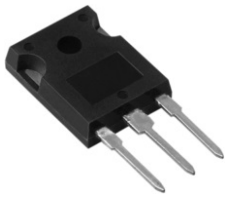
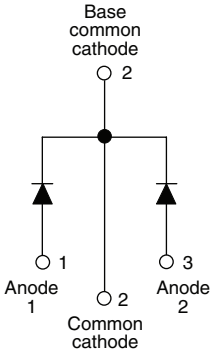
# Schottky Rectifier, 2 x 15 A



TO-247AC




## FEATURES

- 175 °C $T_J$ operation
- Center tap TO-247 package
- 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
- Designed and qualified for industrial level

## DESCRIPTION

The 30CPQ... center tap Schottky rectifier 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 15 A |
| $V_R$ | 80/100 V |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|---|---|---|---|
| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
| $I_{F(AV)}$ | Rectangular waveform | 30 | A |
| $V_{RRM}$ | | 80/100 | V |
| $I_{FSM}$ | $t_p$ = 5 µs sine | 920 | A |
| $V_F$ | 15 Apk, $T_J$ = 125 °C (per leg) | 0.67 | V |
| $T_J$ | | - 55 to 175 | °C |

| VOLTAGE RATINGS | | | | |
|---|---|---|---|---|
| PARAMETER | SYMBOL | 30CPQ080 | 30CPQ100 | UNITS |
| Maximum DC reverse voltage | $V_R$ | 80 | 100 | V |
| Maximum working peak reverse voltage | $V_{RWM}$ | | | |

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|---|---|---|---|---|---|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current<br>See fig. 5 | $I_{F(AV)}$ | 50 % duty cycle at $T_C$ = 140 °C, rectangular waveform | | 30 | A |
| Maximum peak one cycle<br>non-repetitive surge current per leg<br>See fig. 7 | $I_{FSM}$ | 5 µs sine or 3 µs rect. pulse | Following any rated load condition and with rated $V_{RRM}$ applied | 920 | |
| | | 10 ms sine or 6 ms rect. pulse | | 240 | |
| 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<br>Frequency limited by $T_J$ maximum $V_A$ = 1.5 x $V_R$ typical | | 0.50 | A |

## ELECTRICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
|---|---|---|---|---|---|
| Maximum forward voltage drop per leg See fig. 1 | $V_{FM}$ (1) | 15 A | $T_J$ = 25 °C | 0.86 | V |
| | | 30 A | | 1.05 | |
| | | 15 A | $T_J$ = 125 °C | 0.67 | |
| | | 30 A | | 0.81 | |
| Maximum reverse leakage current per leg See fig. 2 | $I_{RM}$ (1) | $T_J$ = 25 °C | $V_R$ = Rated $V_R$ | 0.55 | mA |
| | | $T_J$ = 125 °C | | 7 | |
| Maximum junction capacitance per leg | $C_T$ | $V_R$ = 5 $V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C | | 500 | pF |
| Typical series inductance per leg | $L_S$ | Measured lead to lead 5 mm from package body | | 7.5 | 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 | °C |
| Maximum thermal resistance, junction to case per leg | | $R_{thJC}$ | DC operation See fig. 4 | 2.20 | °C/W |
| Maximum thermal resistance, junction to case per package | | | DC operation | 1.10 | |
| Typical thermal resistance, case to heatsink | | $R_{thCS}$ | Mounting surface, smooth and greased | 0.24 | |
| Approximate weight | | | | 6 | g |
| | | | | 0.21 | oz. |
| Mounting torque | minimum | | Non-lubricated threads | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | | 12 (10) | |
| Marking device | | | Case style TO-247AC (JEDEC) | 30CPQ080 | |
| | | | | 30CPQ100 | |

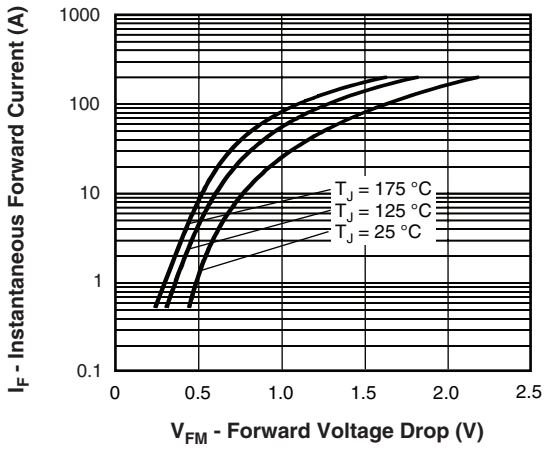



Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

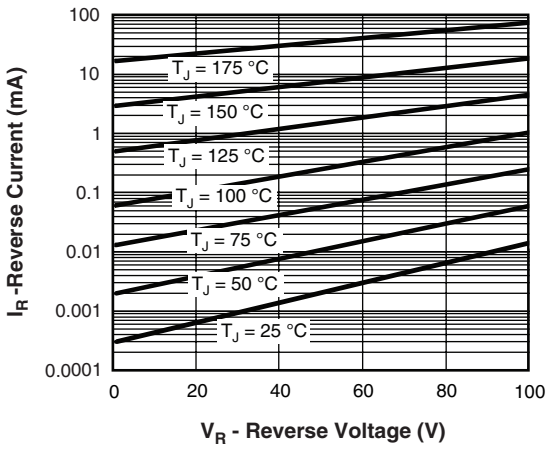



Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

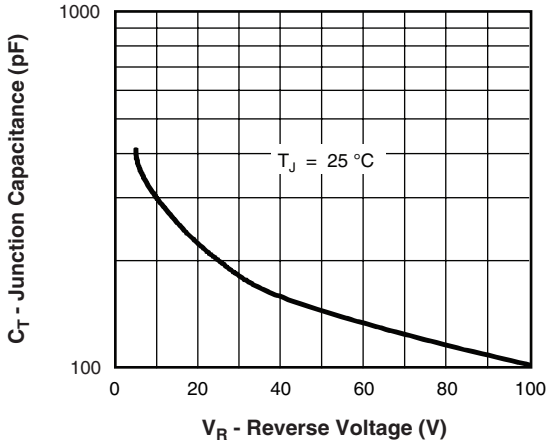



Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

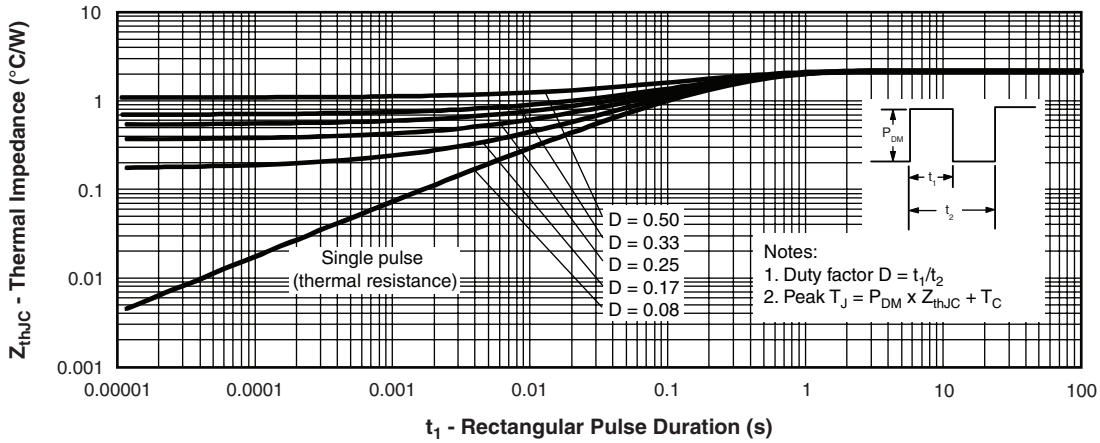



Fig. 4 - Maximum Thermal Impedance $Z_{thJC}$ Characteristics (Per Leg)

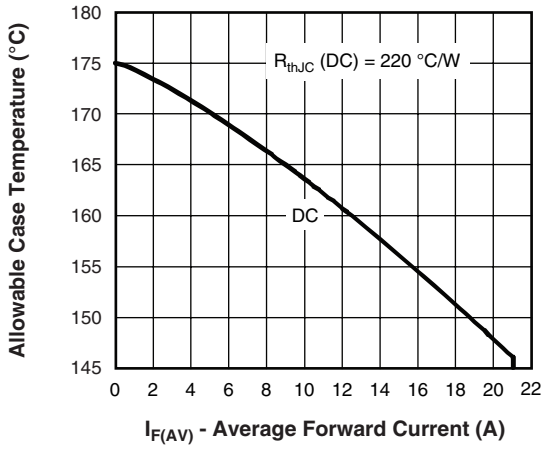



Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

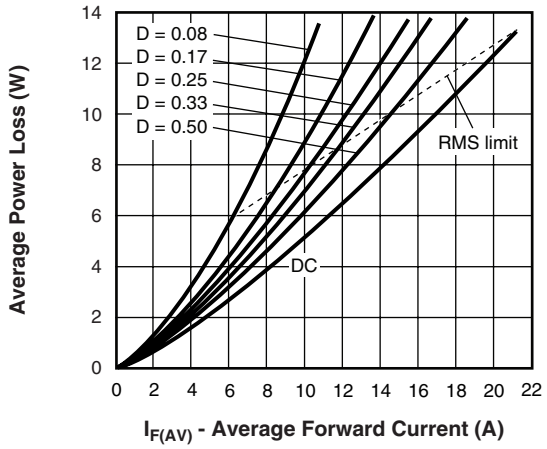



Fig. 6 - Forward Power Loss Characteristics (Per Leg)

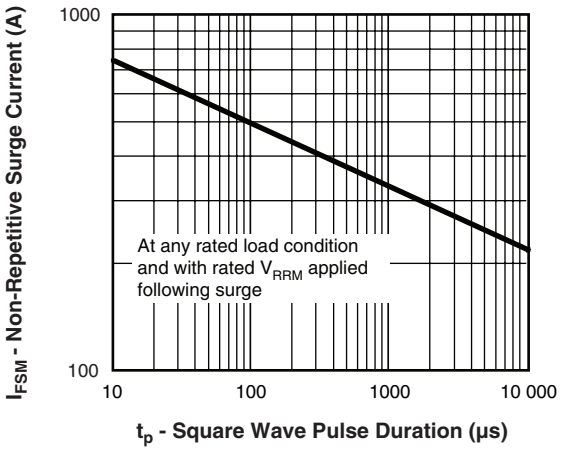



Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

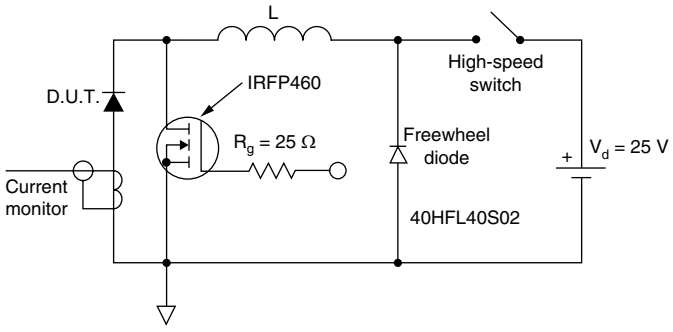



Fig. 8 - Unclamped Inductive Test Circuit

## ORDERING INFORMATION TABLE

**Device code**

| 30 | C | P | Q | 100 | - |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

1 - Current rating

2 - Circuit configuration:
C = Common cathode

3 - Package:
P = TO-247

4 - Schottky "Q" series

5 - Voltage code — 080 = 80 V, 100 = 100 V

6 - • None = Standard production
• PbF = Lead (Pb)-free

Tube standard pack quantity: 25 pieces

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | http://www.vishay.com/doc?95223 |
| Part marking information | http://www.vishay.com/doc?95226 |

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