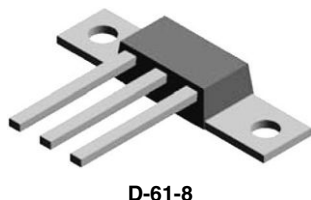
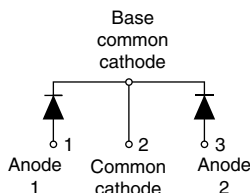


## Schottky Rectifier New Generation 3 D-61 Package, 2 x 40 A

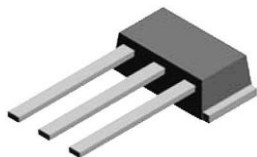
VS-85CNQ015APbF



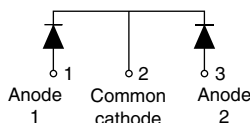
D-61-8



VS-85CNQ015ASMPbF



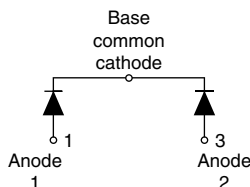
D-61-8-SM



VS-85CNQ015ASLPbF



D-61-8-SL



### FEATURES

- 125 °C  $T_J$  operation ( $V_R < 5$  V)
- Center tap module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- New fully transfer-mold low profile, small footprint, high current package
- Through-hole versions are currently available for use in lead (Pb)-free applications ("PbF" suffix)
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level



Available  
**RoHS\***  
COMPLIANT

### DESCRIPTION

The center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

### PRODUCT SUMMARY

|             |                   |
|-------------|-------------------|
| $I_{F(AV)}$ | 2 x 40 A          |
| $V_R$       | 15 V              |
| $I_{RM}$    | 1000 mA at 100 °C |

### MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL      | CHARACTERISTICS                 | VALUES      | UNITS |
|-------------|---------------------------------|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform            | 80          | A     |
| $V_{RRM}$   |                                 | 15          | V     |
| $I_{FSM}$   | $t_p = 5 \mu s$ sine            | 5200        | A     |
| $V_F$       | 40 Apk, $T_J = 75$ °C (per leg) | 0.32        | V     |
| $T_J$       | Range                           | - 55 to 125 | °C    |

### VOLTAGE RATINGS

| PARAMETER                            | SYMBOL    | VS-85CNQ015APbF | UNITS |
|--------------------------------------|-----------|-----------------|-------|
| Maximum DC reverse voltage           | $V_R$     | 15              | V     |
| Maximum working peak reverse voltage | $V_{RWM}$ | 25              |       |

\* Pb containing terminations are not RoHS compliant, exemptions may apply

### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                                                    | SYMBOL      | TEST CONDITIONS                                                                                                         | VALUES | UNITS |
|------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------|--------|-------|
| Maximum average forward current<br>See fig. 5                                | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 78\text{ }^{\circ}\text{C}$ , 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                                                                     | 5200   |       |
|                                                                              |             | 10 ms sine or 6 ms rect. pulse                                                                                          | 850    |       |
| Non-repetitive avalanche energy per leg                                      | $E_{AS}$    | $T_J = 25\text{ }^{\circ}\text{C}$ , $I_{AS} = 2\text{ A}$ , $L = 4.5\text{ mH}$                                        | 9      | 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 $V_A = 3 \times V_R$ typical | 2      | A     |

### ELECTRICAL SPECIFICATIONS

| PARAMETER                                             | SYMBOL         | TEST CONDITIONS                                                                           |                                    | VALUES                              | UNITS            |
|-------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|------------------|
| Maximum forward voltage drop per leg<br>See fig. 1    | $V_{FM}^{(1)}$ | 40 A                                                                                      | $T_J = 25\text{ }^{\circ}\text{C}$ | 0.36                                | V                |
|                                                       |                | 80 A                                                                                      |                                    | 0.45                                |                  |
|                                                       |                | 40 A                                                                                      | $T_J = 75\text{ }^{\circ}\text{C}$ | 0.32                                |                  |
|                                                       |                | 80 A                                                                                      |                                    | 0.42                                |                  |
| Maximum reverse leakage current per leg<br>See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 100\text{ }^{\circ}\text{C}$                                                       | $V_R = 12\text{ V}$                | 890                                 | mA               |
|                                                       |                |                                                                                           | $V_R = 5\text{ V}$                 | 540                                 |                  |
|                                                       |                | $T_J = 25\text{ }^{\circ}\text{C}$                                                        | $V_R = \text{Rated } V_R$          | 20                                  |                  |
|                                                       |                |                                                                                           |                                    | $T_J = 100\text{ }^{\circ}\text{C}$ |                  |
| Maximum junction capacitance per leg                  | $C_T$          | $V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$ |                                    | 3600                                | 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 temperature range                                  | $T_J, T_{Stg}$ |                                                                  | - 55 to 125 | $^{\circ}\text{C}$   |
| Maximum thermal resistance, _____ per leg<br>junction to case _____ per package | $R_{thJC}$     | DC operation (see fig. 4)                                        | 0.85        | $^{\circ}\text{C/W}$ |
|                                                                                 |                | DC operation                                                     | 0.42        |                      |
| Typical thermal resistance, 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             |
|                                                                                 | maximum        |                                                                  | 58 (50)     | (lbf · in)           |
| Marking device                                                                  |                | Case style D-61                                                  | 85CNQ015A   |                      |
|                                                                                 |                | Case style D-61-8-SM                                             | 85CNQ015ASM |                      |
|                                                                                 |                | Case style D-61-8-SL                                             | 85CNQ015ASL |                      |

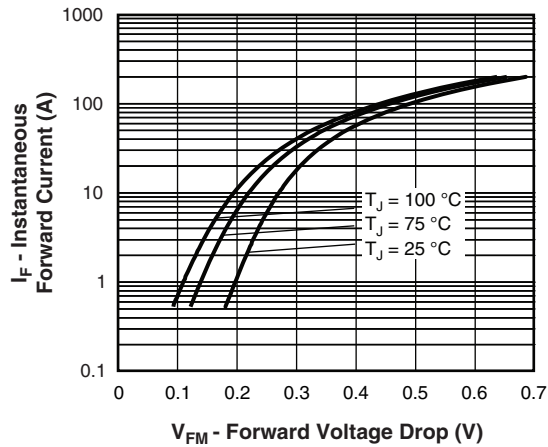


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

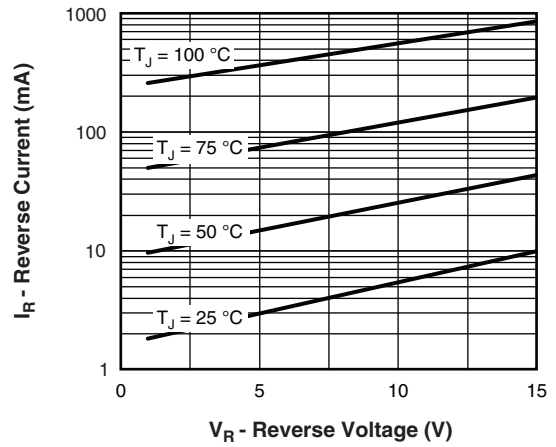


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

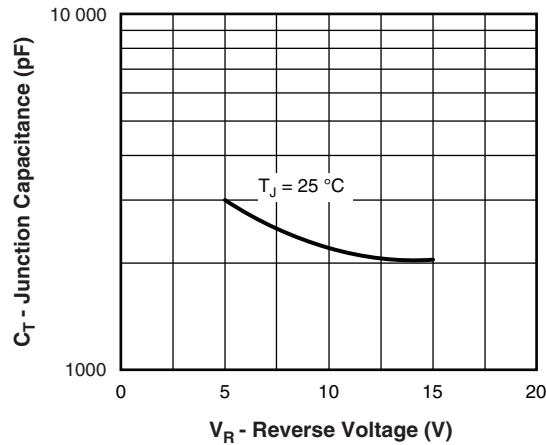


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

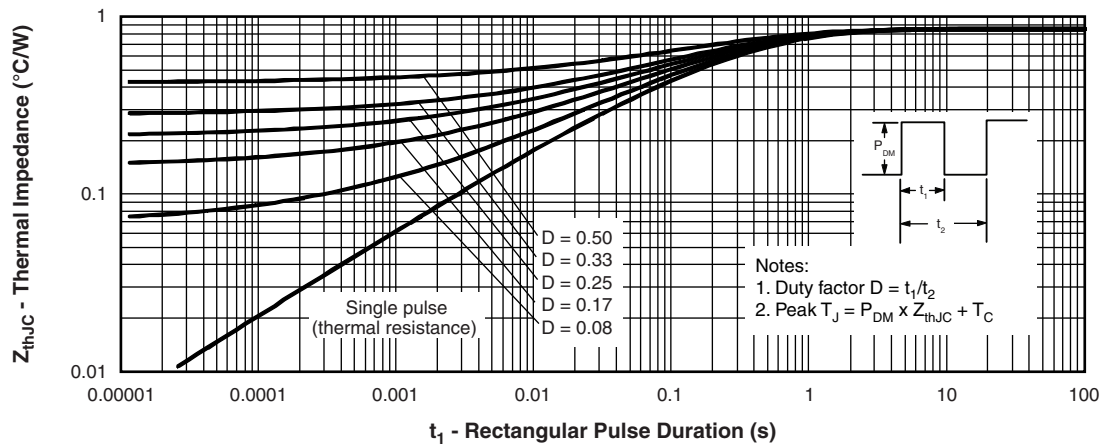


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

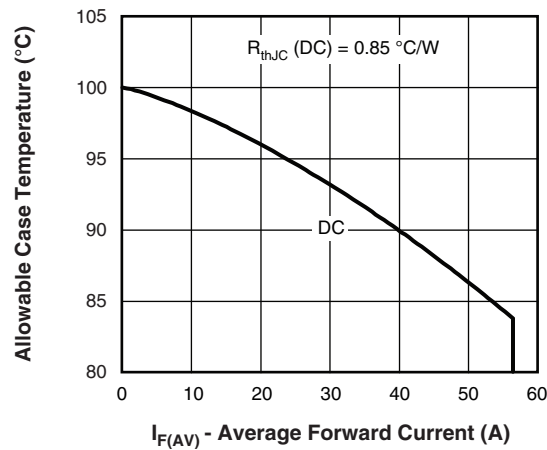


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

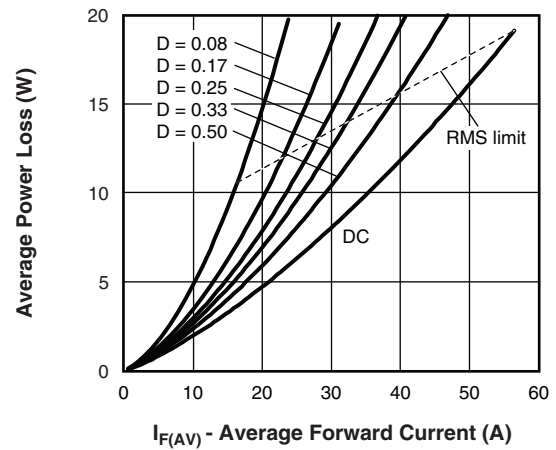


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

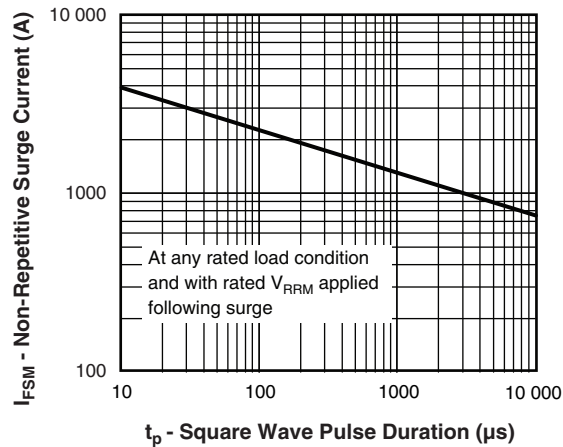


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

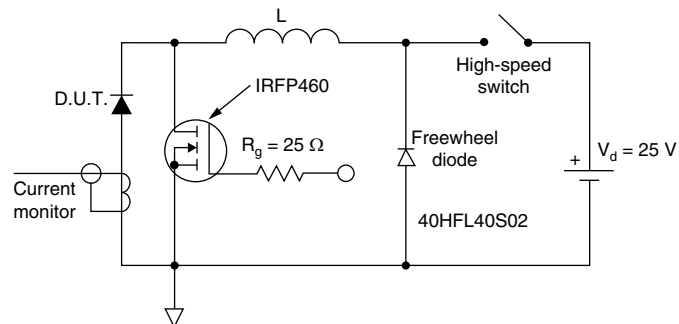


Fig. 8 - Unclamped Inductive Test Circuit



## ORDERING INFORMATION TABLE

|             |     |    |   |   |   |     |   |     |
|-------------|-----|----|---|---|---|-----|---|-----|
| Device code | VS- | 85 | C | N | Q | 015 | A | PbF |
|             | 1   | 2  | 3 | 4 | 5 | 6   | 7 | 8   |

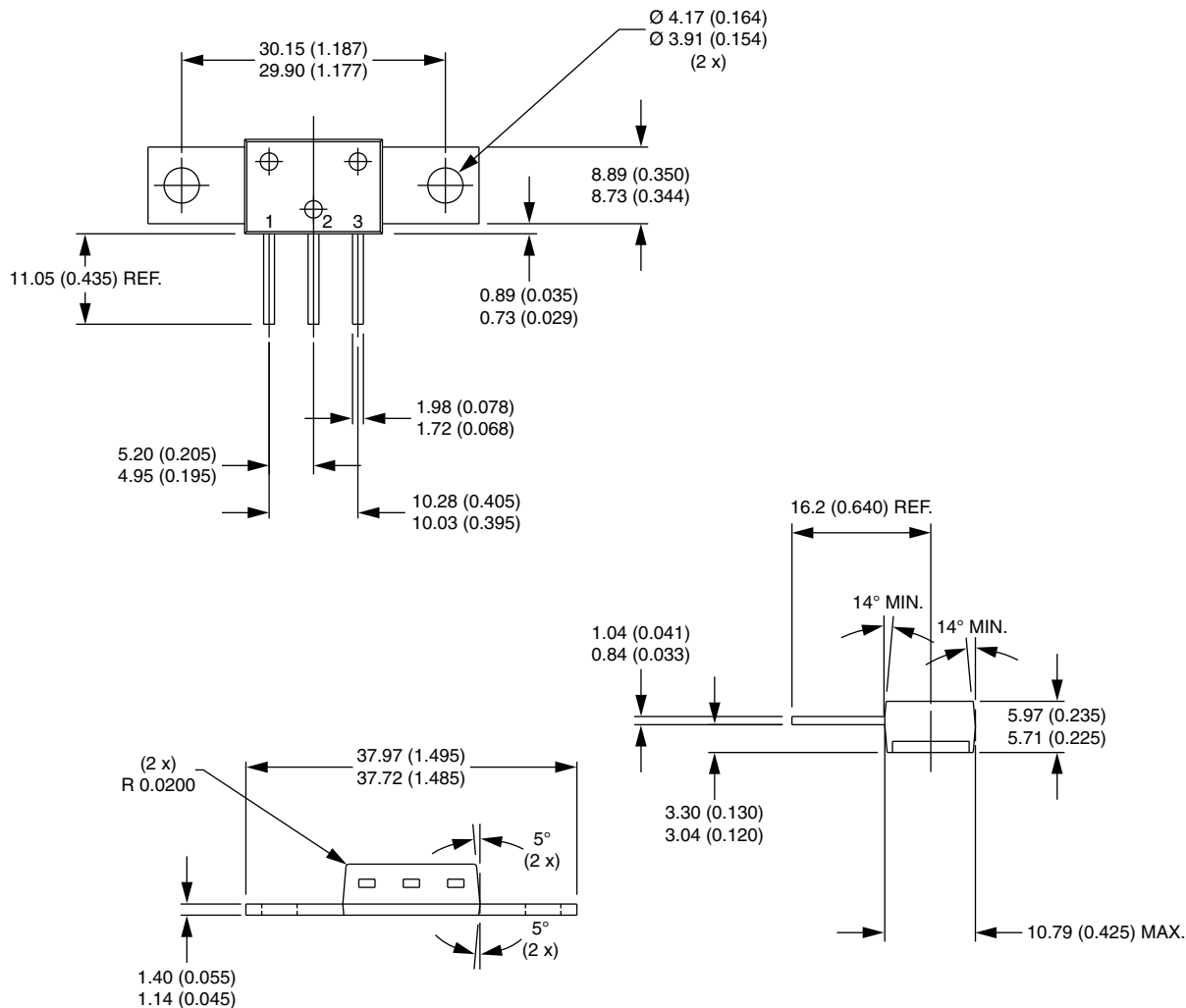
- 1** - HPP product suffix
- 2** - Current rating (80 A)
- 3** - Circuit configuration:
  - C = Common cathode
- 4** - Package:
  - N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage ratings (015 = 15 V)
- 7** - Package style:
  - A = D-61-8
  - ASM = D-61-8-SM
  - ASL = D-61-8-SL
- 8** -
  - None = 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)





## Disclaimer

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