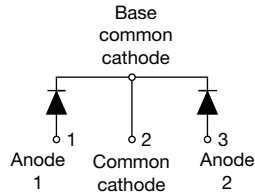
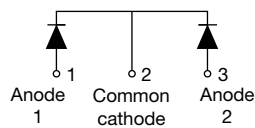
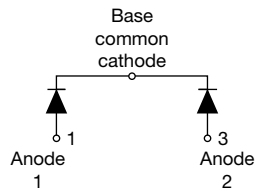


High Performance Schottky Rectifier New Generation 3 D-61 Package, 2 x 55 A

VS-113CNQ100APbF

D-61-8

VS-113CNQ100ASMPbF

D-61-8-SM

VS-113CNQ100ASLPbF

D-61-8-SL

FEATURES

- 175 °C T_J operation
- Center tap module
- Low forward voltage drop
- High frequency operation
- High power discrete
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- New fully transfer-mold low profile, small footprint, high current package
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


 Available
RoHS*
 Available

Note

* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

DESCRIPTION

The center tap Schottky rectifier module series 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

| | |
|-----------------|------------------------------|
| Package | D-61-8, D-61-8-SM, D-61-8-SL |
| $I_{F(AV)}$ | 2 x 55 A |
| V_R | 100 V |
| V_F at I_F | 0.81 V |
| I_{RM} max. | 32 mA at 125 °C |
| T_J max. | 175 °C |
| Diode variation | Common cathode |
| E_{AS} | 15 mJ |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-------------|---|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform | 110 | A |
| V_{RRM} | | 100 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 7000 | A |
| V_F | 55 A _{pk} , $T_J = 125$ °C (per leg) | 0.66 | V |
| T_J | Range | -55 to +175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | VS-113CNQ100APbF | UNITS |
|--------------------------------------|-----------|------------------|-------|
| Maximum DC reverse voltage | V_R | 100 | V |
| Maximum working peak reverse voltage | V_{RWM} | | |



| ABSOLUTE MAXIMUM RATINGS | | | | | | |
|---|-----------------------|-----------------|---|---|-------|----|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS | |
| Maximum average forward current See fig. 5 | per leg per device | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 150\text{ }^\circ\text{C}$, rectangular waveform | | 55 | A |
| | | | | | 110 | |
| Maximum peak one cycle non-repetitive surge current per leg See fig. 7 | | I_{FSM} | 5 μs sine or 3 μs rect. pulse | Following any rated load condition and with rated V_{RRM} applied | 7000 | A |
| | | | 10 ms sine or 6 ms rect. pulse | | 720 | |
| Non-repetitive avalanche energy per leg | | E_{AS} | $T_J = 25\text{ }^\circ\text{C}$, $I_{AS} = 1\text{ A}$, $L = 30\text{ mH}$ | | 15 | 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 | | 1 | A |

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|---|-----------------------------------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop per leg See fig. 1 | $V_{FM}^{(1)}$ | 55 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.81 | V |
| | | 110 A | | 1.00 | |
| | | 55 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.66 | |
| | | 110 A | | 0.79 | |
| Maximum reverse leakage current per leg See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 1.0 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 32 | |
| Maximum junction capacitance per leg | C_T | $V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$ | | 1960 | pF |
| Typical series inductance per leg | L_S | Measured lead to lead 5 mm from package body | | 5.5 | 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 See fig. 4 | | 0.5 | $^\circ\text{C/W}$ |
| Maximum thermal resistance, junction to case per package | | DC operation | | 0.25 | |
| Typical thermal resistance, case to heatsink (D-61-8 only) | R_{thCS} | Mounting surface, smooth and greased Device flatness < 5 mils | | 0.30 | |
| Approximate weight | | | | 7.8 | g |
| | | | | 0.28 | oz. |
| Mounting torque (D-61-8 only) | minimum maximum | | Recommended hardware 3M stainless screw | 12 (10) | kgf · cm (lbf · in) |
| | | | | 24 (20) | |
| Marking device | | | Case style D-61-8 | 113CNQ100A | |
| | | | Case style D-61-8-SM | 113CNQ100ASM | |
| | | | Case style D-61-8-SL | 113CNQ100ASL | |

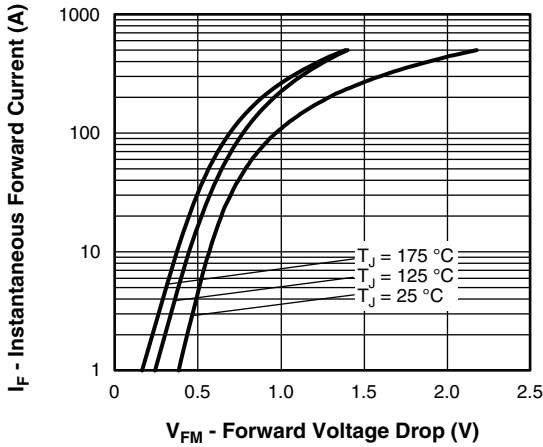


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

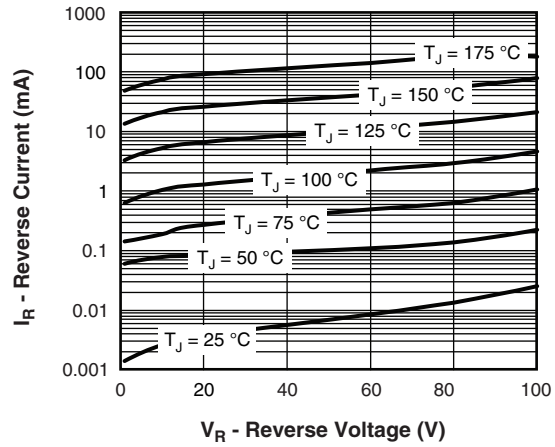


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

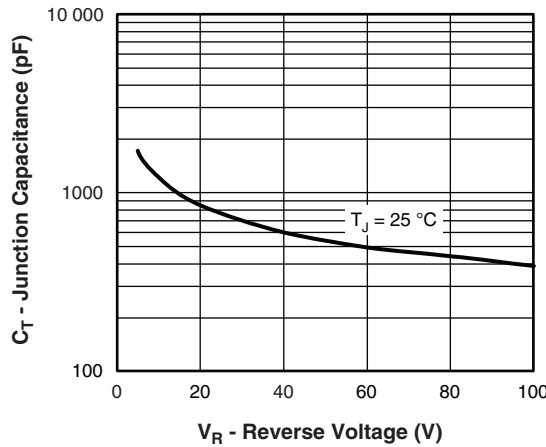


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

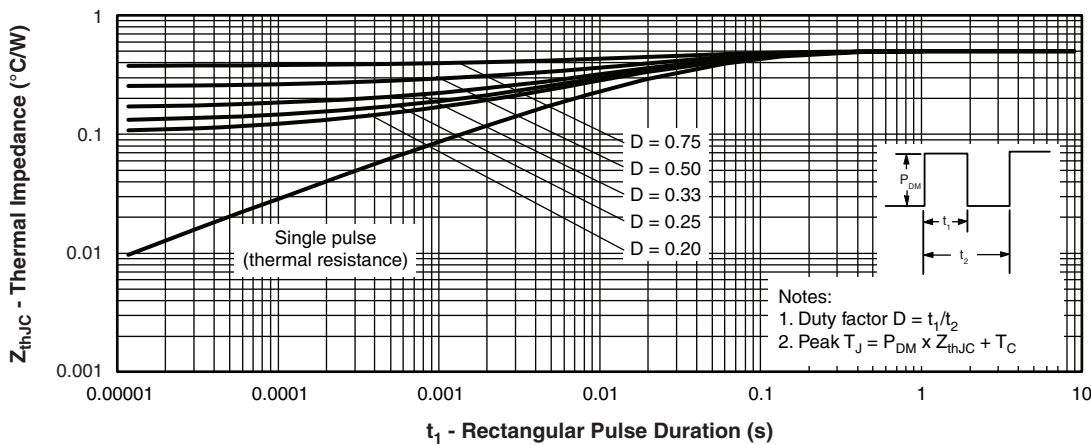


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

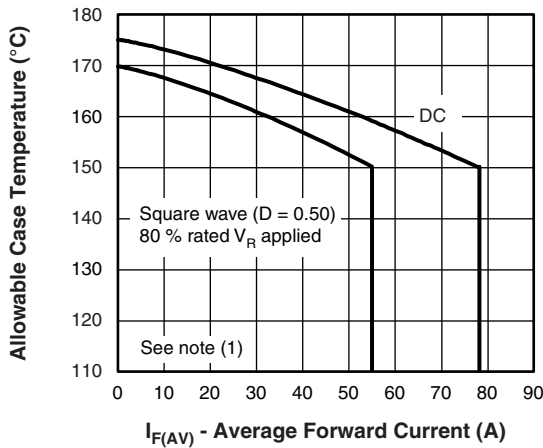


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

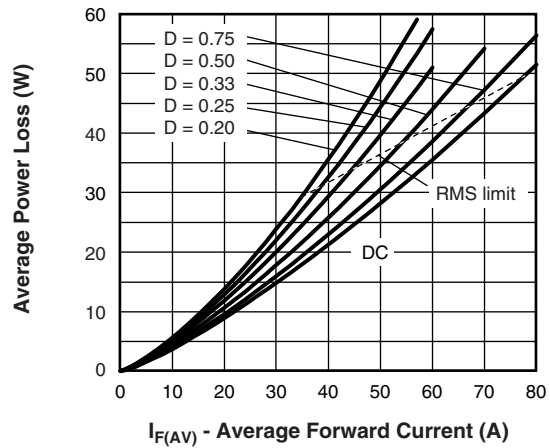


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

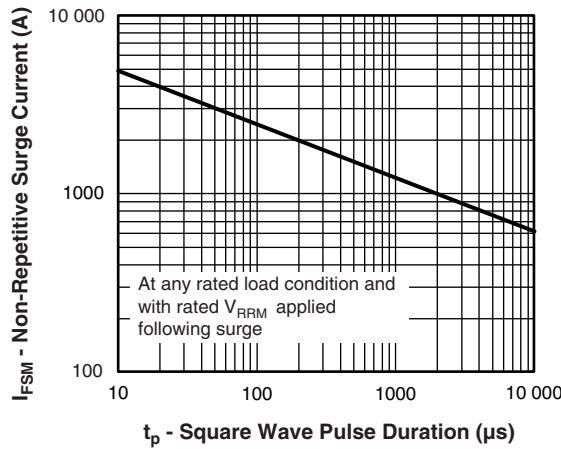


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

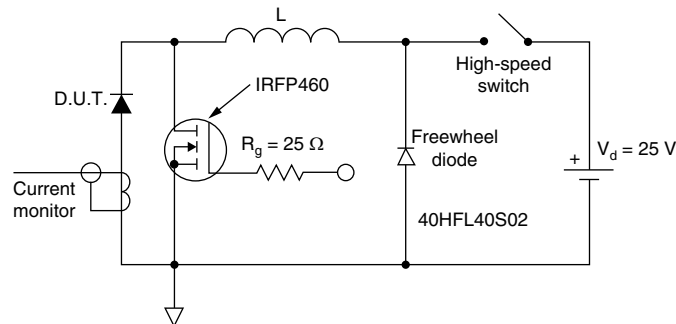


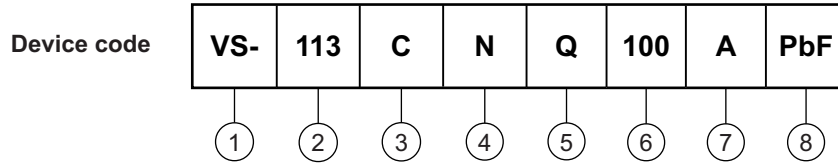
Fig. 8 - Unclamped Inductive Test Circuit

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



ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - Current rating (110 A)
- 3** - Circuit configuration:
C = common cathode
- 4** - Package:
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage rating (100 = 100 V)
- 7** - Package style:
 - A = D-61-8
 - ASM = D-61-8-SM
 - ASL = D-61-8-SL
- 8** -
 - None = standard production
 - PbF = lead (Pb)-free

Standard pack quantity: A = 10 pieces; ASM/ASL = 20 pieces

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95354 |
| Part marking information | www.vishay.com/doc?95356 |



D-61-8, D-61-8-SM, D-61-8-SL

DIMENSIONS - D-61-8 in millimeters (inches)



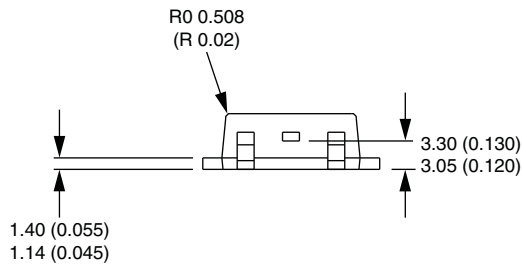


DIMENSIONS - D-61-8-SM in millimeters (inches)





DIMENSIONS - D-61-8-SL in millimeters (inches)





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