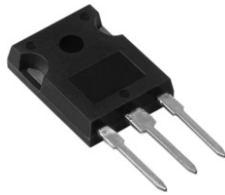
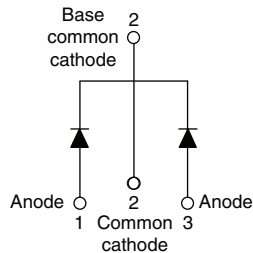


High Performance Schottky Generation 5.0, 2 x 15 A


TO-247AC

FEATURES

- 175 °C high performance Schottky diode
- Very low forward voltage drop
- Extremely low reverse leakage
- Optimized V_F vs. I_R trade off for high efficiency
- Increased ruggedness for reverse avalanche capability
- RBSOA available
- Negligible switching losses
- Submicron trench technology
- Full lead (Pb)-free and RoHS compliant devices
- Designed and qualified for industrial level


**RoHS
COMPLIANT**
APPLICATIONS

- High efficiency SMPS
- Automotive
- High frequency switching
- Output rectification
- Reverse battery protection
- Freewheeling
- Dc-to-dc systems
- Increased power density systems

PRODUCT SUMMARY

| | |
|-------------------------|----------|
| $I_{F(AV)}$ | 2 x 15 A |
| V_R | 100 V |
| V_F at 15 A at 125 °C | 0.67 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-----------|---|-------------|-------|
| V_{RRM} | | 100 | V |
| V_F | 15 Apk, $T_J = 125$ °C (typical, per leg) | 0.63 | |
| T_J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | 30CPT100 | UNITS |
|----------------------------|--------|-----------------|----------|-------|
| Maximum DC reverse voltage | V_R | $T_J = 25$ °C | 100 | V |

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|--|-------------|--|---------------------------------|-------|
| Maximum average forward current <small>per leg</small> <small>per device</small> | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 158$ °C, rectangular waveform | 15 | A |
| | | | 30 | |
| Maximum peak one cycle non-repetitive surge current | I_{FSM} | 5 μ s sine or 3 μ s rect. pulse | 920 | |
| | | 10 ms sine or 6 ms rect. pulse | 240 | |
| Non-repetitive avalanche energy | E_{AS} | $T_J = 25$ °C, $I_{AS} = 1.1$ A, L = 60 mH | 36 | mJ |
| Repetitive avalanche current | I_{AR} | Limited by frequency of operation and time pulse duration so that $T_J < T_{J \text{ max}}$. I_{AS} at $T_J \text{ max}$. as a function of time pulse See fig. 8 | I_{AS} at $T_J \text{ max}$. | A |

30CPT100



Vishay High Power Products

High Performance
Schottky Generation 5.0,
2 x 15 A

| ELECTRICAL SPECIFICATIONS | | | | | | |
|---------------------------------|----------------|---|-----------------------------------|------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | TYP. | MAX. | UNITS |
| Forward voltage drop per leg | $V_{FM}^{(1)}$ | 15 A | $T_J = 25\text{ }^\circ\text{C}$ | - | 0.81 | V |
| | | 30 A | | - | 0.92 | |
| | | 15 A | $T_J = 125\text{ }^\circ\text{C}$ | - | 0.67 | |
| | | 30 A | | - | 0.79 | |
| Reverse leakage current per leg | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | - | 120 | μA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | - | 5 | mA |
| Junction capacitance per leg | C_T | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$ | | 550 | - | pF |
| 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 | $^\circ\text{C}$ |
| Maximum thermal resistance, junction to case per leg | R_{thJC} | DC operation | 1.4 | $^\circ\text{C/W}$ |
| Maximum thermal resistance, junction to case per device | | | 0.8 | |
| Typical thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth and greased | 0.25 | |
| Approximate weight | | | 6 | g |
| | | | 0.21 | oz. |
| Mounting torque | minimum | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | 12 (10) | |
| Marking device | | Case style TO-247AC | 30CPT100 | |



High Performance
Schottky Generation 5.0,
2 x 15 A

Vishay High Power Products

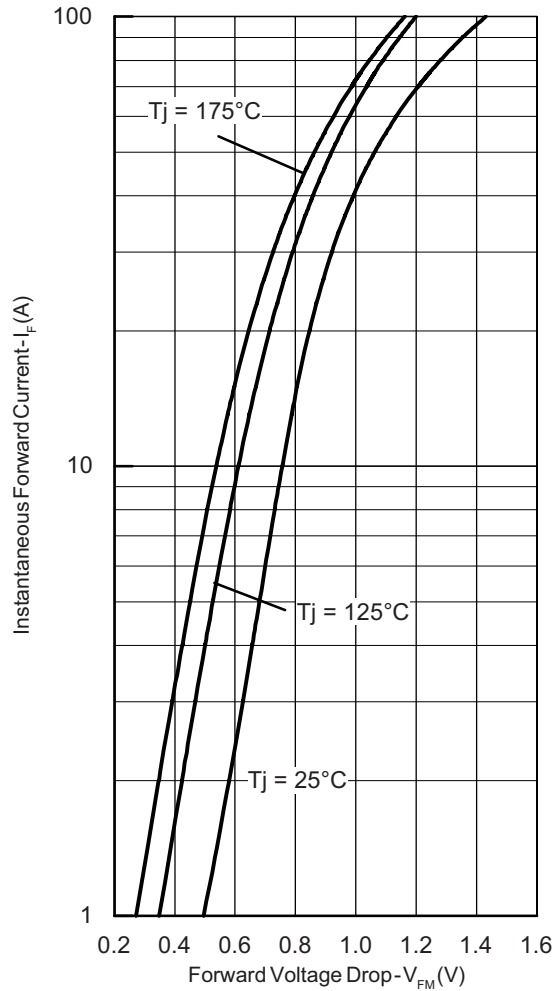


Fig. 1 - Maximum Forward Voltage Drop Characteristics

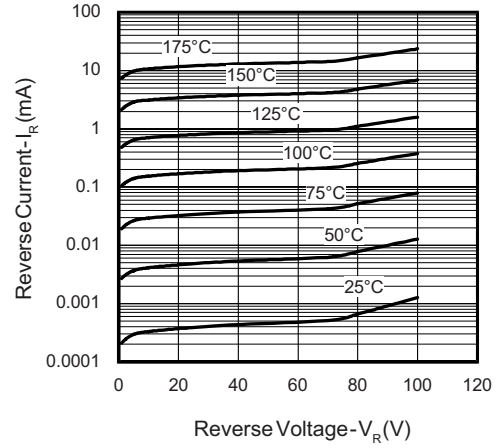


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

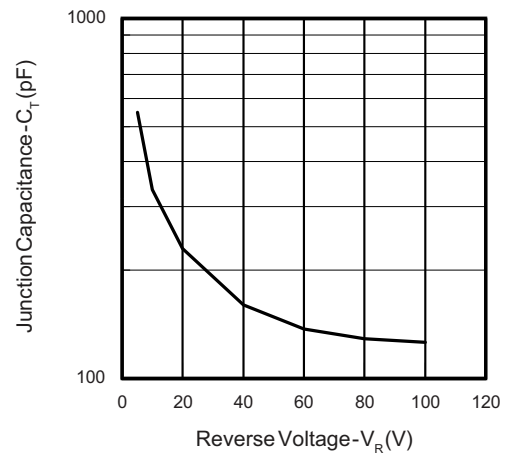


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

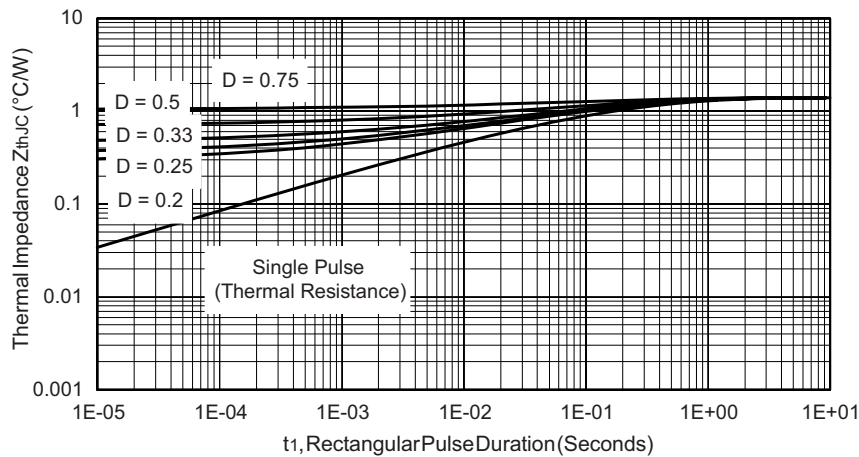


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

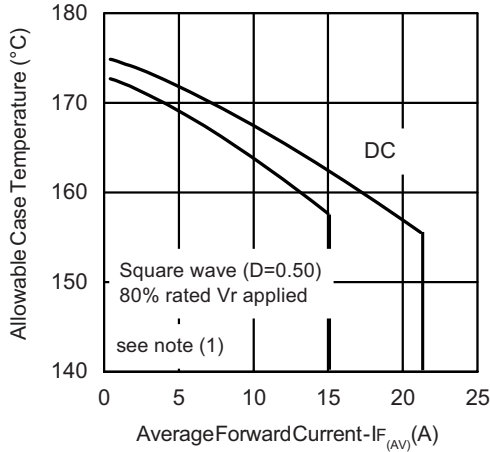


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

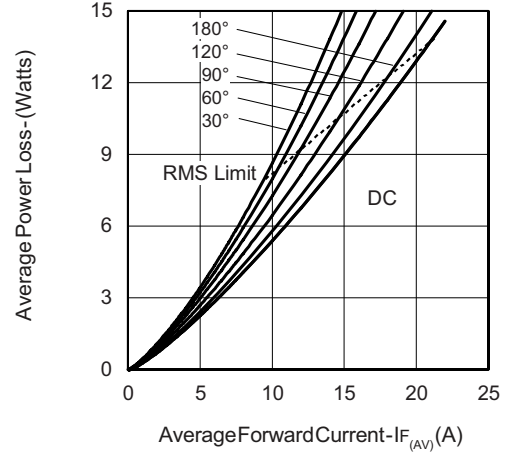


Fig. 6 - Forward Power Loss Characteristics

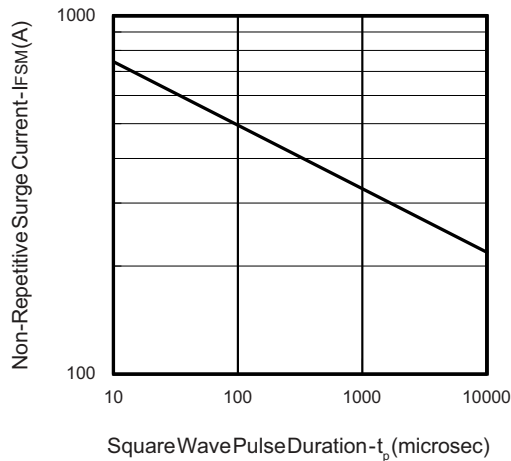


Fig. 7 - Maximum Non-Repetitive Surge Current

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



High Performance Schottky Generation 5.0, 2 x 15 A Vishay High Power Products

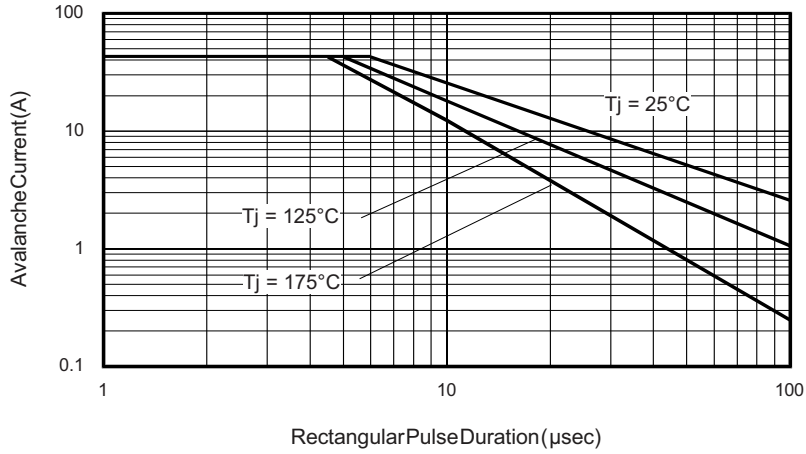


Fig. 8 - Reverse Bias Safe Operating Area (Avalanche Current vs. Rectangular Pulse Duration)

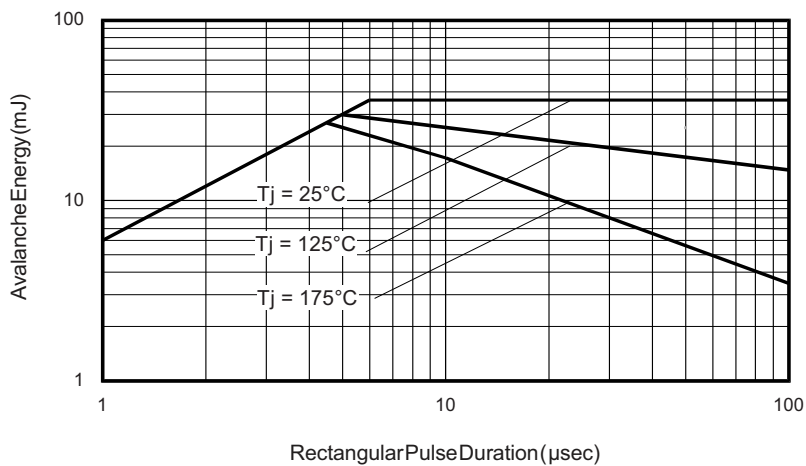


Fig. 9 - Reverse Bias Safe Operating Area (Avalanche Energy vs. Rectangular Pulse Duration)

30CPT100



Vishay High Power Products

High Performance
Schottky Generation 5.0,
2 x 15 A

ORDERING INFORMATION TABLE

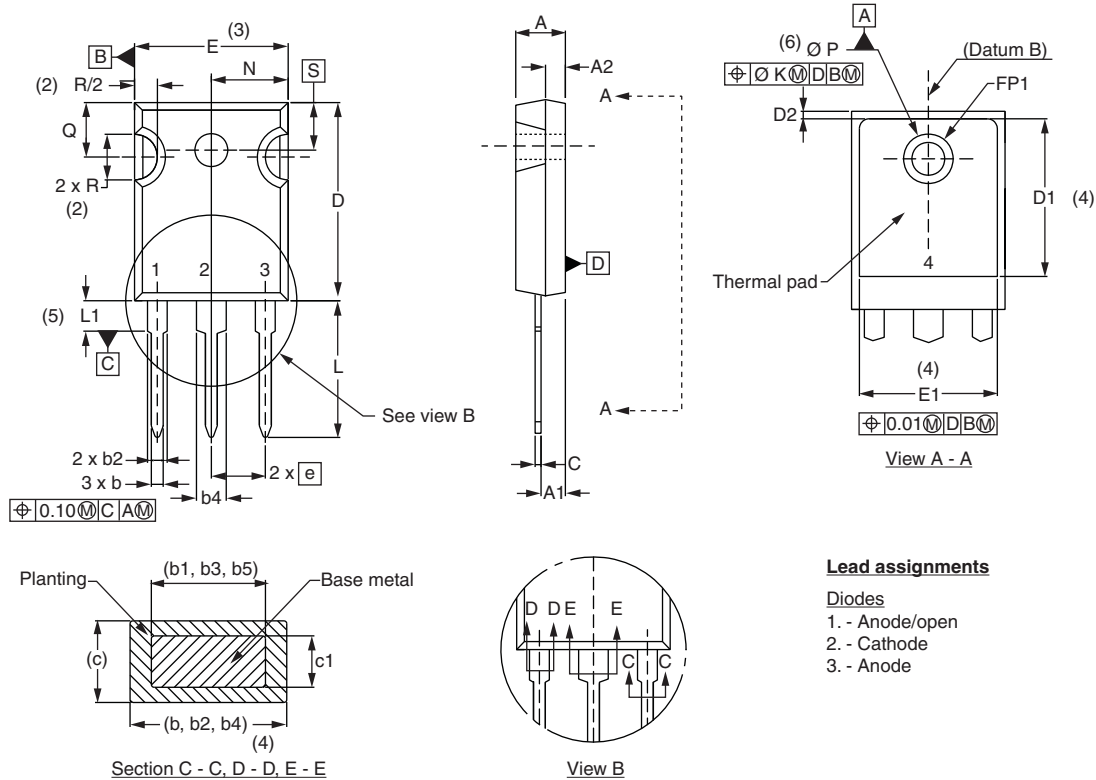
| | | | | | |
|-------------|-----------|----------|--|----------|------------|
| Device code | 30 | C | P | T | 100 |
| | ① | ② | ③ | ④ | ⑤ |
| | 1 | - | Current rating (30 A) | | |
| | 2 | - | Circuit configuration: C = Common cathode | | |
| | 3 | - | Package: P = TO-247 | | |
| | 4 | - | T = Trench | | |
| | 5 | - | Voltage code (100 V) | | |

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 |



DIMENSIONS in millimeters and inches



Lead assignments

- Diodes
 1. - Anode/open
 2. - Cathode
 3. - Anode

| SYMBOL | MILLIMETERS | | INCHES | | NOTES | SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|-------|--------|-------|-------|-----------|-------------|-------|-----------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | | | MIN. | MAX. | MIN. | MAX. | |
| A | 4.65 | 5.31 | 0.183 | 0.209 | | D2 | 0.51 | 1.30 | 0.020 | 0.051 | |
| A1 | 2.21 | 2.59 | 0.087 | 0.102 | | E | 15.29 | 15.87 | 0.602 | 0.625 | 3 |
| A2 | 1.50 | 2.49 | 0.059 | 0.098 | | E1 | 13.72 | - | 0.540 | - | |
| b | 0.99 | 1.40 | 0.039 | 0.055 | | e | 5.46 BSC | | 0.215 BSC | | |
| b1 | 0.99 | 1.35 | 0.039 | 0.053 | | FK | 2.54 | | 0.010 | | |
| b2 | 1.65 | 2.39 | 0.065 | 0.094 | | L | 14.20 | 16.10 | 0.559 | 0.634 | |
| b3 | 1.65 | 2.37 | 0.065 | 0.094 | | L1 | 3.71 | 4.29 | 0.146 | 0.169 | |
| b4 | 2.59 | 3.43 | 0.102 | 0.135 | | N | 7.62 BSC | | 0.3 | | |
| b5 | 2.59 | 3.38 | 0.102 | 0.133 | | ϕP | 3.56 | 3.66 | 0.14 | 0.144 | |
| c | 0.38 | 0.86 | 0.015 | 0.034 | | $\phi P1$ | - | 6.98 | - | 0.275 | |
| c1 | 0.38 | 0.76 | 0.015 | 0.030 | | Q | 5.31 | 5.69 | 0.209 | 0.224 | |
| D | 19.71 | 20.70 | 0.776 | 0.815 | 3 | R | 4.52 | 5.49 | 1.78 | 0.216 | |
| D1 | 13.08 | - | 0.515 | - | 4 | S | 5.51 BSC | | 0.217 BSC | | |

Notes

- (1) Dimensioning and tolerancing per ASME Y14.5M-1994
- (2) Contour of slot optional
- (3) 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 outermost extremes of the plastic body
- (4) Thermal pad contour optional with dimensions D1 and E1
- (5) Lead finish uncontrolled in L1
- (6) ϕP to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- (7) Outline conforms to JEDEC outline TO-247 with exception of dimension c



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