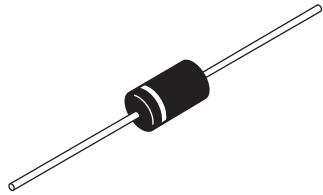




**THE DATASHEET OF
VS-80SQ035**



Schottky Rectifier, 8 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
- Compliant to RoHS Directive 2002/95/EC
- Designed and qualified for commercial level
- Halogen-free according to IEC 61249-2-21 definition (-M3 only)



| PRODUCT SUMMARY | |
|----------------------------------|------------------------|
| Package | DO-204AR |
| I _{F(AV)} | 8 A |
| V _R | 30 V, 35 V, 40 V, 45 V |
| V _F at I _F | 0.44 V |
| I _{RM} max. | 15 mA at 125 °C |
| T _J max. | 175 °C |
| Diode variation | Single die |
| E _{AS} | 10 mJ |

DESCRIPTION

The VS-80SQ... 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 | 8 | A |
| V _{RRM} | Range | 30 to 45 | V |
| I _{FSM} | t _p = 5 μs sine | 2400 | A |
| V _F | 8 Apk, T _J = 125 °C | 0.44 | V |
| T _J | Range | - 55 to 175 | °C |

| VOLTAGE RATINGS | | | | | | |
|--------------------------------------|------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-------|
| PARAMETER | SYMBOL | VS-80SQ030 VS-80SQ030-M3 | VS-80SQ035 VS-80SQ035-M3 | VS-80SQ040 VS-80SQ040-M3 | VS-80SQ045 VS-80SQ045-M3 | UNITS |
| Maximum DC reverse voltage | V _R | 30 | 35 | 40 | 45 | 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 °C, rectangular waveform | 8 | A |
| Maximum peak one cycle non-repetitive surge current See fig. 7 | I _{FSM} | 5 μs sine or 3 μs rect. pulse | 2400 | |
| | | 10 ms sine or 6 ms rect. pulse | 380 | |
| Non-repetitive avalanche energy | E _{AS} | T _J = 25 °C, I _{AS} = 1.6 A, L = 7.8 mH | 10 | mJ |
| Repetitive avalanche current | I _{AR} | Current decaying linearly to zero in 1 μs Frequency limited by, T _J maximum V _A = 1.5 x V _R typical | 1.6 | A |



| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|--|-----------------------------------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop See fig. 1 | $V_{FM}^{(1)}$ | 8 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.53 | V |
| | | 16 A | | 0.60 | |
| | | 8 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.44 | |
| | | 16 A | | 0.55 | |
| Maximum reverse leakage current See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 2 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 15 | |
| Maximum junction capacitance | C_T | $V_R = 5 V_{DC}$, (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$ | | 900 | pF |
| Typical series inductance | L_S | Measured lead to lead 5 mm from package body | | 10.0 | nH |
| Maximum voltage rate of change | dV/dt | Rated V_R | | 10 000 | V/ μs |

Note

(1) Pulse width < 300 μs , 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 | $^\circ\text{C/W}$ |
| Typical thermal resistance, junction to air | R_{thJA} | | | 44 | |
| Approximate weight | | | | 1.4 | g |
| | | | | 0.049 | oz. |
| Marking device | | Case style DO-204AR (JEDEC) | | 80SQ030 | |
| | | | | 80SQ035 | |
| | | | | 80SQ040 | |
| | | | | 80SQ045 | |

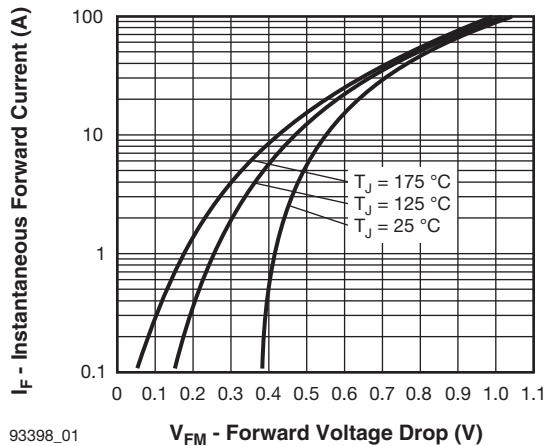


Fig. 1 - Maximum Forward Voltage Drop Characteristics

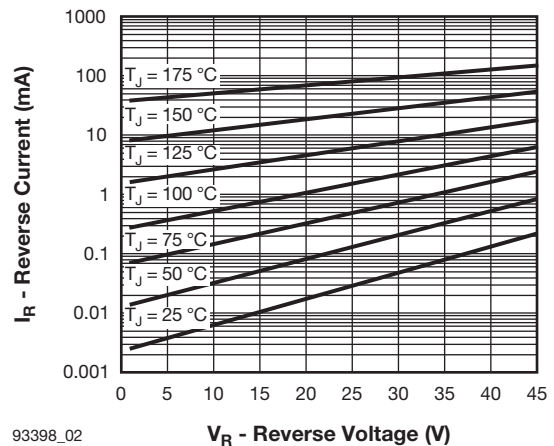


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

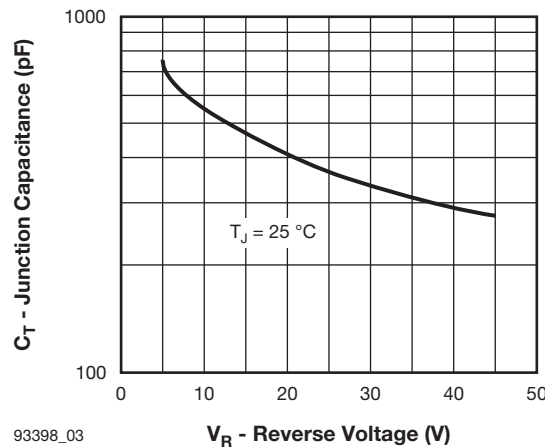


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

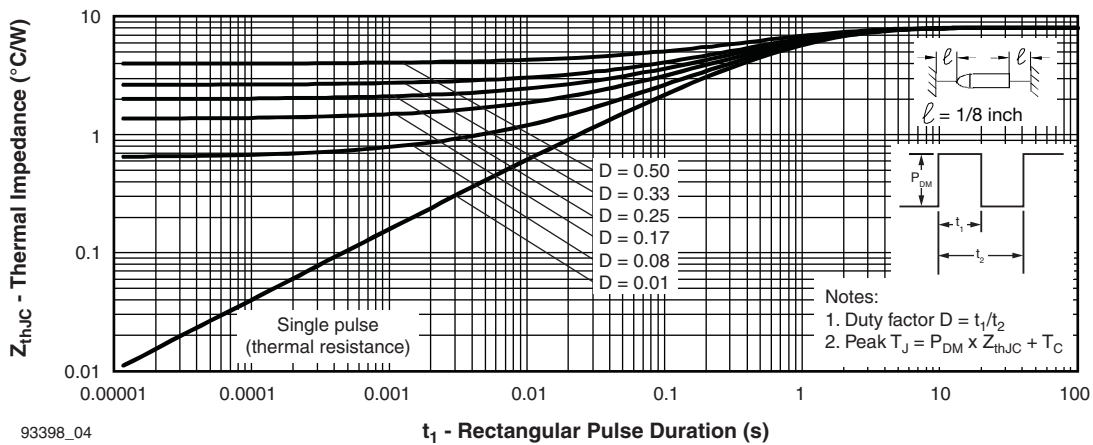
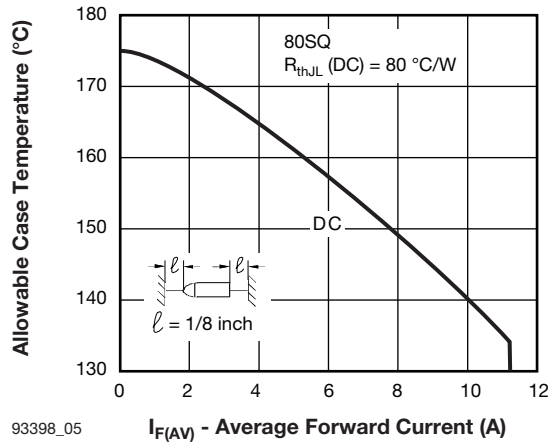
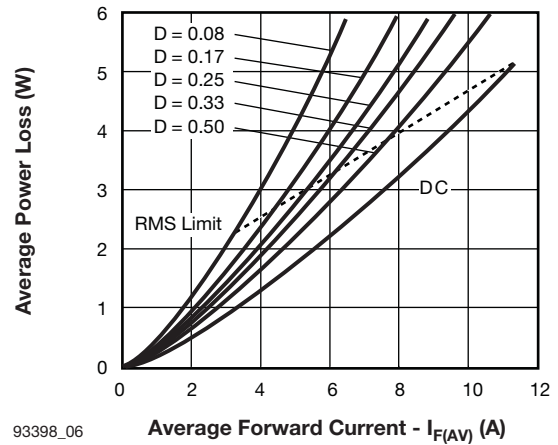


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics



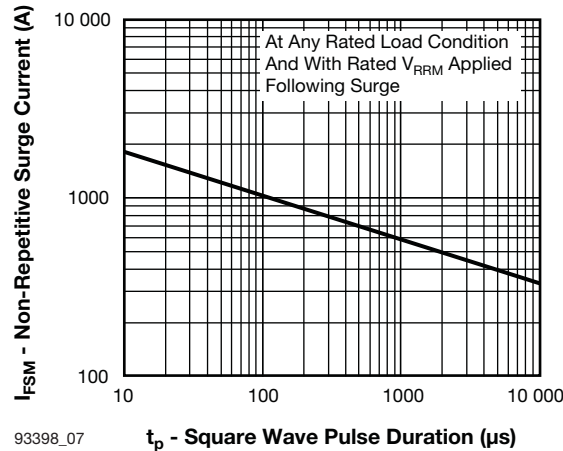
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Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current



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Fig. 6 - Forward Power Loss Characteristics



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Fig. 7 - Maximum Non-Repetitive Surge Current

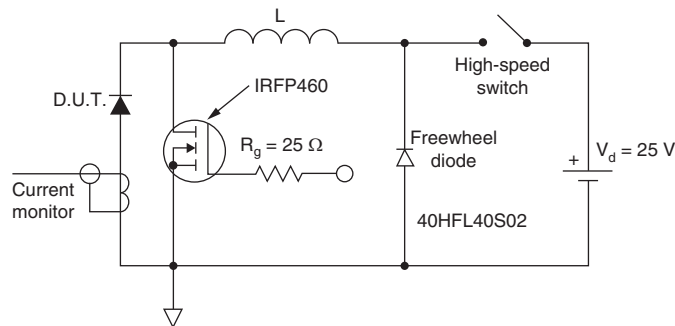
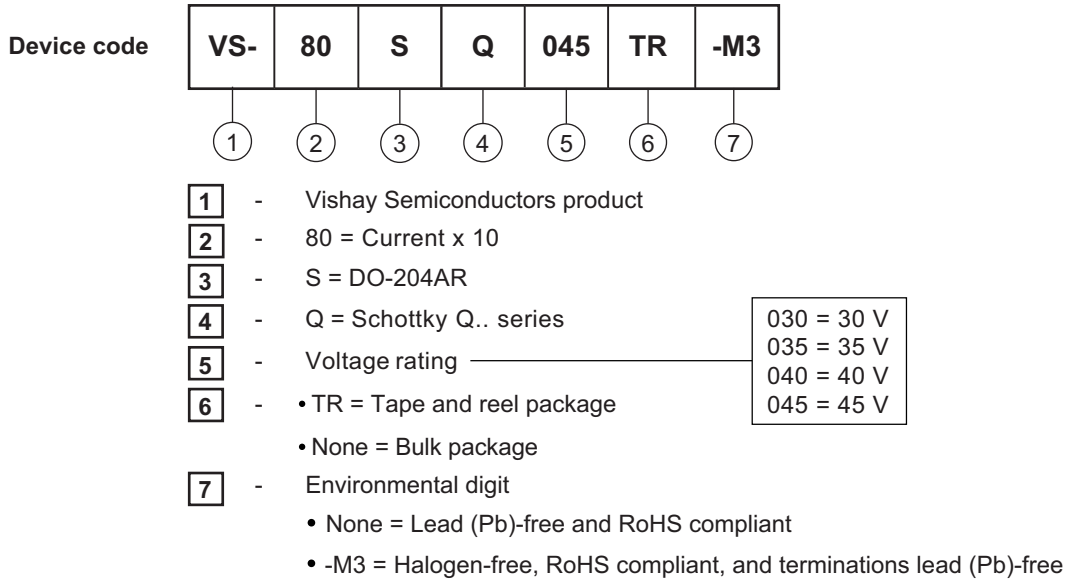


Fig. 8 - Unclamped Inductive Test Circuit



ORDERING INFORMATION TABLE



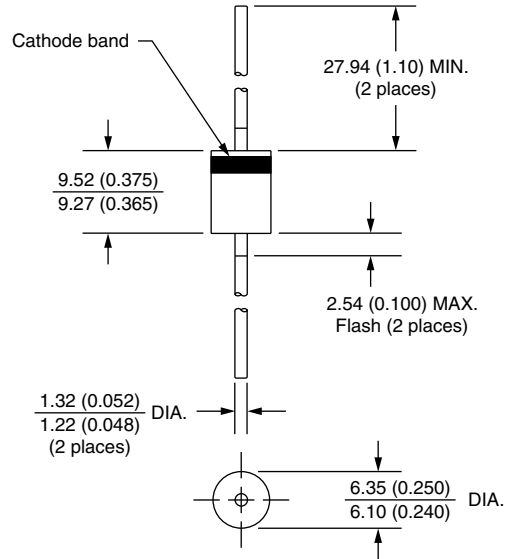
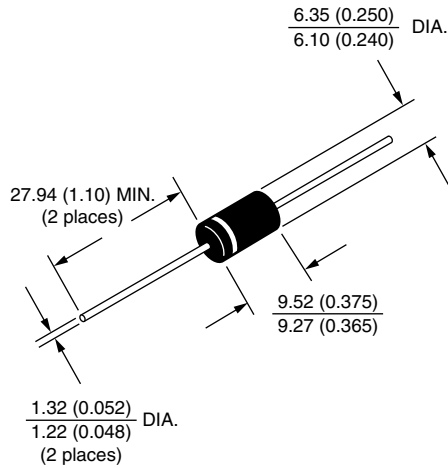
| ORDERING INFORMATION (Example) | | | |
|--------------------------------|------------------|------------------------|-----------------------|
| PREFERRED P/N | QUANTITY PER T/R | MINIMUM ORDER QUANTITY | PACKAGING DESCRIPTION |
| VS-80SQ030 | 300 | 300 | Bulk |
| VS-80SQ030TR | 1500 | 1500 | Tape and reel |
| VS-80SQ030-M3 | 300 | 300 | Bulk |
| VS-80SQ030TR-M3 | 1500 | 1500 | Tape and reel |
| VS-80SQ035 | 300 | 300 | Bulk |
| VS-80SQ035TR | 1500 | 1500 | Tape and reel |
| VS-80SQ035-M3 | 300 | 300 | Bulk |
| VS-80SQ035TR-M3 | 1500 | 1500 | Tape and reel |
| VS-80SQ040 | 300 | 300 | Bulk |
| VS-80SQ040TR | 1500 | 1500 | Tape and reel |
| VS-80SQ040-M3 | 300 | 300 | Bulk |
| VS-80SQ040TR-M3 | 1500 | 1500 | Tape and reel |
| VS-80SQ045 | 300 | 300 | Bulk |
| VS-80SQ045TR | 1500 | 1500 | Tape and reel |
| VS-80SQ045-M3 | 300 | 300 | Bulk |
| VS-80SQ045TR-M3 | 1500 | 1500 | Tape and reel |

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95243 |
| Part marking information | www.vishay.com/doc?95325 |
| Packaging information | www.vishay.com/doc?95338 |



Axial DO-204AR

DIMENSIONS in millimeters (inches)





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