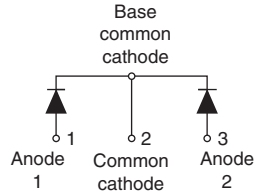
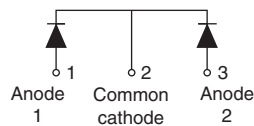
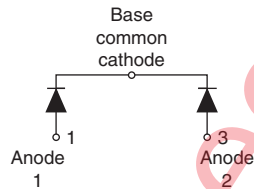


## Schottky High Performance Rectifier Gen 3, D-61 Package, 2 x 40 A

**VS-82CNQ030APbF**

**D-61-8**

**VS-82CNQ030ASMPbF**

**D-61-8-SM**

**VS-82CNQ030ASLPbF**

**D-61-8-SL**

**FEATURES**

- 150 °C T<sub>J</sub> operation
- Dual center tap module
- Very 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-mould low profile, small footprint, high current package
- Through-hole versions are currently available for use in lead (Pb)-free applications ("PbF" suffix)
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**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 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.

| PRODUCT SUMMARY                  |                  |
|----------------------------------|------------------|
| Package                          | D-61             |
| I <sub>F(AV)</sub>               | 2 x 40 A         |
| V <sub>R</sub>                   | 30 V             |
| V <sub>F</sub> at I <sub>F</sub> | 0.47             |
| I <sub>RM</sub> max.             | 280 mA at 125 °C |
| T <sub>J</sub> max.              | 150 °C           |
| Diode variation                  | Common cathode   |
| E <sub>AS</sub>                  | 36 mJ            |

| MAJOR RATINGS AND CHARACTERISTICS |  |             |       |
|-----------------------------------|--|-------------|-------|
| SYMBOL                            | CHARACTERISTICS  | VALUES      | UNITS |
| I <sub>F(AV)</sub>                | Rectangular waveform                                   | 80          | A     |
| V <sub>RRM</sub>                  |  | 30          | V     |
| I <sub>FSM</sub>                  | t <sub>p</sub> = 5 μs sine                             | 5100        | A     |
| V <sub>F</sub>                    | 40 A <sub>pk</sub> , T <sub>J</sub> = 125 °C (per leg) | 0.37        | V     |
| T <sub>J</sub>                    | Range  | -55 to +150 | °C    |

| VOLTAGE RATINGS                      |                  |                 |       |
|--------------------------------------|------------------|-----------------|-------|
| PARAMETER                            | SYMBOL           | VS-82CNQ030APbF | UNITS |
| Maximum DC reverse voltage           | V <sub>R</sub>   | 30              | V     |
| Maximum working peak reverse voltage | V <sub>RWM</sub> |                 |       |



| ABSOLUTE MAXIMUM RATINGS   |             |   |   |        |       |
|--|-------------|---|---|--------|-------|
| PARAMETER  | SYMBOL      | TEST CONDITIONS   |   | VALUES | UNITS |
| Maximum average forward current<br>See fig. 5                                | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 119\text{ }^\circ\text{C}$ , rectangular waveform   |   | 80     | A     |
| Maximum peak one cycle<br>non-repetitive surge current per leg<br>See fig. 7 | $I_{FSM}$   | 5 $\mu\text{s}$ sine or 3 $\mu\text{s}$ rect. pulse   | Following any rated<br>load condition and with<br>rated $V_{RRM}$ applied | 5100   |       |
|  |             | 10 ms sine or 6 ms rect. pulse  |   | 880    |       |
| Non-repetitive avalanche energy per leg                                      | $E_{AS}$    | $T_J = 25\text{ }^\circ\text{C}$ , $I_{AS} = 8\text{ A}$ , $L = 1.12\text{ mH}$   |   | 36     | mJ    |
| Repetitive avalanche current per leg   | $I_{AR}$    | Current decaying linearly to zero in 1 $\mu\text{s}$<br>Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical |   | 8      | A     |

| ELECTRICAL SPECIFICATIONS                             |                |  |                                   |        |                  |
|---|----------------|--|-----------------------------------|--------|------------------|
| PARAMETER   | SYMBOL         | TEST CONDITIONS  |                                   | VALUES | UNITS            |
| Maximum forward voltage drop per leg<br>See fig. 1    | $V_{FM}^{(1)}$ | 40 A   | $T_J = 25\text{ }^\circ\text{C}$  | 0.47   | V                |
|   |                | 80 A   |                                   | 0.55   |                  |
|   |                | 40 A   | $T_J = 125\text{ }^\circ\text{C}$ | 0.37   |                  |
|   |                | 80 A   |                                   | 0.47   |                  |
| Maximum reverse leakage current per leg<br>See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$   | $V_R = \text{Rated } V_R$         | 5      | mA               |
|   |                | $T_J = 125\text{ }^\circ\text{C}$  |                                   | 280    |                  |
| Maximum junction capacitance per leg                  | $C_T$          | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$ |                                   | 3700   | 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/ $\mu\text{s}$ |

**Note**(1) Pulse width < 300  $\mu\text{s}$ , duty cycle < 2 %

| THERMAL - MECHANICAL SPECIFICATIONS               |                |  |  |             |                        |
|---|----------------|--|--|-------------|------------------------|
| PARAMETER   | SYMBOL         | TEST CONDITIONS  |  | VALUES      | UNITS                  |
| Maximum junction and storage<br>temperature range | $T_J, T_{Stg}$ |  |  | -55 to +150 | $^\circ\text{C}$       |
| Maximum thermal resistance,<br>junction to case   | $R_{thJC}$     | DC operation (see fig. 4)  |  | 0.85        | $^\circ\text{C/W}$     |
|   |                | DC operation   |  | 0.42        |                        |
| Typical thermal resistance,<br>case to heatsink   | $R_{thCS}$     | Mounting surface, smooth and greased<br>Device flatness < 5 mils |  | 0.30        |                        |
| Approximate weight                                |                |  |  | 7.8         | g                      |
|   |                |  |  | 0.28        | oz.                    |
| Mounting torque                                   |                | minimum  |  | 40 (35)     | kgf · cm<br>(lbf · in) |
|   |                | maximum  |  | 58 (50)     |                        |
| Marking device                                    |                | Case style D-61  |  | 82CNQ030A   |                        |
|   |                | Case style D-61-8-SM   |  | 82CNQ030ASM |                        |
|   |                | Case style D-61-8-SL   |  | 82CNQ030ASL |                        |

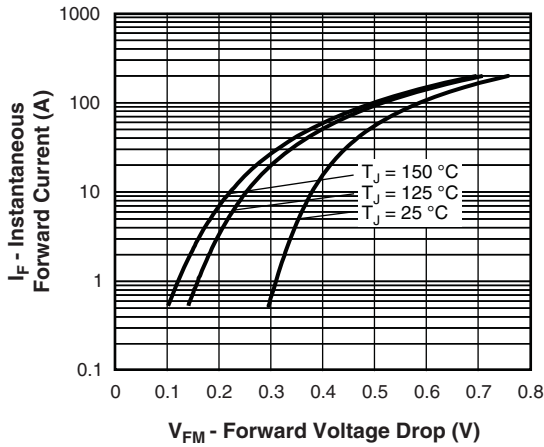


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

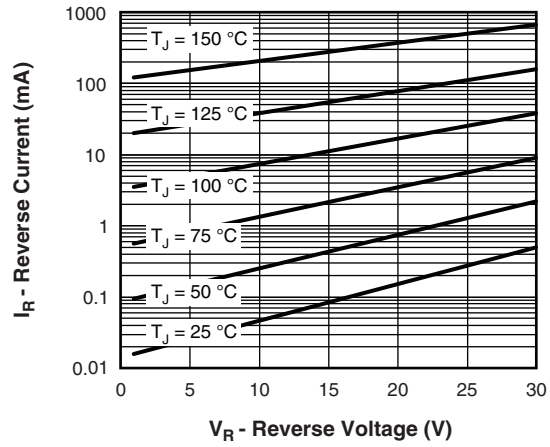


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

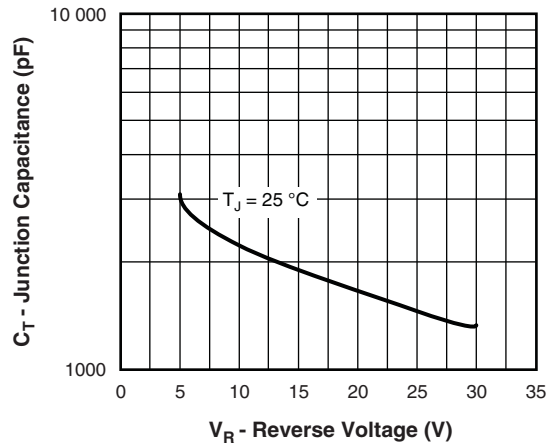


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

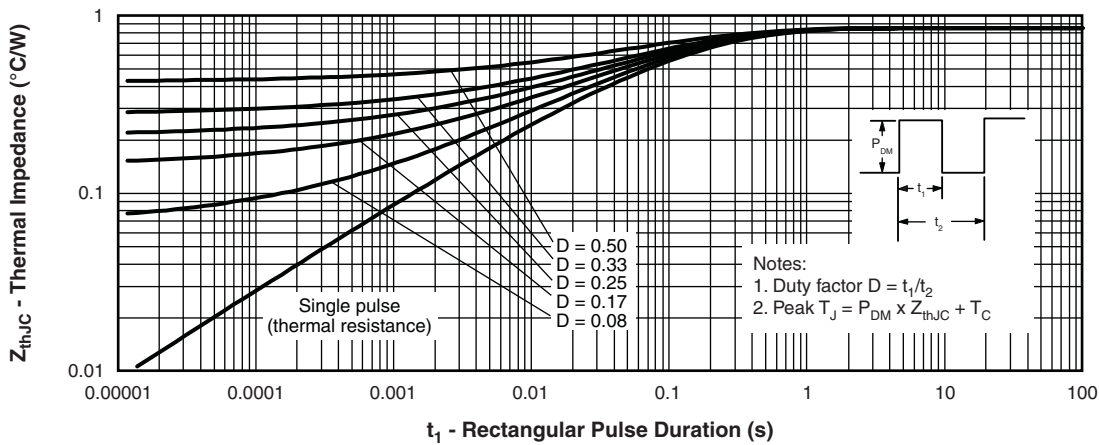


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

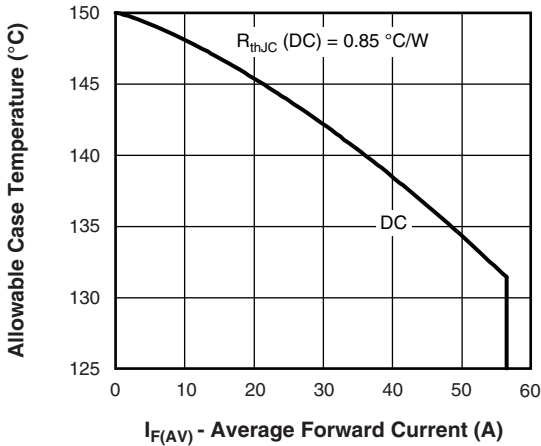


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

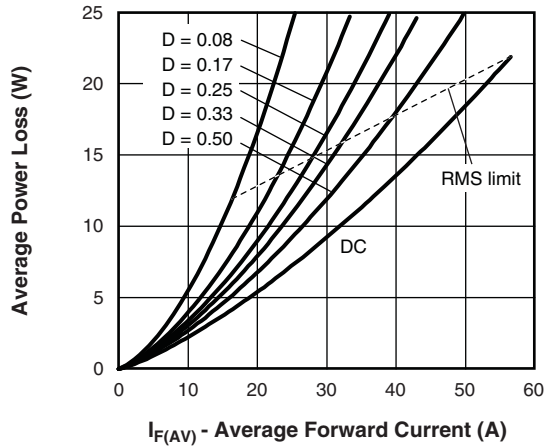


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

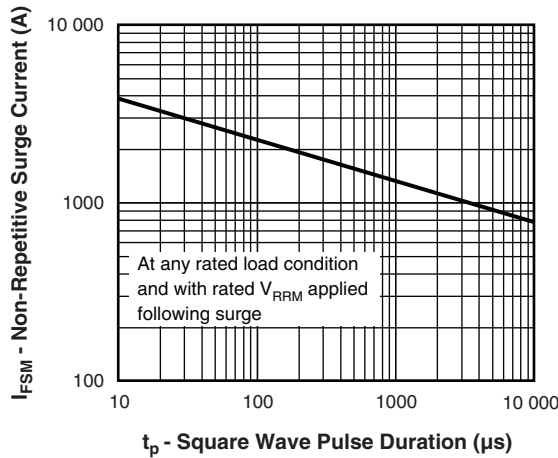


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

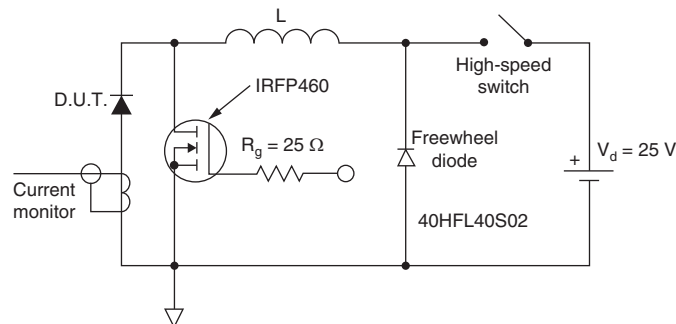


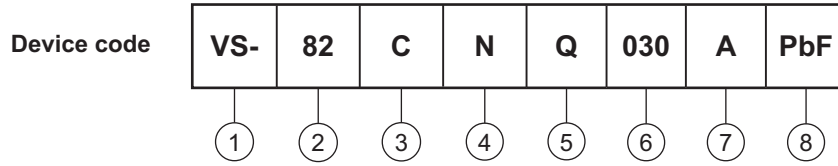
Fig. 8 - Unclamped Inductive Test Circuit

**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 (80 A)
- 3** - Circuit configuration:  
C = common cathode
- 4** - Package:  
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage ratings (030 = 30 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

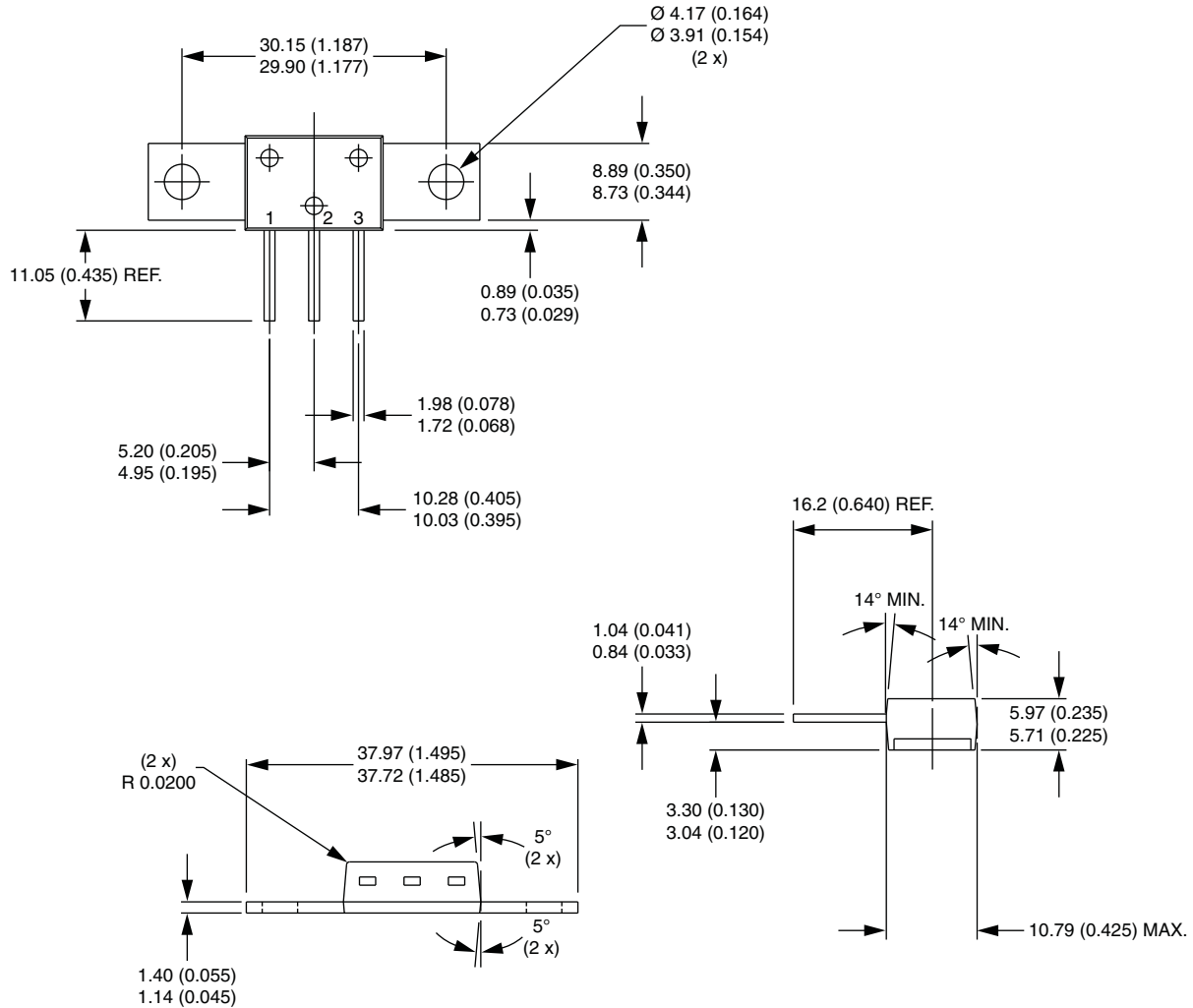
Standard pack quantity: A = 10 pieces; ASM/ASL = 20 pieces

| LINKS TO RELATED DOCUMENTS |  |
|----------------------------|--|
| Dimensions                 | <a href="http://www.vishay.com/doc?95354">www.vishay.com/doc?95354</a> |
| Part marking information   | <a href="http://www.vishay.com/doc?95356">www.vishay.com/doc?95356</a> |



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

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



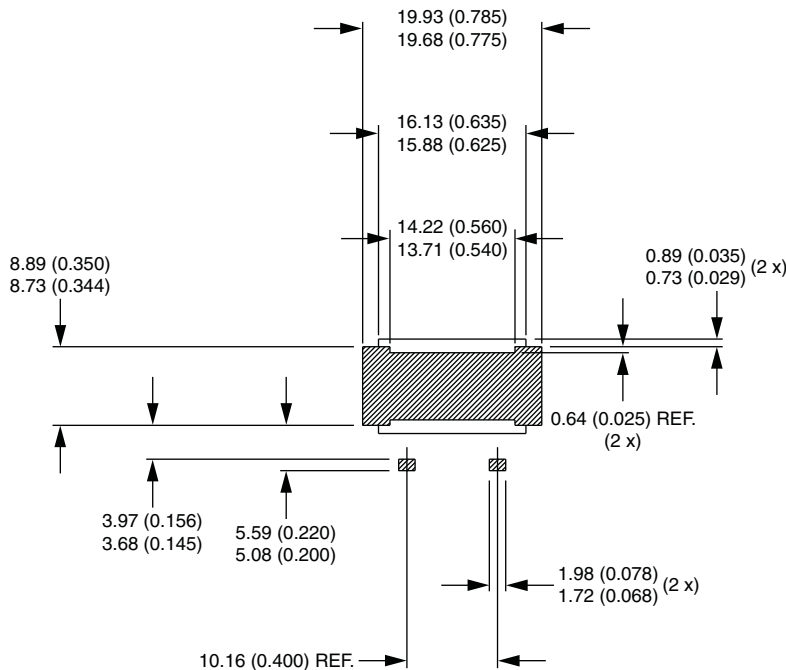
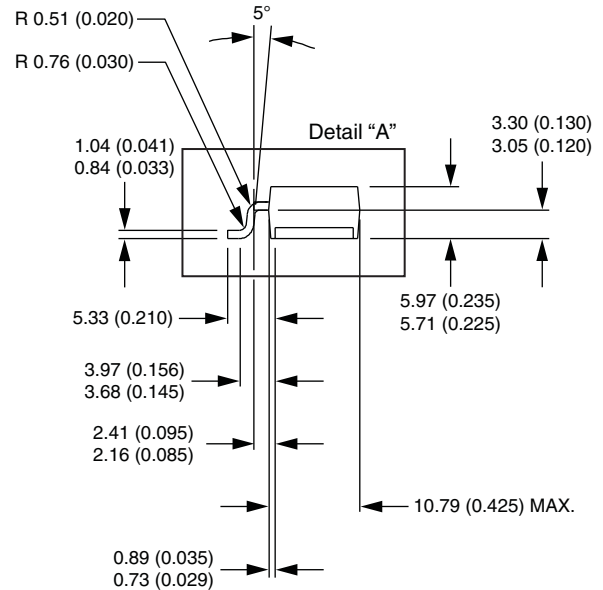


### DIMENSIONS - D-61-8-SM in millimeters (inches)





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







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