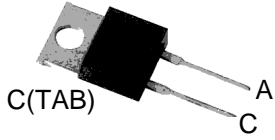


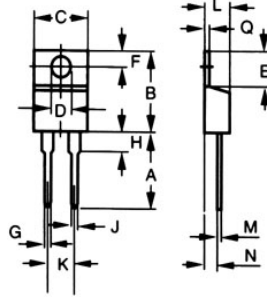
SUR820 thru SUR8100

Ultra Fast Recovery Epitaxial Diodes



A=Anode, C=Cathode, TAB=Cathode

Dimensions TO-220AC



| Dim. | Inches | | Milimeter | |
|------|--------|-------|-----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.500 | 0.580 | 12.70 | 14.73 |
| B | 0.560 | 0.650 | 14.23 | 16.51 |
| C | 0.380 | 0.420 | 9.66 | 10.66 |
| D | 0.139 | 0.161 | 3.54 | 4.08 |
| E | 2.300 | 0.420 | 5.85 | 6.85 |
| F | 0.100 | 0.135 | 2.54 | 3.42 |
| G | 0.045 | 0.070 | 1.15 | 1.77 |
| H | - | 0.250 | - | 6.35 |
| J | 0.025 | 0.035 | 0.64 | 0.89 |
| K | 0.190 | 0.210 | 4.83 | 5.33 |
| L | 0.140 | 0.190 | 3.56 | 4.82 |
| M | 0.015 | 0.022 | 0.38 | 0.56 |
| N | 0.080 | 0.115 | 2.04 | 2.49 |
| Q | 0.025 | 0.055 | 0.64 | 1.39 |

| | V_{RSM} | V_{RRM} |
|----------------|-----------|-----------|
| | V | V |
| SUR820 | 200 | 200 |
| SUR860 | 600 | 600 |
| SUR8100 | 1000 | 1000 |

| Symbol | Test Conditions | Maximum Ratings | Unit |
|------------------------------------|---|---|----------------------|
| I_{FRMS} | $T_{VJ}=T_{VJM}$ | 16 | A |
| I_{FAVM} | $T_C=115^\circ\text{C}$; rectangular, $d=0.5$ | 8 | |
| I_{FRM} | $t_p < 10\mu\text{s}$; rep. rating, pulse width limited by T_{VJM} | 130 | |
| I_{FSM} | $T_{VJ}=45^\circ\text{C}$ | $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine | A |
| | $T_{VJ}=150^\circ\text{C}$ | $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine | |
| I^2t | $T_{VJ}=45^\circ\text{C}$ | $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine | A^2s |
| | $T_{VJ}=150^\circ\text{C}$ | $t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine | |
| T_{VJ} T_{VJM} T_{stg} | | -40...+150 150 -40...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C=25^\circ\text{C}$ | 50 | W |
| M_d | Mounting torque | 0.4...0.6 | Nm |
| Weight | | 2 | g |

SUR820 thru SUR8100

Ultra Fast Recovery Epitaxial Diodes

| Symbol | Test Conditions | Characteristic Values | | Unit |
|---|---|-----------------------|------|------------|
| | | typ. | max. | |
| I_R | $T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$ | | 20 | uA |
| | $T_{VJ}=25^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$ | | 10 | uA |
| | $T_{VJ}=125^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$ | | 1.5 | mA |
| V_F | $I_F=8\text{A}; T_{VJ}=150^{\circ}\text{C}$ | | 1.3 | V |
| | $T_{VJ}=25^{\circ}\text{C}$ | | 1.5 | |
| V_{TO} | For power-loss calculations only | | 0.98 | V |
| r_T | $T_{VJ}=T_{VJM}$ | | 28.7 | m Ω |
| R_{thJC} R_{thCK} R_{thJA} | | 0.5 | 2.5 | K/W |
| | | | 60 | |
| | | | | |
| t_{rr} | $I_F=1\text{A}; -di/dt=50\text{A/us}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$ | 35 | 50 | ns |
| I_{RM} | $V_R=540\text{V}; I_F=15\text{A}; -di_F/dt=100\text{A/us}; L<0.05\mu\text{H}; T_{VJ}=100^{\circ}\text{C}$ | 2.5 | 2.8 | A |

FEATURES

- * International standard package JEDEC TO-220AC
- * Planar passivated chips
- * Very short recovery time
- * Extremely low switching losses
- * Low I_{RM}-values
- * Soft recovery behaviour

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

SUR820 thru SUR8100

Ultra Fast Recovery Epitaxial Diodes

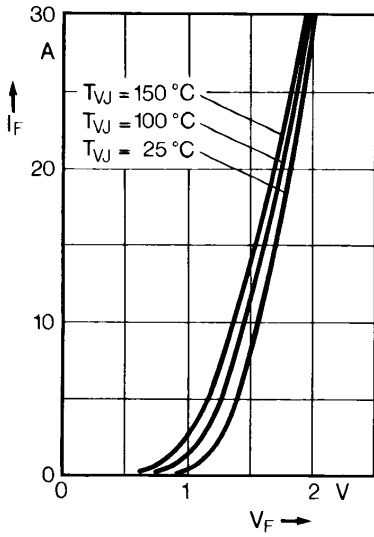


Fig. 1 Forward current versus voltage drop.

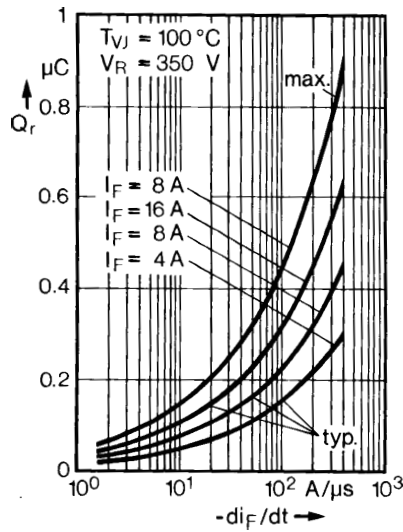


Fig. 2 Recovery charge versus $-di_F/dt$.

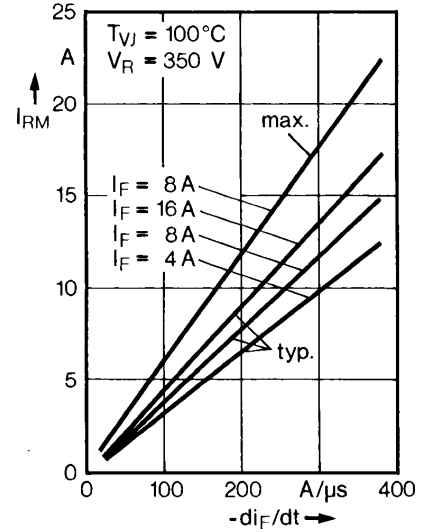


Fig. 3 Peak reverse current versus $-di_F/dt$.

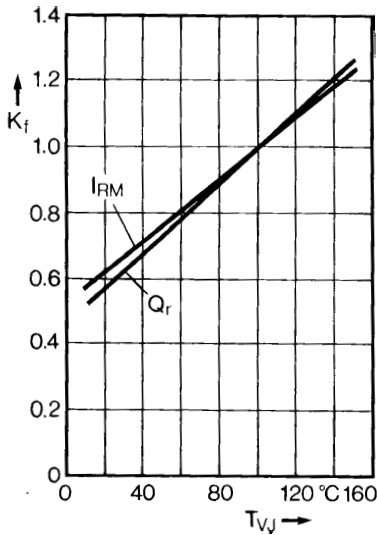


Fig. 4 Dynamic parameters versus junction temperature.

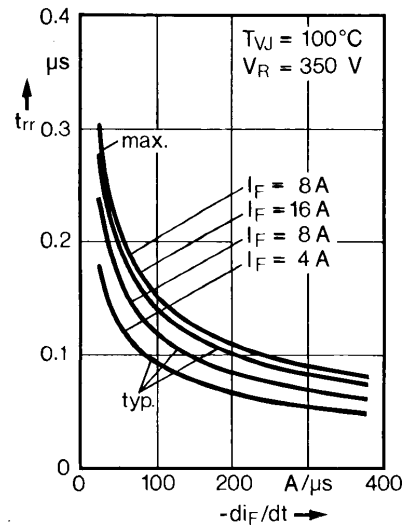


Fig. 5 Recovery time versus $-di_F/dt$.

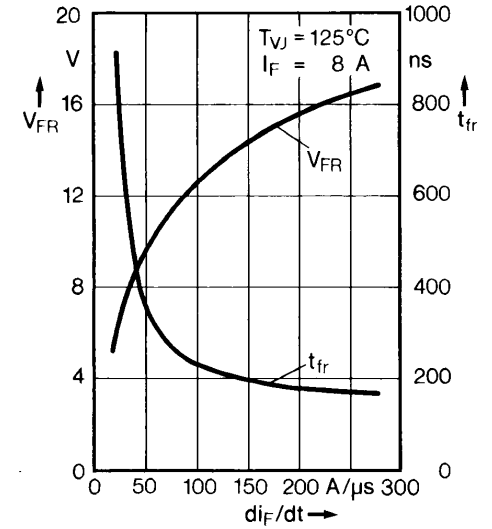


Fig. 6 Peak forward voltage versus di_F/dt .

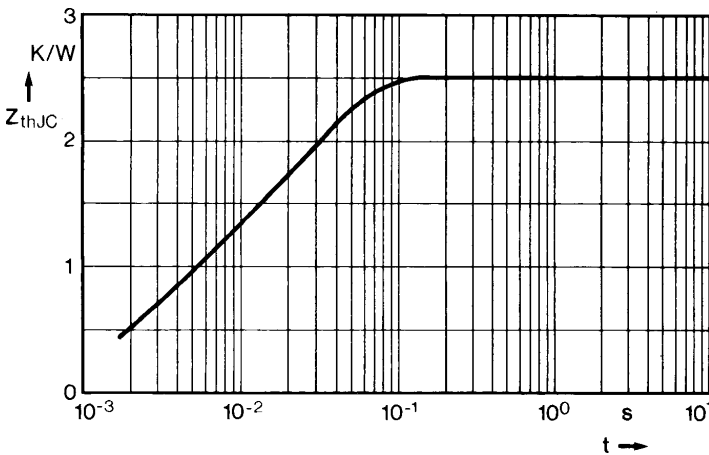


Fig. 7 Transient thermal impedance junction to case.