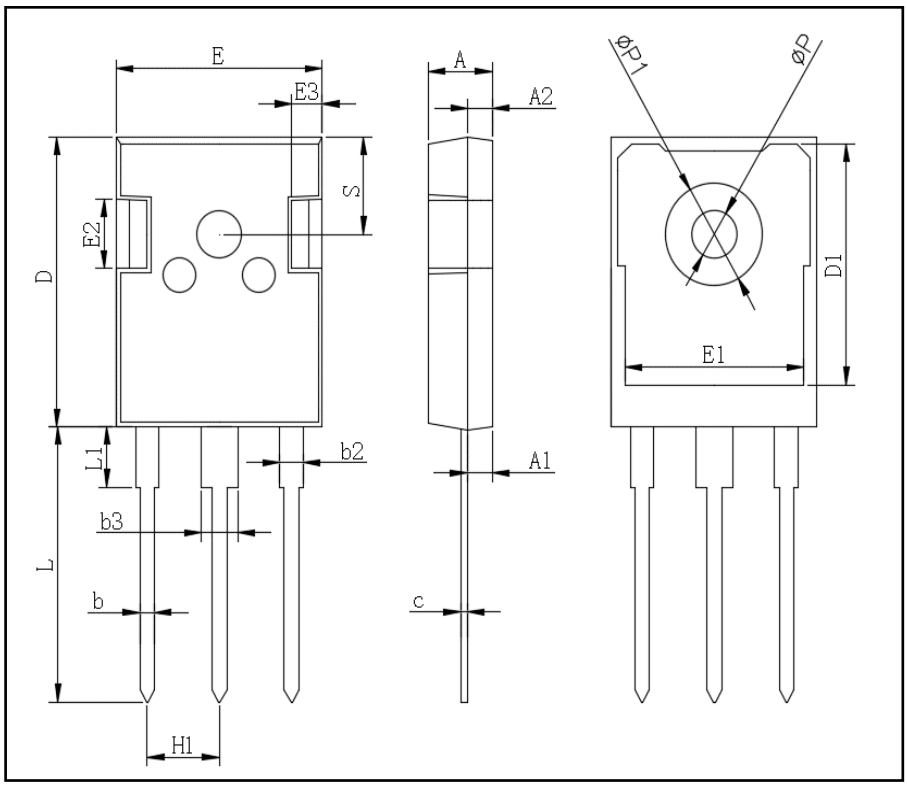
## ■ Outline Dimensions




| TO-247-3L | | |
|---|---|---|
| Dim | Min | Max |
| A | 4.80 | 5.20 |
| A1 | 2.21 | 2.61 |
| A2 | 1.85 | 2.15 |
| b | 1.0 | 1.4 |
| b2 | 1.91 | 2.21 |
| C | 0.5 | 0.7 |
| D | 20.70 | 21.30 |
| D1 | 16.25 | 16.85 |
| E | 15.50 | 16.10 |
| E1 | 13.0 | 13.6 |
| E2 | 4.80 | 5.20 |
| E3 | 2.30 | 2.70 |
| L | 19.62 | 20.22 |
| L1 | - | 4.30 |
| ΦP | 3.40 | 3.80 |
| ΦP1 | - | 7.30 |
| S | 6.15TYP | |
| H1 | 5.44TYP | |
| b3 | 2.80 | 3.20 |

| Packge | Packing | Box Size L×W×H(mm) | Quatity(pcs/box) | Carton Size L×W×H(mm) | Quatity(pcs/carton) |
|---|---|---|---|---|---|
| TO-247 | 30pcs/Tube | 570×155×50 | 450 | 580×340×125 | 1800 |