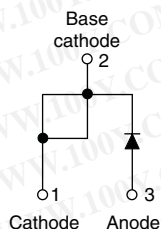




勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Schottky Rectifier, 8 A

**TO-220AC**

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 ("PbF" suffix)
- Designed and qualified for industrial level

**RoHS***
COMPLIANT

PRODUCT SUMMARY

| | |
|-------------|-------------|
| $I_{F(AV)}$ | 8 A |
| V_R | 60 to 100 V |

DESCRIPTION

The 8TQ...PbF 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 | 60 to 100 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 850 | A |
| V_F | 8 Apk, $T_J = 125^\circ C$ | 0.58 | V |
| T_J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | 8TQ060PbF | 8TQ080PbF | 8TQ100PbF | UNITS |
|--------------------------------------|-----------|-----------|-----------|-----------|-------|
| Maximum DC reverse voltage | V_R | 60 | 80 | 100 | V |
| Maximum working peak reverse voltage | V_{RWM} | | | | |

ABSOLUTE MAXIMUM RATINGS

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|--|-------------|---|---|--------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current See fig. 5 | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 157\text{ }^{\circ}\text{C}$, 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 | Following any rated load condition and with rated V_{RRM} applied | 850 | A |
| | | 10 ms sine or 6 ms rect. pulse | | 230 | |
| Non-repetitive avalanche energy | E_{AS} | $T_J = 25\text{ }^{\circ}\text{C}$, $I_{AS} = 0.50\text{ A}$, $L = 60\text{ mH}$ | | 7.50 | 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 | | 0.50 | A |

* Pb containing terminations are not RoHS compliant, exemptions may apply

ELECTRICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|----------------|---|--------|------------|
| Maximum forward voltage drop See fig. 1 | $V_{FM}^{(1)}$ | 8 A | 0.72 | V |
| | | 16 A | 0.88 | |
| | | 8 A | 0.58 | |
| | | 16 A | 0.69 | |
| Maximum reverse leakage current See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ °C}$ | 0.55 | mA |
| | | $T_J = 125\text{ °C}$ | 7 | |
| Maximum junction capacitance | C_T | $V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C | 500 | pF |
| Typical series inductance | L_S | Measured lead to lead 5 mm from package body | 8 | 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 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation See fig. 4 | 2.0 | °C/W |
| Typical thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth and greased | 0.50 | |
| Approximate weight | | | 2 | g |
| | | | 0.07 | oz. |
| Mounting torque | minimum | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | 12 (10) | |
| Marking device | | Case style TO-220AC | 8TQ060 | |
| | | | 8TQ080 | |
| | | | 8TQ100 | |

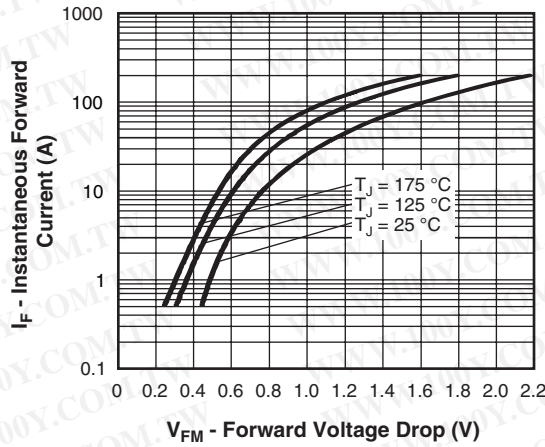


Fig. 1 - Maximum Forward Voltage Drop Characteristics

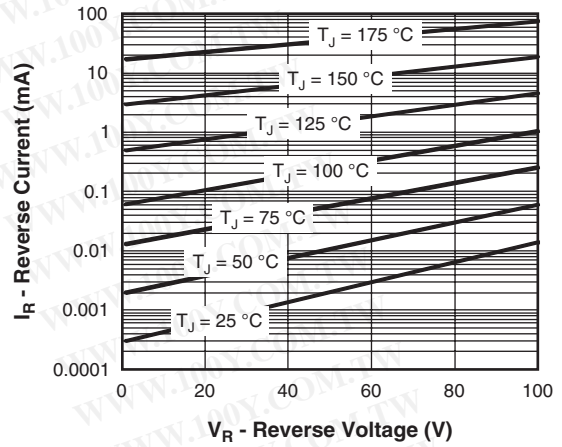


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

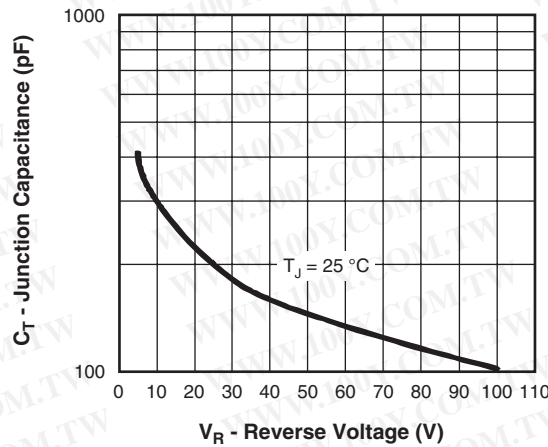


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

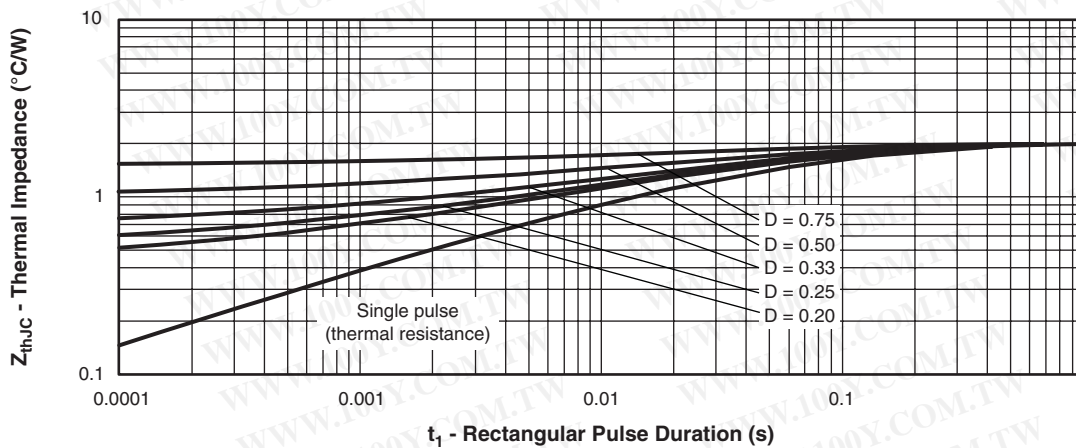


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

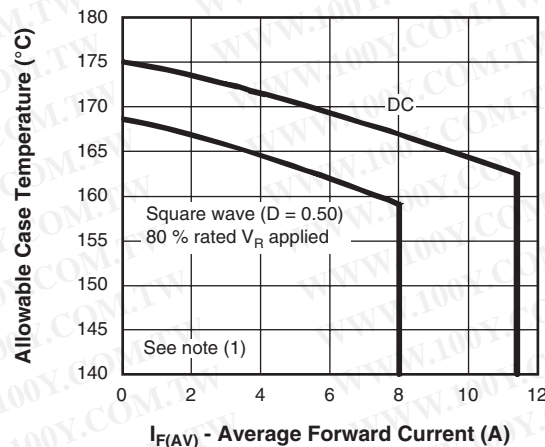


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

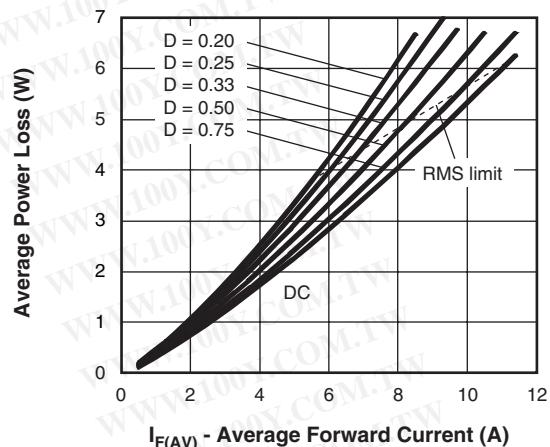


Fig. 6 - Forward Power Loss Characteristics

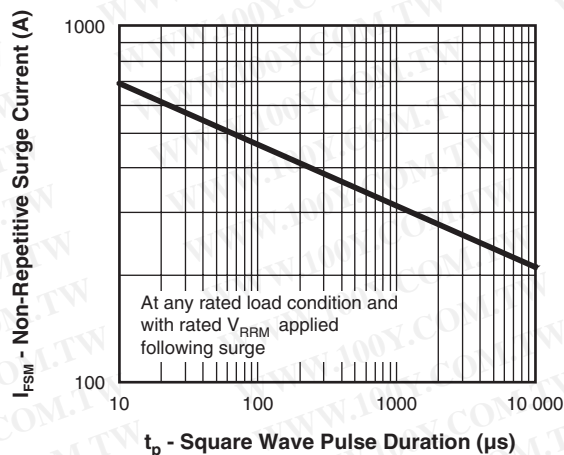


Fig. 7 - Maximum Non-Repetitive Surge Current

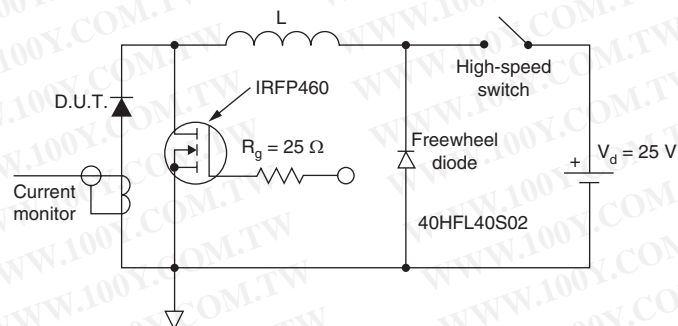


Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



ORDERING INFORMATION TABLE

| Device code | 8 | T | Q | 100 | PbF |
|-------------|---|------------------------------|---|-----|-----|
| | 1 | 2 | 3 | 4 | 5 |
| 1 | - | Current rating (8 = 8 A) | | | |
| 2 | - | Package: | | | |
| | | T = TO-220 | | | |
| 3 | - | Schottky "Q" series | | | |
| 4 | - | Voltage ratings | | | |
| 5 | - | • None = Standard production | | | |
| | | • PbF = Lead (Pb)-free | | | |

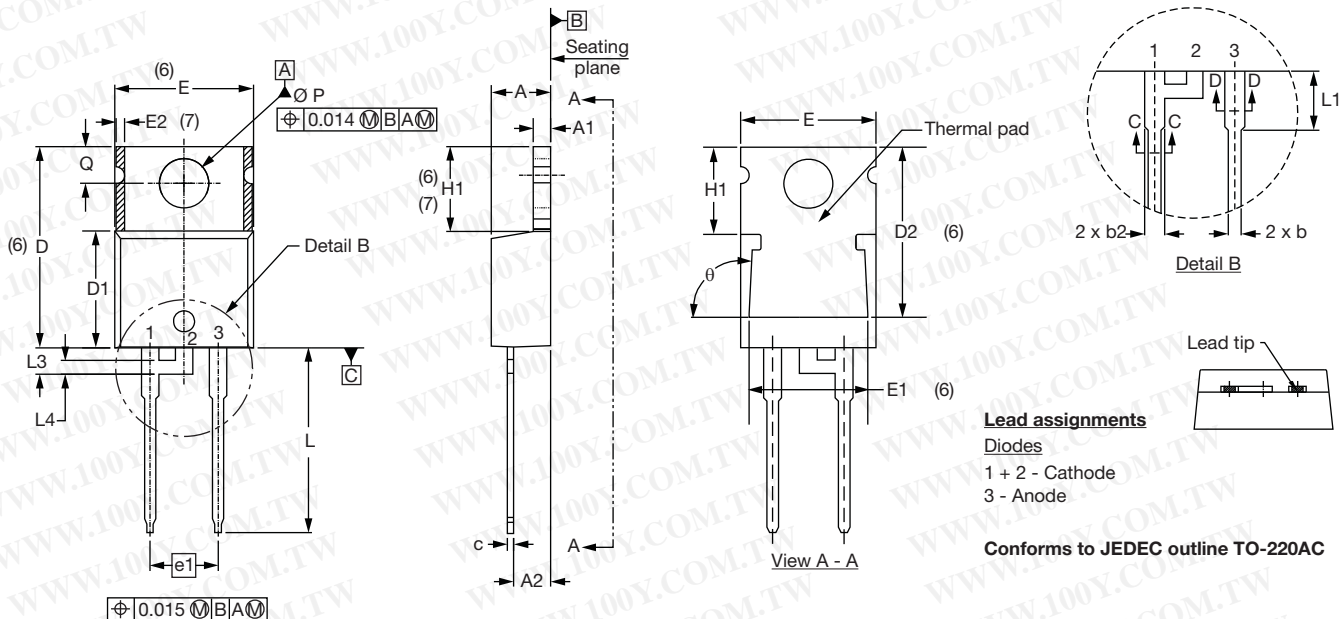
| |
|-------------|
| 060 = 60 V |
| 080 = 80 V |
| 100 = 100 V |

Tube standard pack quantity: 50 pieces

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95221 |
| Part marking information | http://www.vishay.com/doc?95224 |

TO-220AC

DIMENSIONS in millimeters and inches



| SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|-------|--------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| A | 4.25 | 4.65 | 0.167 | 0.183 | |
| A1 | 1.14 | 1.40 | 0.045 | 0.055 | |
| A2 | 2.56 | 2.92 | 0.101 | 0.115 | |
| b | 0.69 | 1.01 | 0.027 | 0.040 | |
| b1 | 0.38 | 0.97 | 0.015 | 0.038 | 4 |
| b2 | 1.20 | 1.73 | 0.047 | 0.068 | |
| b3 | 1.14 | 1.73 | 0.045 | 0.068 | 4 |
| c | 0.36 | 0.61 | 0.014 | 0.024 | |
| c1 | 0.36 | 0.56 | 0.014 | 0.022 | 4 |
| D | 14.85 | 15.25 | 0.585 | 0.600 | 3 |
| D1 | 8.38 | 9.02 | 0.330 | 0.355 | |
| D2 | 11.68 | 12.88 | 0.460 | 0.507 | 6 |
| E | 10.11 | 10.51 | 0.398 | 0.414 | 3, 6 |

| SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|-------|------------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| E1 | 6.86 | 8.89 | 0.270 | 0.350 | 6 |
| E2 | - | 0.76 | - | 0.030 | 7 |
| e | 2.41 | 2.67 | 0.095 | 0.105 | |
| e1 | 4.88 | 5.28 | 0.192 | 0.208 | |
| H1 | 6.09 | 6.48 | 0.240 | 0.255 | 6, 7 |
| L | 13.52 | 14.02 | 0.532 | 0.552 | |
| L1 | 3.32 | 3.82 | 0.131 | 0.150 | 2 |
| L3 | 1.78 | 2.13 | 0.070 | 0.084 | |
| L4 | 0.76 | 1.27 | 0.030 | 0.050 | 2 |
| Ø P | 3.54 | 3.73 | 0.139 | 0.147 | |
| Q | 2.60 | 3.00 | 0.102 | 0.118 | |
| θ | 90° to 93° | | 90° to 93° | | |

Notes

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Lead dimension and finish uncontrolled in L1
- (3) Dimension D, D1 and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (4) Dimension b1, b3 and c1 apply to base metal only
- (5) Controlling dimension: inches
- (6) Thermal pad contour optional within dimensions E, H1, D2 and E1
- (7) Dimension E2 x H1 define a zone where stamping and singulation irregularities are allowed
- (8) Outline conforms to JEDEC TO-220, D2 (minimum) where dimensions are derived from the actual package outline



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