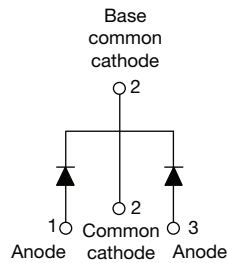


Schottky Rectifier, 2 x 15 A


TO-262

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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified


RoHS
 COMPLIANT
 HALOGEN
FREE
PRODUCT SUMMARY

| | |
|-----------------|------------------|
| Package | TO-262AA |
| $I_{F(AV)}$ | 2 x 15 A |
| V_R | 30 V |
| V_F at I_F | 0.37 V |
| I_{RM} | 350 mA at 125 °C |
| T_J max. | 150 °C |
| Diode variation | Common cathode |
| E_{AS} | 15 mJ |

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 | 30 | 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 | VS-30L30CT-1PbF | 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 |
| | | | 15 | |
| Maximum peak one cycle non-repetitive surge current | I_{FSM} | 5 μ s sine or 3 μ s rect. pulse | 1450 | A |
| | | 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 |



| 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 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 1.50 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 350 | |
| Maximum junction capacitance per leg | C_T | $V_R = 5\text{ }V_{DC}$ (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 | $^\circ\text{C/W}$ |
| 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-262 | | 30L30CT-1 | |

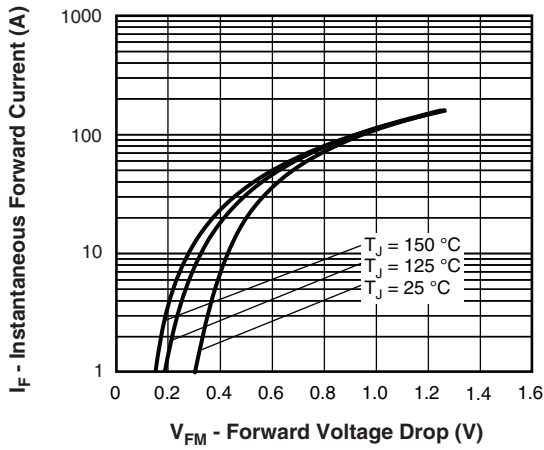


Fig. 1 - Maximum Forward Voltage Drop Characteristics

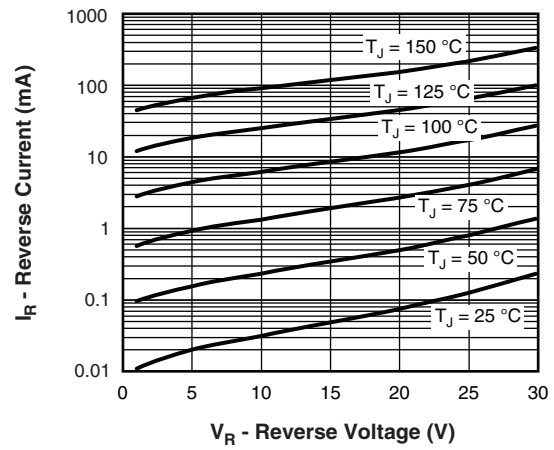


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

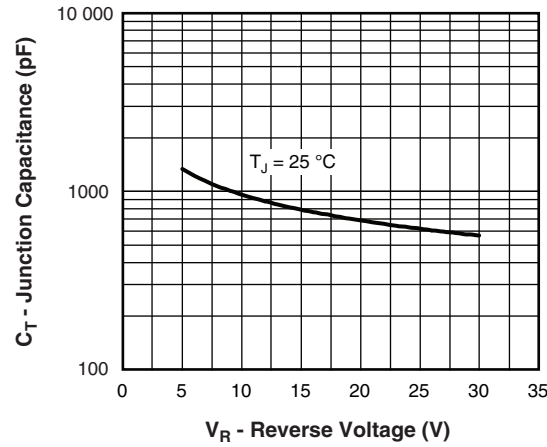


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

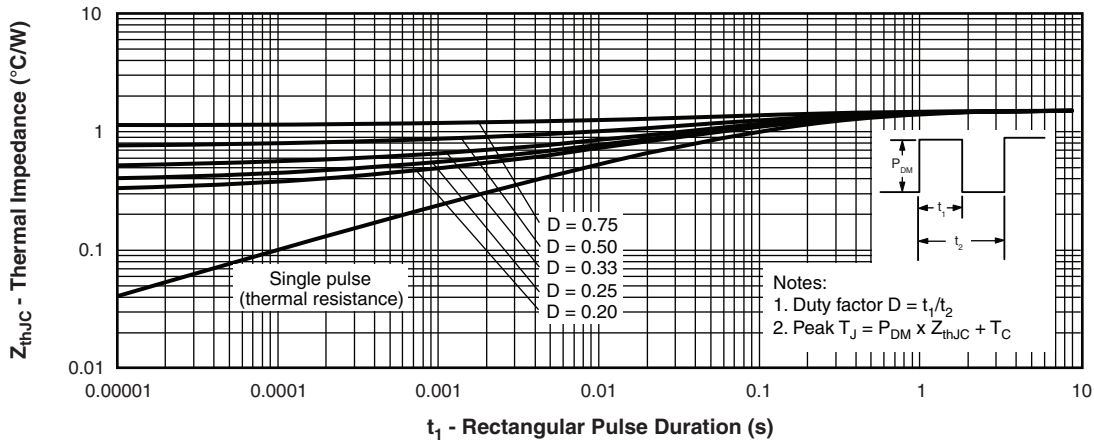


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

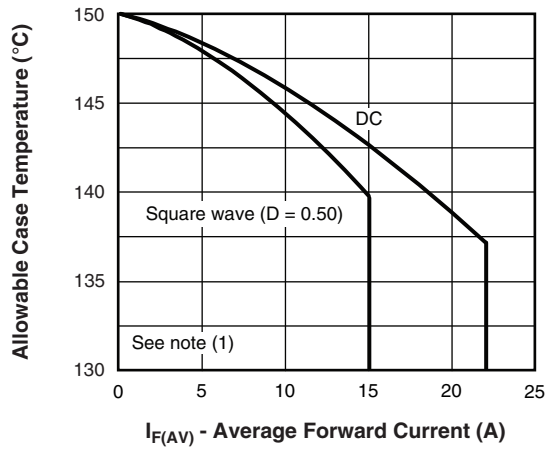


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

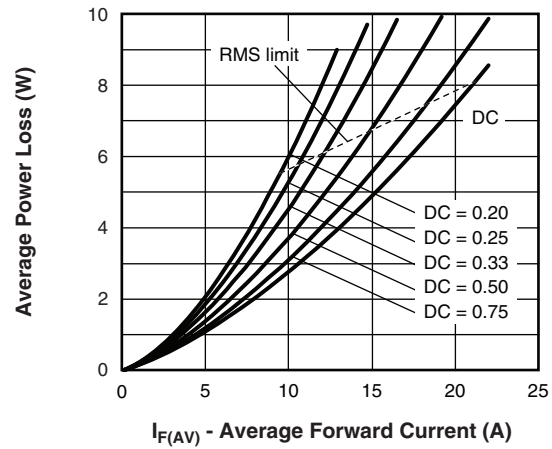


Fig. 6 - Forward Power Loss Characteristics

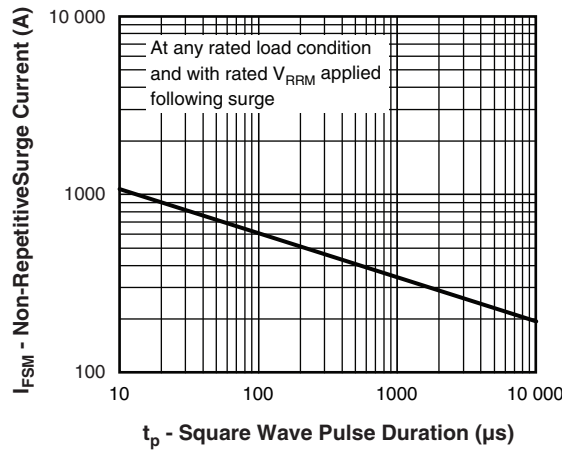


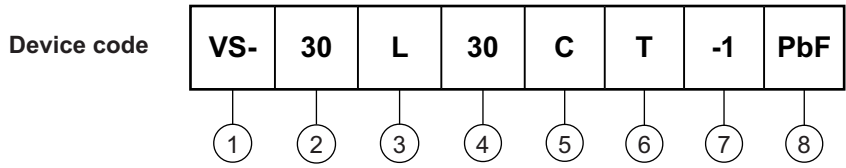
Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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



ORDERING INFORMATION TABLE



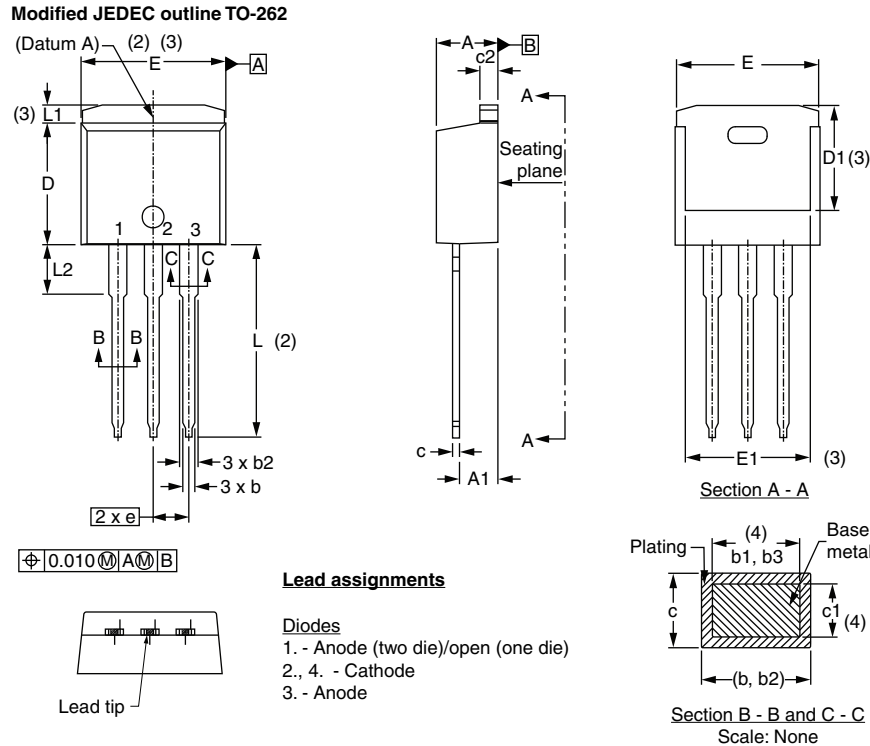
- 1** - Vishay Semiconductors product
- 2** - Current rating (30 A)
- 3** - L = Low V_F
- 4** - Voltage rating (30 = 30 V)
- 5** - Circuit configuration: C = Common cathode
- 6** - T = TO-220
- 7** - -1 = TO-262
- 8** - PbF = Lead (Pb)-free

Tube standard pack quantity: 50 pieces

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95419 |
| Part marking information | www.vishay.com/doc?95420 |
| SPICE model | www.vishay.com/doc?95287 |

TO-262

DIMENSIONS in millimeters and inches



| SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|-------|-----------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| A | 4.06 | 4.83 | 0.160 | 0.190 | |
| A1 | 2.03 | 3.02 | 0.080 | 0.119 | |
| b | 0.51 | 0.99 | 0.020 | 0.039 | |
| b1 | 0.51 | 0.89 | 0.020 | 0.035 | 4 |
| b2 | 1.14 | 1.78 | 0.045 | 0.070 | |
| b3 | 1.14 | 1.73 | 0.045 | 0.068 | 4 |
| c | 0.38 | 0.74 | 0.015 | 0.029 | |
| c1 | 0.38 | 0.58 | 0.015 | 0.023 | 4 |
| c2 | 1.14 | 1.65 | 0.045 | 0.065 | |
| D | 8.51 | 9.65 | 0.335 | 0.380 | 2 |
| D1 | 6.86 | 8.00 | 0.270 | 0.315 | 3 |
| E | 9.65 | 10.67 | 0.380 | 0.420 | 2, 3 |
| E1 | 7.90 | 8.80 | 0.311 | 0.346 | 3 |
| e | 2.54 BSC | | 0.100 BSC | | |
| L | 13.46 | 14.10 | 0.530 | 0.555 | |
| L1 | - | 1.65 | - | 0.065 | 3 |
| L2 | 3.56 | 3.71 | 0.140 | 0.146 | |

Notes

- Dimensioning and tolerancing as per ASME Y14.5M-1994
- Dimension D 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 outmost extremes of the plastic body
- Thermal pad contour optional within dimension E, L1, D1 and E1
- Dimension b1 and c1 apply to base metal only
- Controlling dimension: inches
- Outline conform to JEDEC TO-262 except A1 (maximum), b (minimum) and D1 (minimum) where dimensions derived the actual package outline



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