

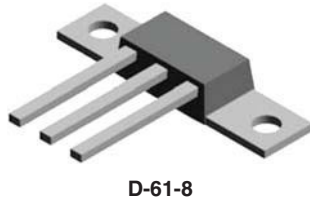


# VS-82CNQ030A, VS-82CNQ030ASM, VS-82CNQ030ASL

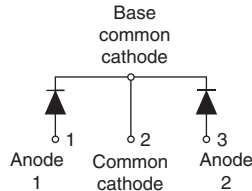
Vishay Semiconductors

## Schottky Rectifier New Generation 3 D-61 Package, 2 x 40 A

VS-82CNQ030A



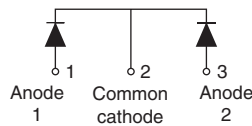
D-61-8



VS-82CNQ030ASM



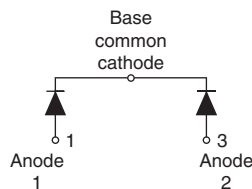
D-61-8-SM



VS-82CNQ030ASL



D-61-8-SL



### FEATURES

- 150 °C  $T_J$  operation
- Dual center tap module
- 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
- New fully transfer-mold low profile, small footprint, high current package
- Designed and qualified for industrial level

### DESCRIPTION

The center tap Schottky rectifier module 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

|             |          |
|-------------|----------|
| $I_{F(AV)}$ | 2 x 40 A |
| $V_R$       | 30 V     |

### MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL      | CHARACTERISTICS                                    | VALUES      | UNITS |
|-------------|----------------------------------------------------|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform                               | 80          | A     |
| $V_{RRM}$   |                                                    | 30          | V     |
| $I_{FSM}$   | $t_p = 5 \mu s$ sine                               | 5100        | A     |
| $V_F$       | 40 A <sub>pk</sub> , $T_J = 125^\circ C$ (per leg) | 0.37        | V     |
| $T_J$       | Range                                              | - 55 to 150 | °C    |

### VOLTAGE RATINGS

| PARAMETER                            | SYMBOL    | VS-82CNQ030A | UNITS |
|--------------------------------------|-----------|--------------|-------|
| Maximum DC reverse voltage           | $V_R$     | 30           | V     |
| Maximum working peak reverse voltage | $V_{RWM}$ |              |       |

**VS-82CNQ030A, VS-82CNQ030ASM, VS-82CNQ030ASL**

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Schottky Rectifier  
New Generation 3 D-61 Package, 2 x 40 A**ABSOLUTE MAXIMUM RATINGS**

| PARAMETER                                                                    | SYMBOL      | TEST CONDITIONS                                                                                                           | VALUES | UNITS |
|------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------|--------|-------|
| Maximum average forward current<br>See fig. 5                                | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 119^\circ\text{C}$ , 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                                                                       | 5100   |       |
|                                                                              |             | 10 ms sine or 6 ms rect. pulse                                                                                            | 880    |       |
| Non-repetitive avalanche energy per leg                                      | $E_{AS}$    | $T_J = 25^\circ\text{C}$ , $I_{AS} = 8\text{ A}$ , $L = 1.12\text{ mH}$                                                   | 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                                                                             | 0.47   | V                |
|                                                       |                | 80 A                                                                             | 0.55   |                  |
|                                                       |                | 40 A                                                                             | 0.37   |                  |
|                                                       |                | 80 A                                                                             | 0.47   |                  |
| Maximum reverse leakage current per leg<br>See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25^\circ\text{C}$                                                         | 5      | mA               |
|                                                       |                | $T_J = 125^\circ\text{C}$                                                        | 280    |                  |
| Maximum junction capacitance per leg                  | $C_T$          | $V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz), $25^\circ\text{C}$ | 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**<sup>(1)</sup> Pulse width < 300  $\mu\text{s}$ , 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<br>See fig. 4                                       | 0.85        | $^\circ\text{C/W}$ |
| Maximum thermal resistance, junction to case per package   |                | DC operation                                                     | 0.42        |                    |
| Typical thermal resistance, case to heatsink (D-61-8 only) | $R_{thCS}$     | Mounting surface, smooth and greased<br>Device flatness < 5 mils | 0.30        |                    |
| Approximate weight                                         |                |                                                                  | 7.8         | g                  |
|                                                            |                |                                                                  | 0.28        | oz.                |
| Mounting torque<br>(D-61-8 only)                           | minimum        |                                                                  | 40 (35)     | kgf · cm           |
|                                                            | maximum        |                                                                  | 58 (50)     | (lbf · in)         |
| Marking device                                             |                | Case style D-61-8                                                | 82CNQ030A   |                    |
|                                                            |                | Case style D-61-8-SM                                             | 82CNQ030ASM |                    |
|                                                            |                | Case style D-61-8-SL                                             | 82CNQ030ASL |                    |



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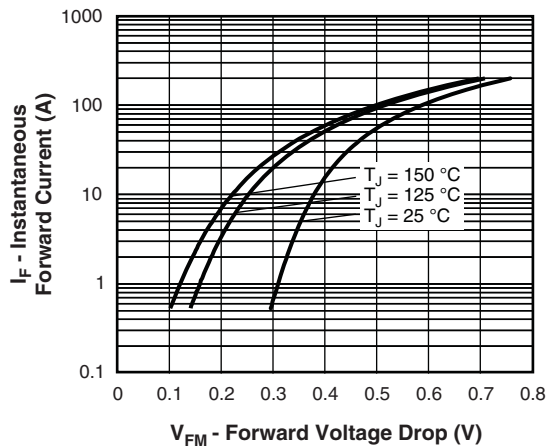


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

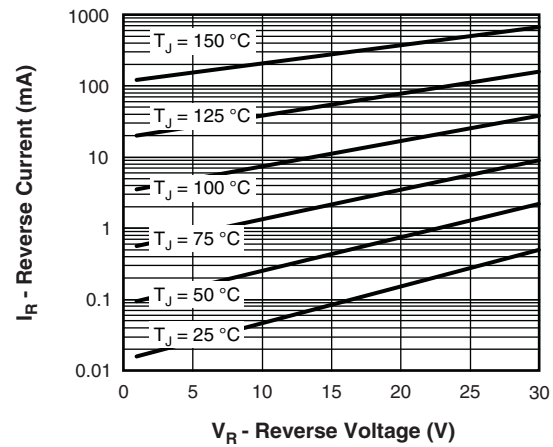


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

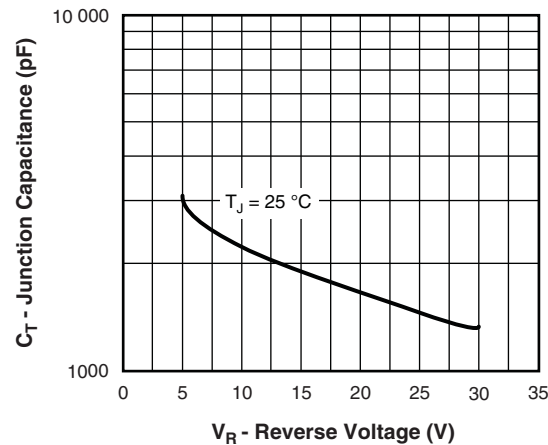


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

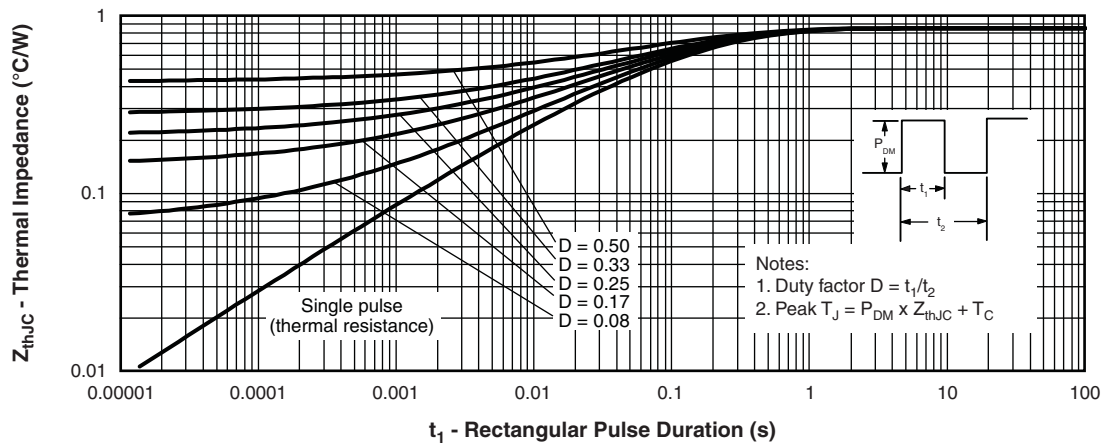


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

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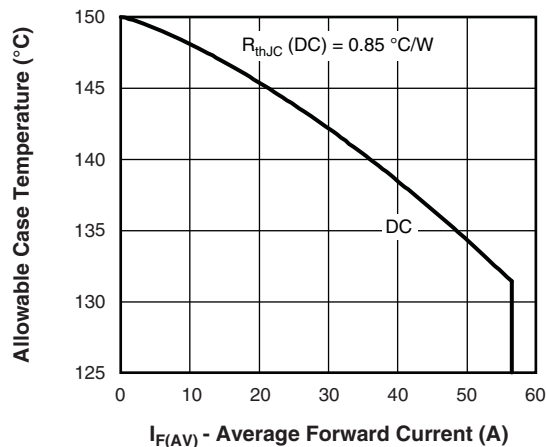


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

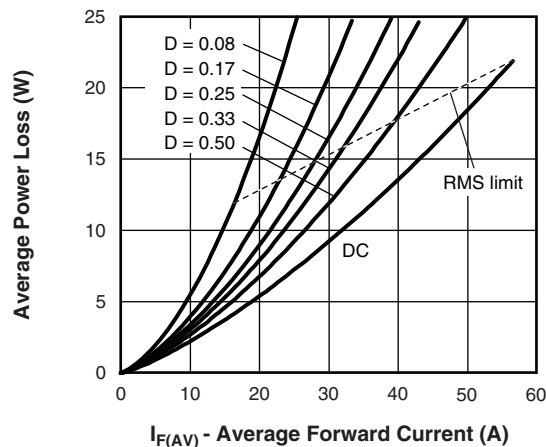


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

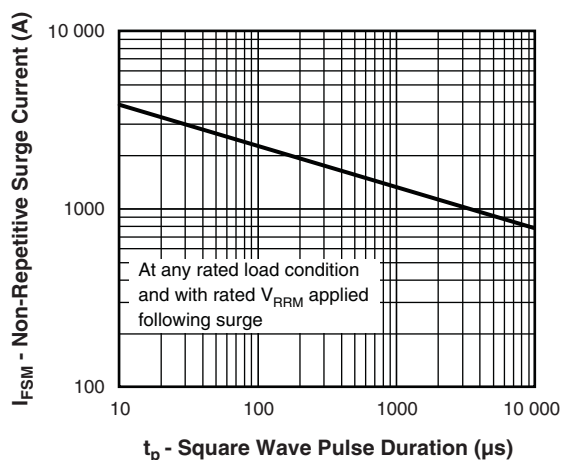


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

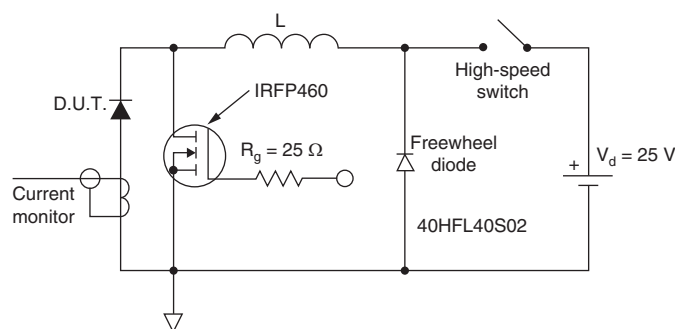


Fig. 8 - Unclamped Inductive Test Circuit



# VS-82CNQ030A, VS-82CNQ030ASM, VS-82CNQ030ASL

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## ORDERING INFORMATION TABLE

|             |     |    |   |   |   |     |   |   |
|-------------|-----|----|---|---|---|-----|---|---|
| Device code | VS- | 82 | C | N | Q | 030 | A | - |
|             | 1   | 2  | 3 | 4 | 5 | 6   | 7 | 8 |

- 1** - Vishay Semiconductors product
- 2** - Current rating (82 = 80 A)
- 3** - Circuit configuration:  
C = Common cathode
- 4** - Package:  
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage rating (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 (D-61-8 only)

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

| LINKS TO RELATED DOCUMENTS |                                                                        |
|----------------------------|------------------------------------------------------------------------|
| Dimensions                 | <a href="http://www.vishay.com/doc?94354">www.vishay.com/doc?94354</a> |
| Part marking information   | <a href="http://www.vishay.com/doc?94356">www.vishay.com/doc?94356</a> |



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