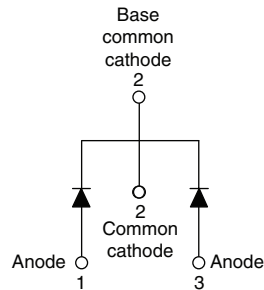


Schottky Rectifier, 2 x 15 A


TO-220AB


FEATURES

- 150 °C T_J operation
- Center tap configuration
- Very 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 15 A |
| V_R | 30 V |

DESCRIPTION

This center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 °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 | 2 x 15 | A |
| V_{RRM} | | 30 | V |
| V_F | 15 Apk, $T_J = 125$ °C (per leg) | 0.37 | |
| T_J | Range | - 55 to 150 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | STPS30L30CTPbF | UNITS |
|--------------------------------------|-----------|----------------|-------|
| Maximum DC reverse voltage | V_R | 30 | V |
| Maximum working peak reverse voltage | V_{RWM} | | |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|-------------|---|------------|-------|
| Maximum average forward current | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 140$ °C, rectangular waveform | 30 | A |
| | | | per device | |
| Maximum peak one cycle non-repetitive surge current | I_{FSM} | 5 μ s sine or 3 μ s rect. pulse | 1450 | |
| | | 10 ms sine or 6 ms rect. pulse | 220 | |
| Non-repetitive avalanche energy per leg | E_{AS} | $T_J = 25$ °C, $I_{AS} = 2$ A, $L = 7.5$ mH | 15 | mJ |
| Repetitive avalanche current per leg | I_{AR} | Current decaying linearly to zero in 1 μ s Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical | 2 | A |

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

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|--|-----------------------------------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop per leg | $V_{FM}^{(1)}$ | 15 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.46 | V |
| | | 30 A | | 0.57 | |
| | | 15 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.37 | |
| | | 30 A | | 0.50 | |
| Maximum reverse leakage current per leg | I_{RM} | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 1.50 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 350 | |
| Maximum junction capacitance per leg | C_T | $V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$ | | 1500 | 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 150 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to case per leg | R_{thJC} | DC operation | | 1.5 | $^\circ\text{C}/\text{W}$ |
| Maximum thermal resistance, junction to case per package | | | | 0.8 | |
| Approximate weight | | | | 2 | g |
| | | | | 0.07 | oz. |
| Mounting torque | minimum | | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | | 12 (10) | |
| Marking device | | Case style TO-220AB | | STPS30L30CT | |

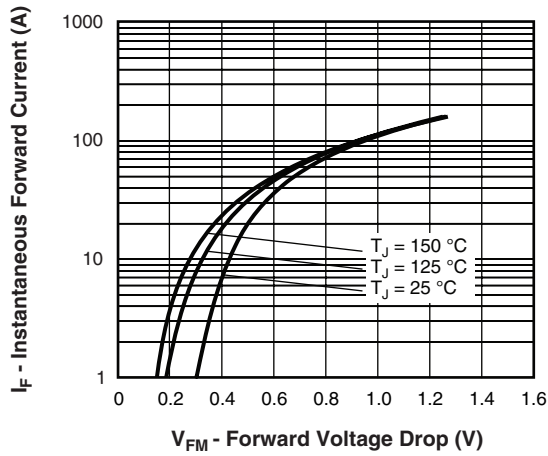


Fig. 1 - Maximum Forward Voltage Drop Characteristics

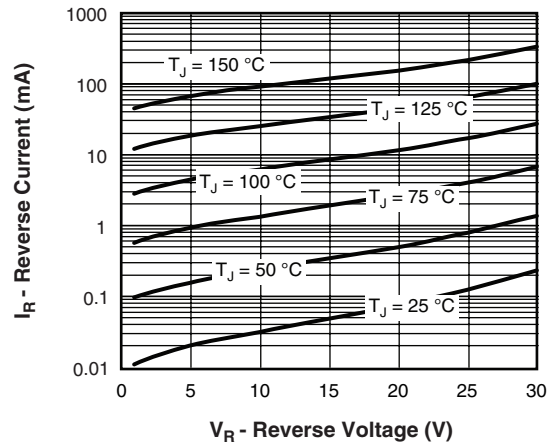


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

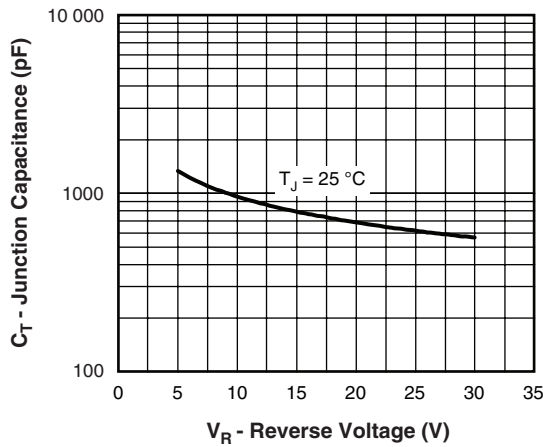


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

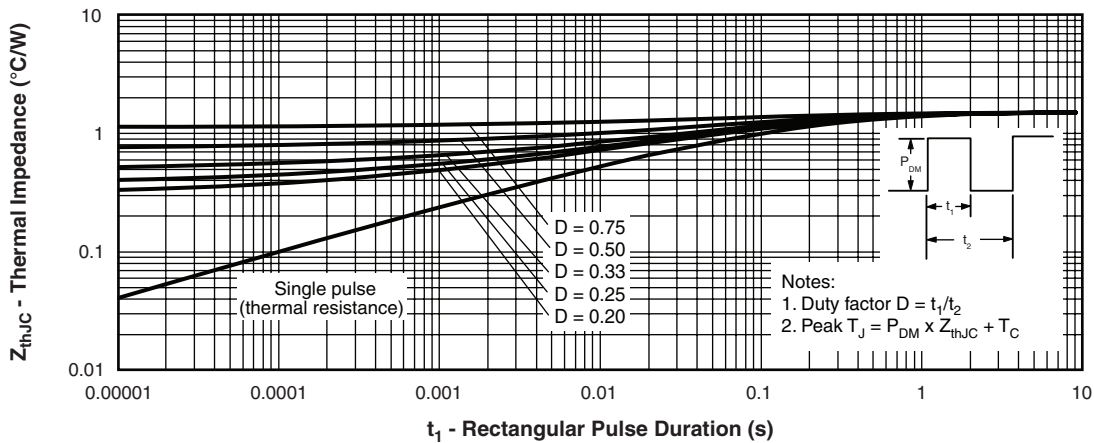


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

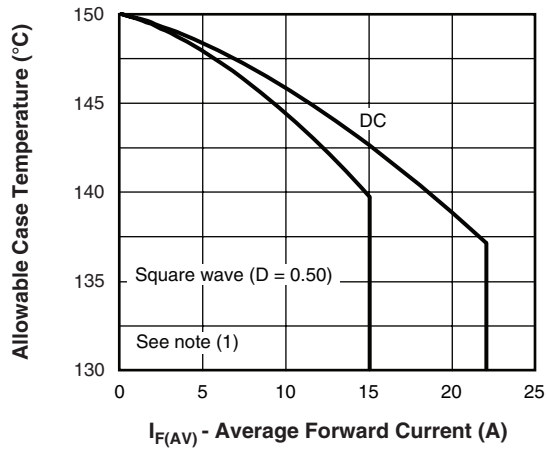


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

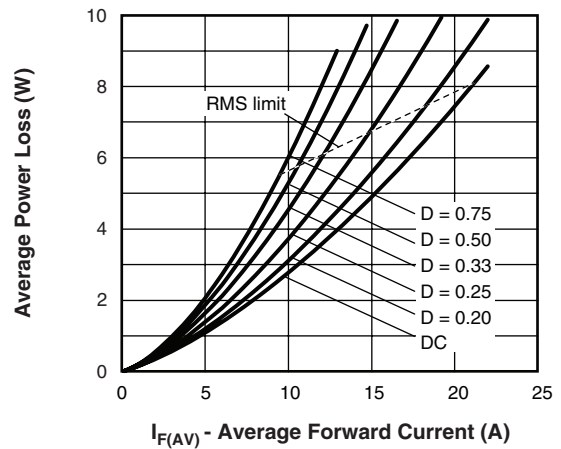


Fig. 6 - Forward Power Loss Characteristics

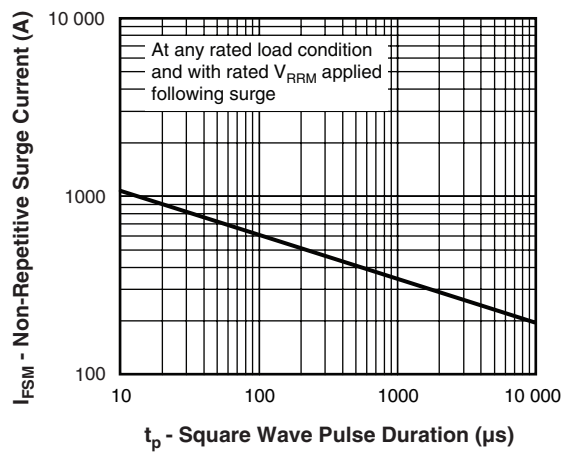


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

(1) Formula used: $T_C = T_J - P_d \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6)



ORDERING INFORMATION TABLE

| | | | | | | |
|-------------|-------------|-----------|----------|-----------|-----------|------------|
| Device code | STPS | 30 | L | 30 | CT | PbF |
| | ① | ② | ③ | ④ | ⑤ | ⑥ |

- 1** - Schottky STPS series
- 2** - Current rating (30 = 30 A)
- 3** - L = Low voltage drop
- 4** - Voltage rating (30 = 30 V)
- 5** - CT = Essential part number
- 6** -
 - None = Standard production
 - PbF = Lead (Pb)-free

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95222 |
| Part marking information | http://www.vishay.com/doc?95225 |
| SPIICE model | http://www.vishay.com/doc?95287 |



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