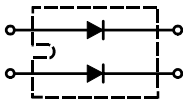
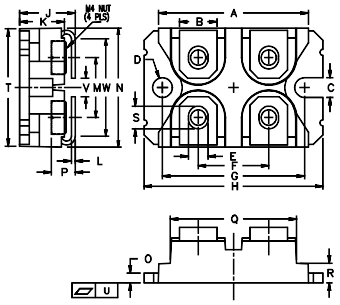
# SUR2x30-04, SUR2x30-06

## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diodes



Dimensions SOT-227(ISOTOP)



| Dim. | Millimeter Min. | Millimeter Max. | Inches Min. | Inches Max. |
|---|---|---|---|---|
| A | 31.50 | 31.88 | 1.240 | 1.255 |
| B | 7.80 | 8.20 | 0.307 | 0.323 |
| C | 4.09 | 4.29 | 0.161 | 0.169 |
| D | 4.09 | 4.29 | 0.161 | 0.169 |
| E | 4.09 | 4.29 | 0.161 | 0.169 |
| F | 14.91 | 15.11 | 0.587 | 0.595 |
| G | 30.12 | 30.30 | 1.186 | 1.193 |
| H | 37.80 | 38.20 | 1.489 | 1.505 |
| J | 11.68 | 12.22 | 0.460 | 0.481 |
| K | 8.92 | 9.60 | 0.351 | 0.378 |
| L | 0.76 | 0.84 | 0.030 | 0.033 |
| M | 12.60 | 12.85 | 0.496 | 0.506 |
| N | 25.15 | 25.42 | 0.990 | 1.001 |
| O | 1.98 | 2.13 | 0.078 | 0.084 |
| P | 4.95 | 5.97 | 0.195 | 0.235 |
| Q | 26.54 | 26.90 | 1.045 | 1.059 |
| R | 3.94 | 4.42 | 0.155 | 0.174 |
| S | 4.72 | 4.85 | 0.186 | 0.191 |
| T | 24.59 | 25.07 | 0.968 | 0.987 |
| U | -0.05 | 0.1 | -0.002 | 0.004 |
| V | 3.30 | 4.57 | 0.130 | 0.180 |
| W | 0.780 | 0.830 | 19.81 | 21.08 |

| | $V_{RSM}$ V | $V_{RRM}$ V |
|---|---|---|
| **SUR2x30-04** | 400 | 400 |
| **SUR2x30-06** | 600 | 600 |

| Symbol | Test Conditions | | Maximum Ratings | Unit |
|---|---|---|---|---|
| $I_{FRMS}$<br>$I_{FAVM}$<br>$I_{FRM}$ | $T_{VJ}=T_{VJM}$<br>$T_C=85^oC$; rectangular, d=0.5<br>$t_P$<10us; rep. rating, pulse width limited by $T_{VJM}$ | | 70<br>30<br>375 | A |
| $I_{FSM}$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 300<br>320 | A |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 260<br>280 | |
| $I^2t$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 450<br>420 | $A^2s$ |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 340<br>320 | |
| $T_{VJ}$<br>$T_{VJM}$<br>$T_{stg}$ | | | -40...+150<br>150<br>-40...+150 | $^oC$ |
| $P_{tot}$ | $T_C=25^oC$ | | 100 | W |
| $V_{ISOL}$ | 50/60Hz, RMS<br>$I_{ISOL}$≤1mA | | 2500 | V~ |
| $M_d$ | Mounting torque<br>Terminal connection torque (M4) | | 1.5/13<br>1.5/13 | Nm/lb.in. |
| **Weight** | | | 30 | g |

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| Symbol | Test Conditions | Characteristic Values typ. | 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·$V_{RRM}$ | | 100<br>50<br>7 | uA<br>uA<br>mA |
| $V_F$ | $I_F$=30A; $T_{VJ}$=150°C<br>$T_{VJ}$=25°C | | 1.4<br>1.6 | V |
| $V_{TO}$ | For power-loss calculations only | | 1.01 | V |
| $r_T$ | $T_{VJ}$=$T_{VJM}$ | | 7.1 | mΩ |
| $R_{thJC}$<br>$R_{thCK}$ | | 0.05 | 1.25 | K/W |
| $t_{rr}$ | $I_F$=1A; -di/dt=100A/us; $V_R$=30V; $T_{VJ}$=25°C | 35 | 50 | ns |
| $I_{RM}$ | $V_R$=350V; $I_F$=30A; -di$_F$/dt=240A/us; L≤0.05uH; $T_{VJ}$=100°C | 10 | 11 | A |

### *FEATURES*

* International standard package miniBLOC (ISOTOP compatible)
* Isolation voltage 2500 V~
* 2 independent FRED in 1 package
* Glass passivatd chips
* Very short recovery time
* Extremely low switching losses
* Low $I_{RM}$-values
* Soft recovery behaviour
* UL File NO.E310749
* RoHS compliant

### *APPLICATIONS*

* Antiparallel diode for high frequency switching devices
* Antisaturation diode
* Snubber diode
* Free wheeling diode in converters and motor control circuits
* Rectifiers in switch mode power supplies (SMPS)
* Inductive heating and melting
* Uninterruptible power supplies (UPS)
* Ultrasonic cleaners and welders

### *ADVANTAGES*

* High reliability circuit operation
* Low voltage peaks for reduced protection circuits
* Low noise switching
* Low losses
* Operating at lower temperature or space saving by reduced cooling

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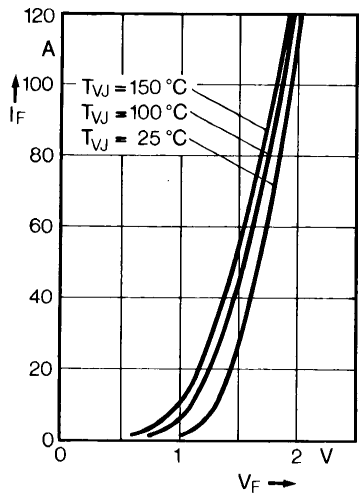


Fig. 1 Forward current versus voltage drop.

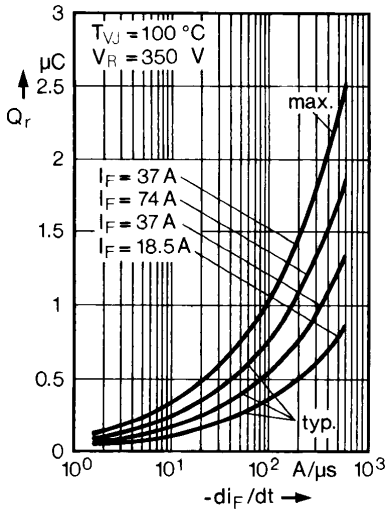


Fig. 2 Recovery charge versus $-di_F/dt$.

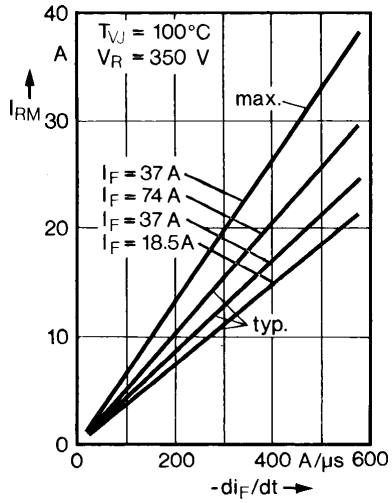


Fig. 3 Peak reverse current versus $-di_F/dt$.

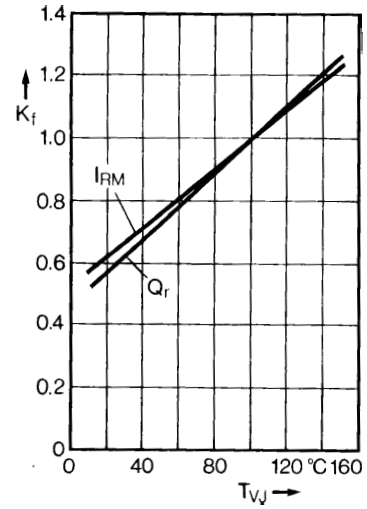


Fig. 4 Dynamic parameters versus junction temperature.

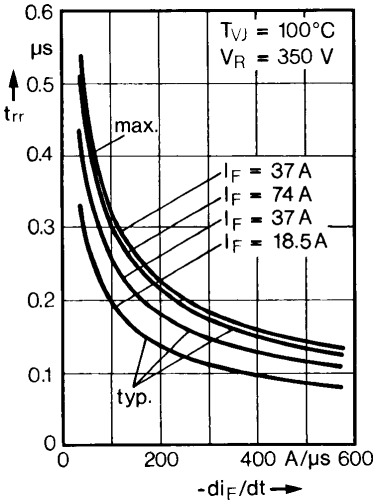


Fig. 5 Recovery time versus $-di_F/dt$.

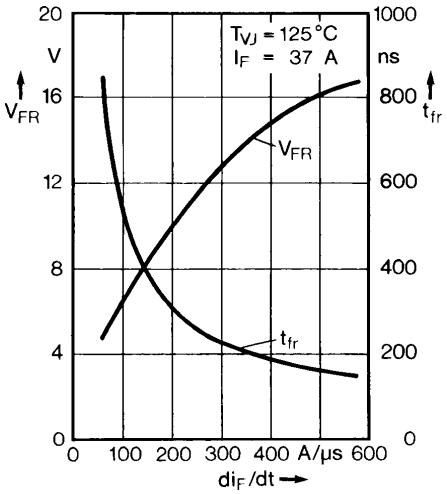


Fig. 6 Peak forward voltage versus $di_F/dt$.

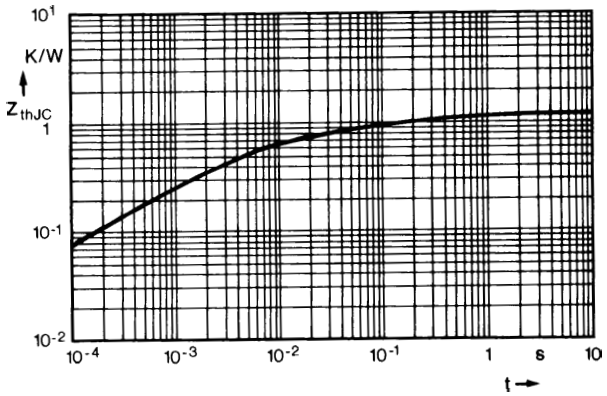


Fig. 7 Transient thermal impedance junction to case.



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