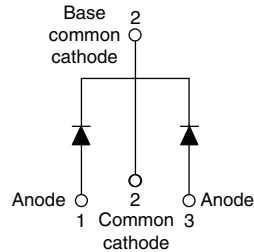


Schottky Rectifier, 2 x 30 A


TO-220AB

FEATURES

- 175 °C T_J operation
- Center tap TO-220 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
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level


RoHS*
COMPLIANT

PRODUCT SUMMARY

| | |
|-------------|------------|
| $I_{F(AV)}$ | 2 x 30 A |
| V_R | 35 to 45 V |

DESCRIPTION

This 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.

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-------------|-----------------------------------|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform (per device) | 60 | A |
| V_{RRM} | | 35 to 45 | V |
| I_{FRM} | $T_C = 142\text{ °C}$ (per leg) | 60 | A |
| I_{FSM} | $t_p = 5\ \mu\text{s}$ sine | 2600 | A |
| V_F | 30 Apk, $T_J = 125\text{ °C}$ | 0.57 | V |
| T_J | Range | - 65 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | 61CTQ035PbF | 61CTQ040PbF | 61CTQ045PbF | UNITS |
|--------------------------------------|-----------|-------------|-------------|-------------|-------|
| Maximum DC reverse voltage | V_R | 35 | 40 | 45 | V |
| Maximum working peak reverse voltage | V_{RWM} | | | | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|-------------|---|--------|-------|
| Maximum average forward current per leg per device | $I_{F(AV)}$ | $T_C = 142\text{ °C}$, rated V_R | 30 | A |
| | | | 60 | |
| Peak repetitive forward current per leg | I_{FRM} | Rated V_R , square wave, 20 kHz, $T_C = 142\text{ °C}$ | 60 | |
| Maximum peak one cycle non-repetitive surge current per leg | I_{FSM} | 5 μs sine or 3 μs rect. pulse | 2600 | |
| | | 10 ms sine or 6 ms rect. pulse | 350 | |
| Non-repetitive avalanche energy per leg | E_{AS} | $T_J = 25\text{ °C}$, $I_{AS} = 4\text{ A}$, $L = 3.4\text{ mH}$ | 27 | mJ |
| Repetitive avalanche current per leg | I_{AR} | Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical | 4 | A |

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

| ELECTRICAL SPECIFICATIONS | | | | | | |
|---------------------------------------|----------------|--|-----------------------------------|--------|------|------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | TYP. | MAX. | UNITS |
| Maximum forward voltage drop | $V_{FM}^{(1)}$ | 30 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.57 | 0.61 | V |
| | | 60 A | | 0.72 | 0.76 | |
| | | 30 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.53 | 0.57 | |
| | | 60 A | | 0.70 | 0.74 | |
| Maximum instantaneous reverse current | I_{RM} | $T_J = 25\text{ }^\circ\text{C}$ | Rated DC voltage | 0.06 | 1 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 21 | 40 | |
| Maximum junction capacitance | C_T | $V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C | | 1900 | | pF |
| Typical series inductance | L_S | Measured from top of terminal to mounting plane | | 8.0 | | 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} | | - 65 to 175 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to case per leg | R_{thJC} | DC operation | 1.2 | $^\circ\text{C}/\text{W}$ |
| 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 ————— maximum | Non-lubricated threads | 6 (5) | kgf · cm (lbf · in) |
| | | | 12 (10) | |
| Marking device | | Case style TO-220AB | 61CTQ035 | |
| | | | 61CTQ040 | |
| | | | 61CTQ045 | |

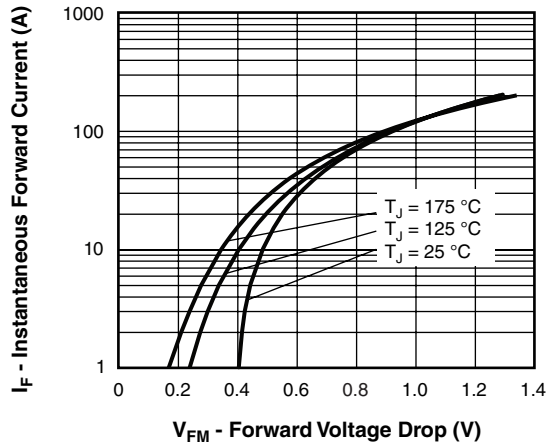


Fig. 1 - Maximum Forward Voltage Drop Characteristics

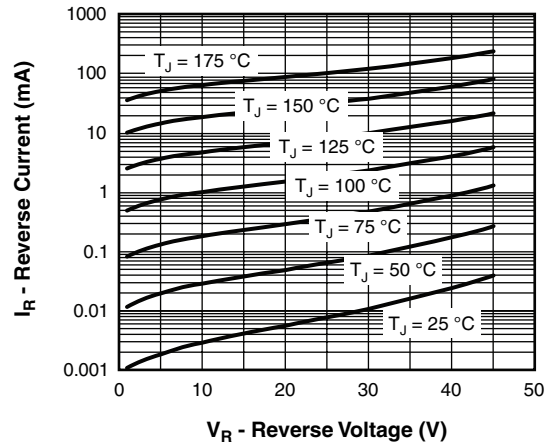


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

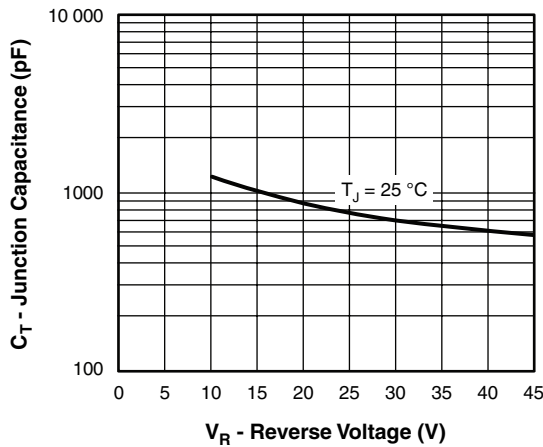


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

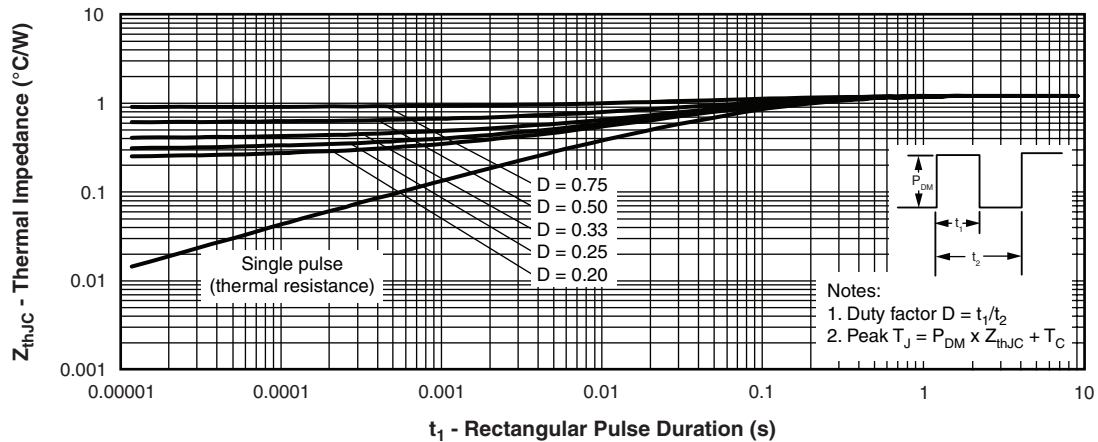


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

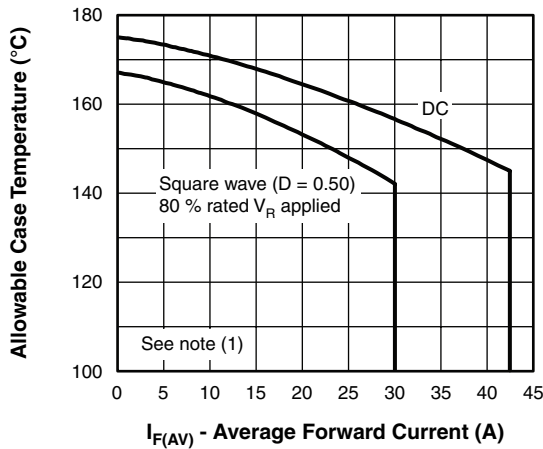


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

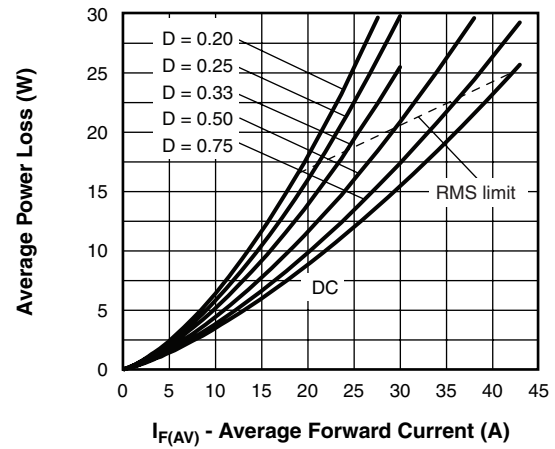


Fig. 6 - Forward Power Loss Characteristics

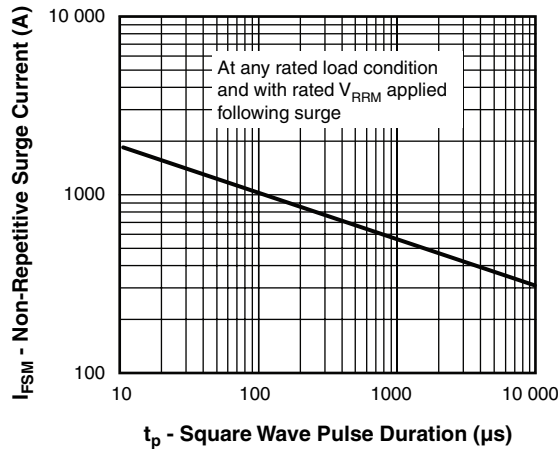


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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



ORDERING INFORMATION TABLE

| | | | | | | |
|-------------|-----------|----------|--|----------|------------|------------|
| Device code | 61 | C | T | Q | 045 | PbF |
| | ① | ② | ③ | ④ | ⑤ | ⑥ |
| | 1 | - | Current rating (60 = 60 A) | | | |
| | 2 | - | Circuit configuration: C = Common cathode | | | |
| | 3 | - | Package: T = TO-220 | | | |
| | 4 | - | Schottky "Q" series | | | |
| | 5 | - | Voltage ratings | | | |
| | 6 | - | • None = Standard production • PbF = Lead (Pb)-free | | | |

| |
|------------|
| 035 = 35 V |
| 040 = 40 V |
| 045 = 45 V |

Tube standard pack quantity: 50 pieces

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95222 |
| Part marking information | http://www.vishay.com/doc?95225 |



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