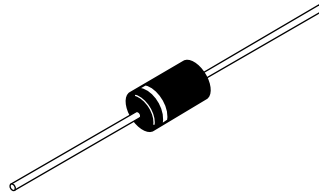
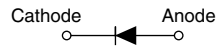


Schottky Rectifier, 5 A


DO-204AR

FEATURES

- 175 °C T_J operation
- Low forward voltage drop
- 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
- Lead (Pb)-free plating
- Designed and qualified for industrial level


RoHS
COMPLIANT

PRODUCT SUMMARY

| | |
|-------------|-------------|
| $I_{F(AV)}$ | 5 A |
| V_R | 60 to 100 V |

DESCRIPTION

The 50SQ... axial leaded Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-------------|----------------------------|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform | 5 | A |
| V_{RRM} | Range | 60 to 100 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 1900 | A |
| V_F | 5 Apk, $T_J = 125^\circ C$ | 0.52 | V |
| T_J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | 50SQ060 | 50SQ080 | 50SQ100 | UNITS |
|--------------------------------------|-----------|---------|---------|---------|-------|
| Maximum DC reverse voltage | V_R | 60 | 80 | 100 | V |
| Maximum working peak reverse voltage | V_{RWM} | | | | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS | | |
|--|---|--|---|-------|---|--------------------------------|
| Maximum average forward current See fig. 5 | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 119^\circ C$, rectangular waveform | 5 | A | | |
| Maximum peak one cycle non-repetitive surge current See fig. 7 | I_{FSM} | <table border="1"> <tr> <td>5 μs sine or 3 μs rect. pulse</td> <td rowspan="2">Following any rated load condition and with rated V_{RRM} applied</td> </tr> <tr> <td>10 ms sine or 6 ms rect. pulse</td> </tr> </table> | 5 μs sine or 3 μs rect. pulse | | Following any rated load condition and with rated V_{RRM} applied | 10 ms sine or 6 ms rect. pulse |
| 5 μs sine or 3 μs rect. pulse | Following any rated load condition and with rated V_{RRM} applied | | | | | |
| 10 ms sine or 6 ms rect. pulse | | | | | | |
| Non-repetitive avalanche energy | E_{AS} | $T_J = 25^\circ C$, $I_{AS} = 1.0 A$, $L = 15 mH$ | 7.5 | mJ | | |
| Repetitive avalanche current | I_{AR} | Current decaying linearly to zero in 1 μs Frequency limited by, T_J maximum $V_A = 1.5 \times V_R$ typical | 1.0 | A | | |



| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|---|-----------------------------------|--------|------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop See fig. 1 | $V_{FM}^{(1)}$ | 5 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.66 | V |
| | | 10 A | | 0.77 | |
| | | 5 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.52 | |
| | | 10 A | | 0.62 | |
| Maximum reverse leakage current See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 0.55 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 7 | |
| Maximum junction capacitance | C_T | $V_R = 5\text{ }V_{DC}$, (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$ | | 500 | pF |
| Typical series inductance | L_S | Measured lead to lead 5 mm from body | | 10 | nH |
| Maximum voltage rate of change | dV/dt | Rated V_R | | 10 000 | V/ μ s |

Note(1) Pulse width < 300 μ s, duty cycle < 2 %

| THERMAL - MECHANICAL SPECIFICATIONS | | | | | |
|--|----------------|--|-----------------------------|-------------|---------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | | - 55 to 175 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to lead | R_{thJL} | DC operation; see fig. 4 1/8" lead length | | 8.0 | $^\circ\text{C}/\text{W}$ |
| Typical thermal resistance, junction to air | R_{thJA} | | | 44 | |
| Approximate weight | | | | 1.4 | g |
| | | | | 0.049 | oz. |
| Marking device | | | Case style DO-204AR (JEDEC) | 50SQ060 | |
| | | | | 50SQ080 | |
| | | | | 50SQ100 | |

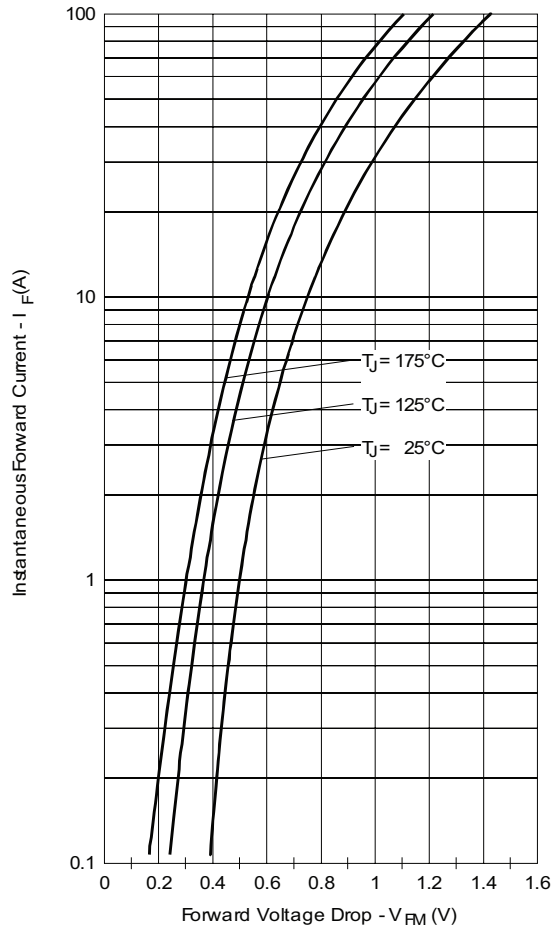


Fig. 1 - Maximum Forward Voltage Drop Characteristics

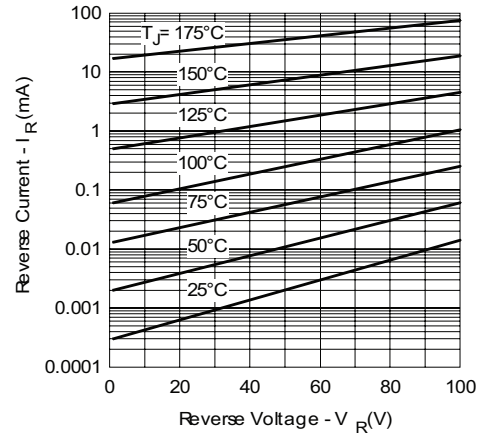


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

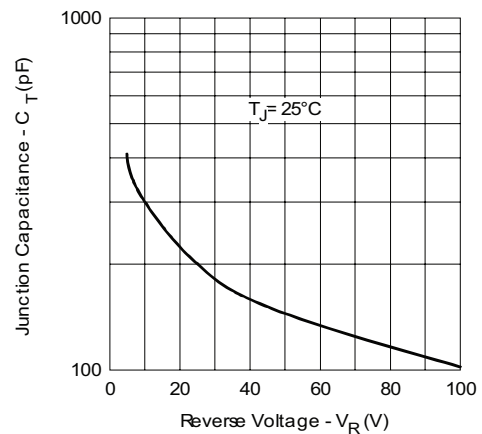


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

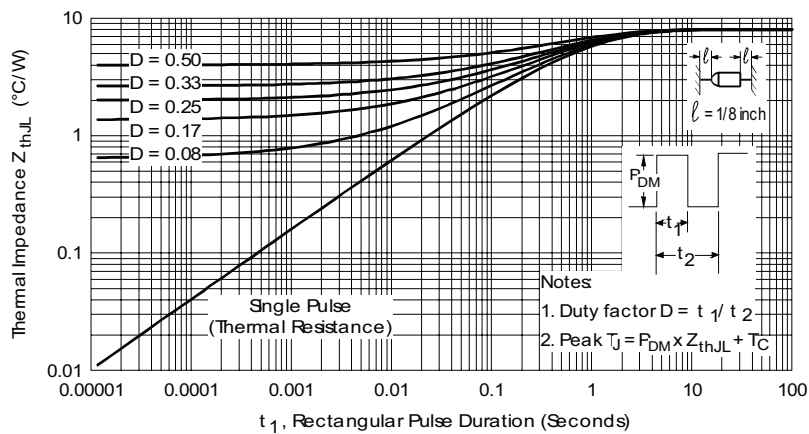


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

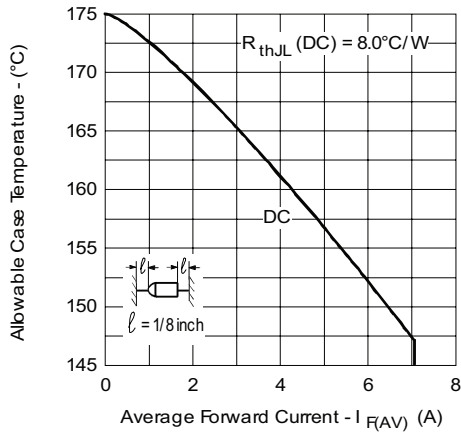


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

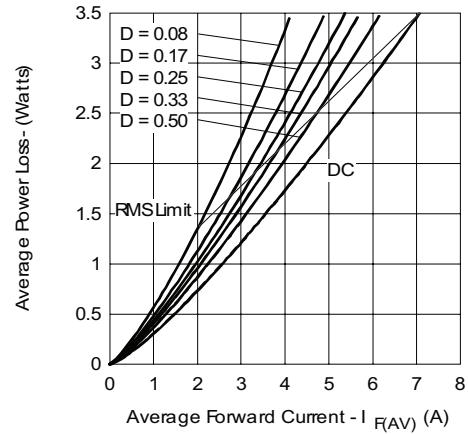


Fig. 6 - Forward Power Loss Characteristics

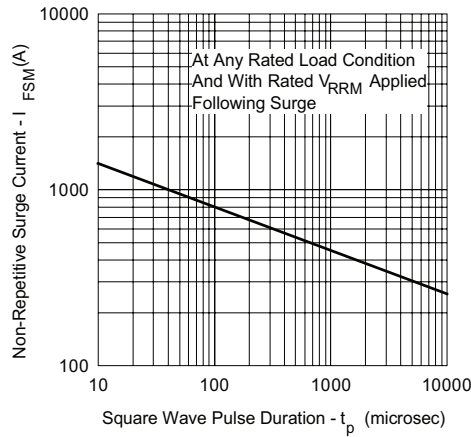


Fig. 7 - Maximum Non-Repetitive Surge Current

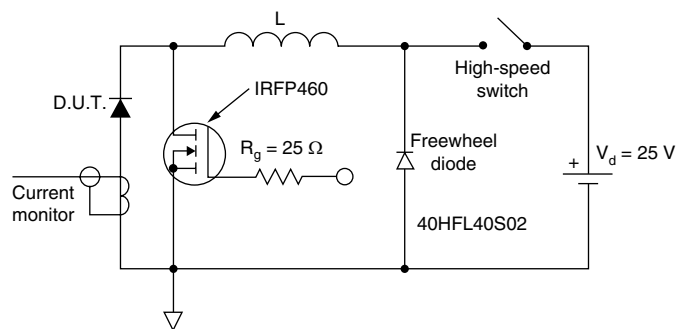
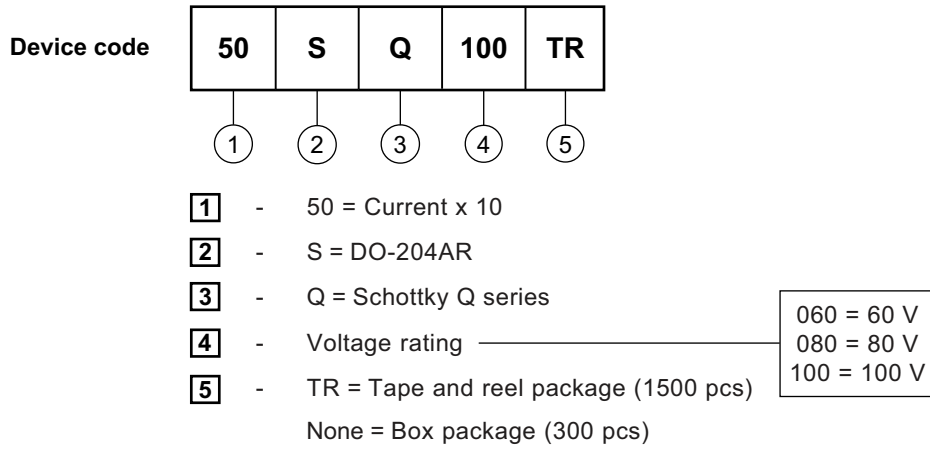


Fig. 8 - Unclamped Inductive Test Circuit



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