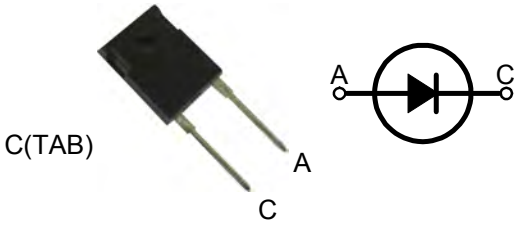
# SUR6080 thru SUR60120

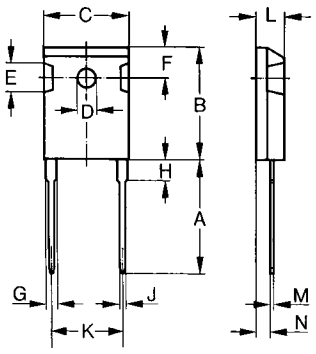
## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diodes




A=Anode, C=Cathode, TAB=Cathode

| | $V_{RSM}$ V | $V_{RRM}$ V |
|---|---|---|
| **SUR6080** | 800 | 800 |
| **SUR60100** | 1000 | 1000 |
| **SUR60120** | 1200 | 1200 |

Dimensions TO-247AC




| Dim. | Millimeter Min. | Max. | Inches Min. | Max. |
|---|---|---|---|---|
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.80 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.610 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| F | 5.4 | 6.2 | 0.212 | 0.244 |
| G | 1.65 | 2.13 | 0.065 | 0.084 |
| H | - | 4.5 | - | 0.177 |
| J | 1.0 | 1.4 | 0.040 | 0.055 |
| K | 10.8 | 11.0 | 0.426 | 0.433 |
| L | 4.7 | 5.3 | 0.185 | 0.209 |
| M | 0.4 | 0.8 | 0.016 | 0.031 |
| N | 1.5 | 2.49 | 0.087 | 0.102 |

| Symbol | Test Conditions | | Maximum Ratings | Unit |
|---|---|---|---|---|
| $I_{FRMS}$<br>$I_{FAVM}$<br>$I_{FRM}$ | $T_{VJ}=T_{VJM}$<br>$T_C=60^oC$; rectangular, d=0.5<br>$t_p$<10us; rep. rating, pulse width limited by $T_{VJM}$ | | 100<br>60<br>800 | A |
| $I_{FSM}$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 500<br>540 | A |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 450<br>480 | |
| $I^2t$ | $T_{VJ}=45^oC$ | t=10ms (50Hz), sine<br>t=8.3ms (60Hz), sine | 1250<br>1200 | $A^2s$ |
| | $T_{VJ}=150^oC$ | t=10ms(50Hz), sine<br>t=8.3ms(60Hz), sine | 1000<br>950 | |
| $T_{VJ}$<br>$T_{VJM}$<br>$T_{stg}$ | | | -40...+150<br>150<br>-40...+150 | $^oC$ |
| $P_{tot}$ | $T_C=25^oC$ | | 189 | W |
| $M_d$ | Mounting torque | | 0.8...1.2 | Nm |
| **Weight** | | | 6 | 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·$V_{RRM}$ | | 3<br>0.5<br>14 | mA |
| $V_F$ | $I_F$=60A; $T_{VJ}$=150°C<br>$T_{VJ}$=25°C | | 1.8<br>2.3 | V |
| $V_{TO}$ | For power-loss calculations only | | 1.43 | V |
| $r_T$ | $T_{VJ}$=$T_{VJM}$ | | 6.1 | mΩ |
| $R_{thJC}$<br>$R_{thCK}$<br>$R_{thJA}$ | | 0.25 | 0.66<br><br>35 | K/W |
| $t_{rr}$ | $I_F$=1A; -di/dt=200A/us; $V_R$=30V; $T_{VJ}$=25°C | 35 | 50 | ns |
| $I_{RM}$ | $V_R$=540V; $I_F$=60A; -di$_F$/dt=480A/us; L≤0.05uH; $T_{VJ}$=100°C | 32 | 36 | A |

### *FEATURES*

* International standard package JEDEC TO-247AC
* Glass passivatd chips
* Very short recovery time
* Extremely low switching losses
* Low $I_{RM}$-values
* Soft recovery behaviour
* 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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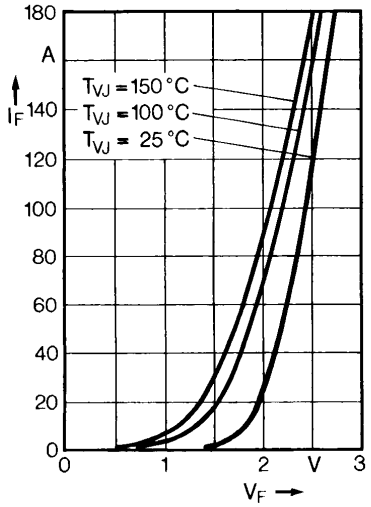


Fig. 1 Forward current versus voltage drop.

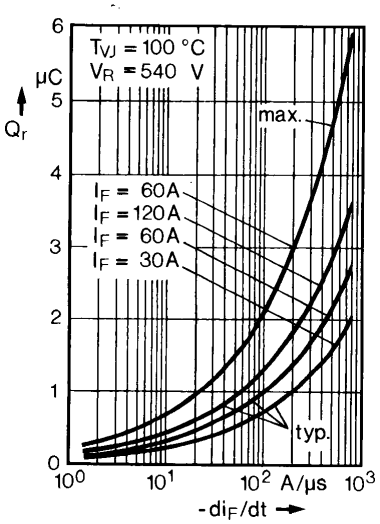


Fig. 2 Recovery charge versus $-di_F/dt$.

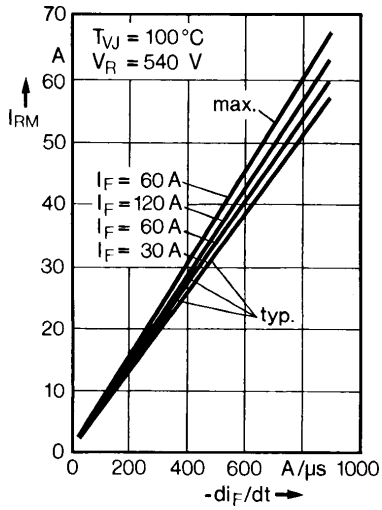


Fig. 3 Peak reverse current versus $-di_F/dt$.

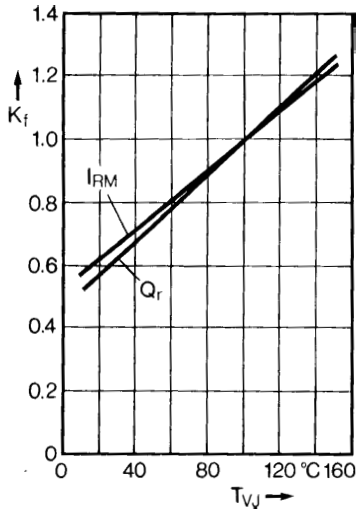


Fig. 4 Dynamic parameters versus junction temperature.

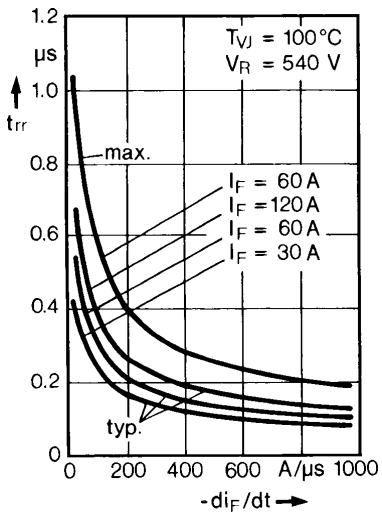


Fig. 5 Recovery time versus $-di_F/dt$.

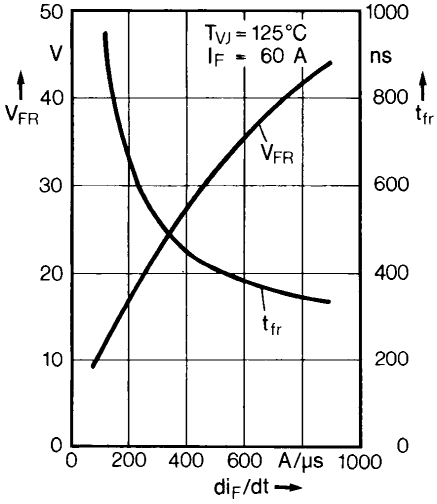


Fig. 6 Peak forward voltage versus $di_F/dt$.

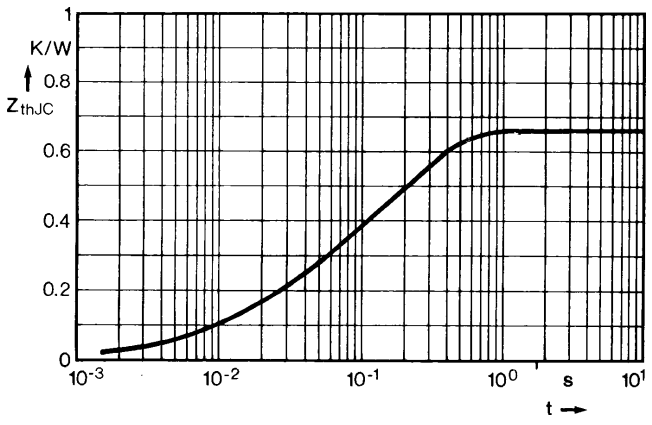


Fig. 7 Transient thermal impedance junction to case.



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