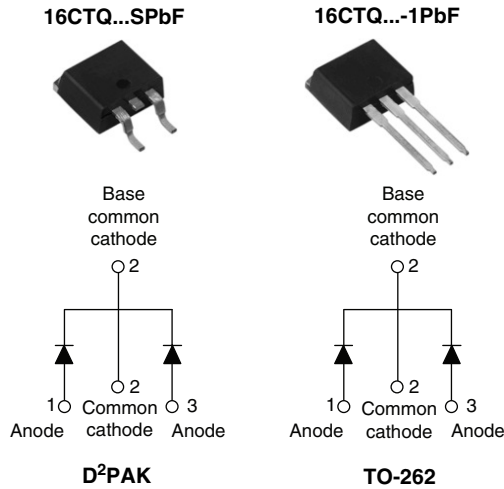


Schottky Rectifier, 2 x 8 A



FEATURES

- 175 °C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for Q101 level



Available
RoHS*
COMPLIANT

DESCRIPTION

This center tap 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.

PRODUCT SUMMARY

| | |
|--------------------|-------------|
| I _{F(AV)} | 2 x 8 A |
| V _R | 60 to 100 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|--------------------|--|-------------|-------|
| I _{F(AV)} | Rectangular waveform | 16 | A |
| V _{R(RM)} | | 60 to 100 | V |
| I _{F(SM)} | t _p = 5 μs sine | 850 | A |
| V _F | 8 Apk, T _J = 125 °C (per leg) | 0.58 | V |
| T _J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | 16CTQ060SPbF 16CTQ060-1PbF | 16CTQ080SPbF 16CTQ080-1PbF | 16CTQ100SPbF 16CTQ100-1PbF | UNITS |
|--------------------------------------|--------------------|-------------------------------|-------------------------------|-------------------------------|-------|
| Maximum DC reverse voltage | V _R | 60 | 80 | 100 | V |
| Maximum working peak reverse voltage | V _{R(WM)} | | | | |

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 = 148 °C, rectangular waveform | per leg | 8 |
| | | | per device | 16 |
| Maximum peak one cycle non-repetitive surge current per leg See fig. 7 | I _{F(SM)} | 5 μs sine or 3 μs rect. pulse | Following any rated load condition and with rated V _{R(RM)} applied | 850 |
| | | 10 ms sine or 6 ms rect. pulse | | 275 |
| Non-repetitive avalanche energy per leg | E _{AS} | T _J = 25 °C, I _{AS} = 0.50 A, L = 60 mH | 7.50 | mJ |
| Repetitive avalanche current per leg | I _{AR} | Current decaying linearly to zero in 1 μs Frequency limited by T _J maximum V _A = 1.5 x V _R typical | 0.50 | A |

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

16CTQ...SPbF/16CTQ...-1PbF Series



Vishay High Power Products Schottky Rectifier, 2 x 8 A

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|---|-----------------------------------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop per leg See fig. 1 | $V_{FM}^{(1)}$ | 8 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.72 | V |
| | | 16 A | | 0.88 | |
| | | 8 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.58 | |
| | | 16 A | | 0.69 | |
| Maximum reverse leakage current per leg See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 0.55 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 7.0 | |
| Threshold voltage | $V_{F(TO)}$ | $T_J = T_J \text{ maximum}$ | | 0.415 | V |
| Forward slope resistance | r_t | | | 11.07 | m Ω |
| Maximum junction capacitance per leg | C_T | $V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$ | | 500 | pF |
| Typical series inductance per leg | L_S | Measured lead to lead 5 mm from package body | | 8.0 | 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 case per leg | R_{thJC} | DC operation | | 3.25 | $^\circ\text{C/W}$ |
| Maximum thermal resistance, junction to case per package | | | | 1.63 | |
| 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 D ² PAK | | 16CTQ...S | |
| | | Case style TO-262 | | 16CTQ...-1 | |



16CTQ...SPbF/16CTQ...-1PbF Series

Schottky Rectifier, 2 x 8 A Vishay High Power Products

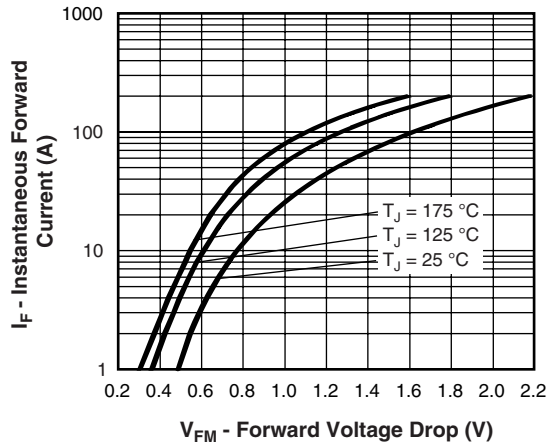


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

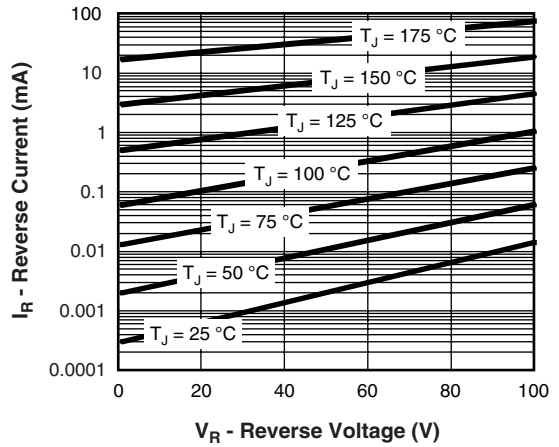


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

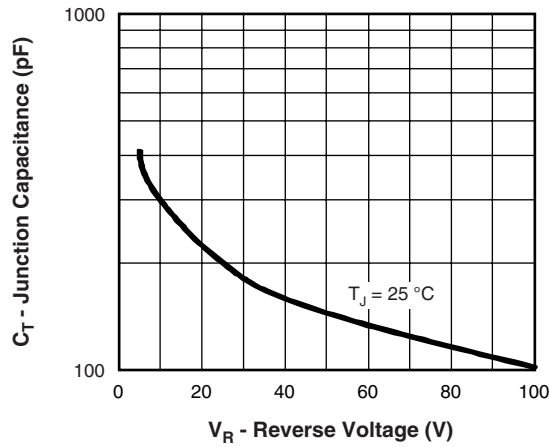


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

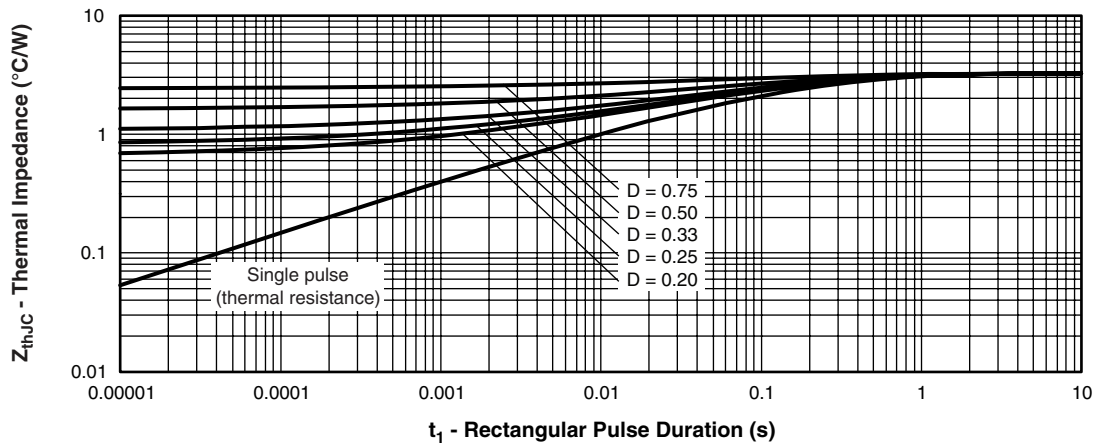


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

16CTQ...SPbF/16CTQ...-1PbF Series

Vishay High Power Products Schottky Rectifier, 2 x 8 A

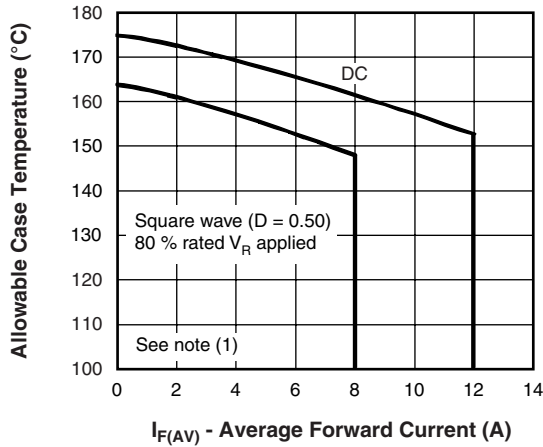


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

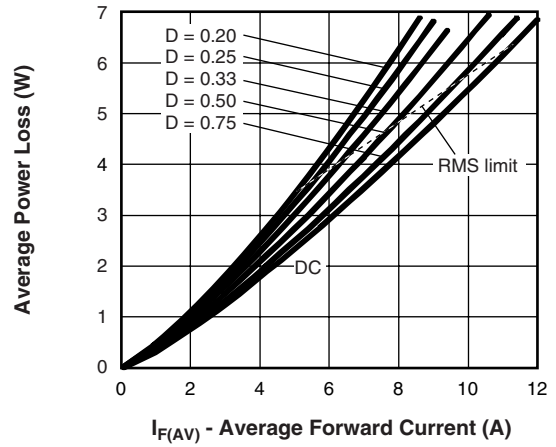


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

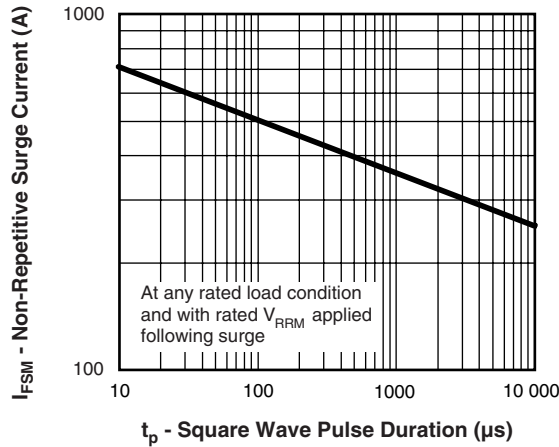


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)



Fig. 8 - Unclamped Inductive Test Circuit

Note

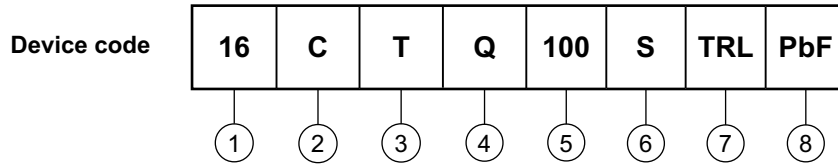
- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
- P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
- $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R applied



16CTQ...SPbF/16CTQ...-1PbF Series

Schottky Rectifier, 2 x 8 A Vishay High Power Products

ORDERING INFORMATION TABLE



- 1** - Current rating (16 A)
- 2** - Circuit configuration
C = Common cathode
- 3** - T = TO-220
- 4** - Schottky "Q" series
- 5** - Voltage ratings

| |
|-------------|
| 060 = 60 V |
| 080 = 80 V |
| 100 = 100 V |
- 6** -
 - S = D²PAK
 - -1 = TO-262
- 7** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented - for D²PAK only)
 - TRR = Tape and reel (right oriented - for D²PAK only)
- 8** -
 - None = Standard production
 - PbF = Lead (Pb)-free

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95014 |
| Part marking information | http://www.vishay.com/doc?95008 |
| Packaging information | http://www.vishay.com/doc?95032 |
| SPICE model | http://www.vishay.com/doc?95279 |



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