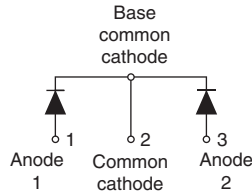
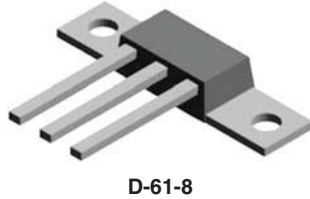




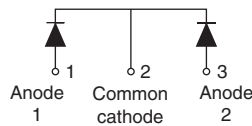
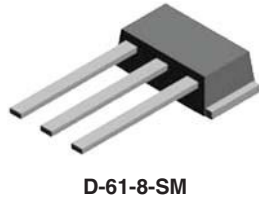
Schottky Rectifier

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

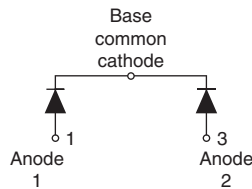
VS-81CNQ...A



VS-81CNQ...ASM



VS-81CNQ...ASL



FEATURES

- 175 °C T_J operation
- Center tap module
- 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 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

| | |
|-------------|--------------|
| $I_{F(AV)}$ | 2 x 40 A |
| V_R | 35 V to 45 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-------------|--|-------------|-------|
| $I_{F(AV)}$ | Rectangular waveform | 80 | A |
| V_{RRM} | | 35 to 45 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 4600 | A |
| V_F | 40 A _{pk} , $T_J = 125^\circ C$ (per leg) | 0.54 | V |
| T_J | Range | - 55 to 175 | °C |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | VS-81CNQ035A | VS-81CNQ040A | VS-81CNQ045A | UNITS |
|--------------------------------------|-----------|--------------|--------------|--------------|-------|
| Maximum DC reverse voltage | V_R | 35 | 40 | 45 | V |
| Maximum working peak reverse voltage | V_{RWM} | | | | |

VS-81CNQ035A, VS-81CNQ040A, VS-81CNQ045A

Vishay Semiconductors

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 See fig. 5 | I _{F(AV)} | 50 % duty cycle at T _C = 141 °C, rectangular waveform | | 80 | A |
| 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 | 4600 | |
| | | 10 ms sine or 6 ms rect. pulse | | 790 | |
| Non-repetitive avalanche energy per leg | E _{AS} | T _J = 25 °C, I _{AS} = 8 A, L = 1.7 mH | | 54 | 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 x V _R typical | | 8 | A |

ELECTRICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
|---|----------------|--|-------------------------------------|--------|------------------|
| Maximum forward voltage drop per leg See fig. 1 | $V_{FM}^{(1)}$ | 40 A | $T_J = 25\text{ }^{\circ}\text{C}$ | 0.60 | V |
| | | 80 A | | 0.74 | |
| | | 40 A | $T_J = 125\text{ }^{\circ}\text{C}$ | 0.54 | |
| | | 80 A | | 0.66 | |
| Maximum reverse leakage current per leg See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^{\circ}\text{C}$ | $V_R = \text{Rated } V_R$ | 5 | mA |
| | | $T_J = 125\text{ }^{\circ}\text{C}$ | | 45 | |
| Maximum junction capacitance per leg | C_T | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$ | | 2600 | 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 %



VS-81CNQ035A, VS-81CNQ040A, VS-81CNQ045A

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

Vishay Semiconductors

| THERMAL - MECHANICAL SPECIFICATIONS | | | | |
|--|-----------------------------------|--|-------------|------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction and storage temperature range | T _J , T _{Stg} | | - 55 to 175 | °C |
| Maximum thermal resistance, junction to case per leg | R _{thJC} | DC operation See fig. 4 | 0.85 | °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 Device flatness < 5 mils | 0.30 | |
| Approximate weight | | | 7.8 | g |
| | | | 0.28 | oz. |
| Mounting torque (D-61-8 only) | minimum | | 40 (35) | kgf · cm (lbf · in) |
| | maximum | | 58 (50) | |
| Marking device | | Case style D-61-8 | 81CNQ035A | |
| | | | 81CNQ040A | |
| | | | 81CNQ045A | |
| | | Case style D-61-8-SM | 81CNQ035ASM | |
| | | | 81CNQ040ASM | |
| | | | 81CNQ045ASM | |
| | | Case style D-61-8-SL | 81CNQ035ASL | |
| | | | 81CNQ040ASL | |
| | | | 81CNQ045ASL | |

VS-81CNQ035A, VS-81CNQ040A, VS-81CNQ045A

Vishay Semiconductors

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

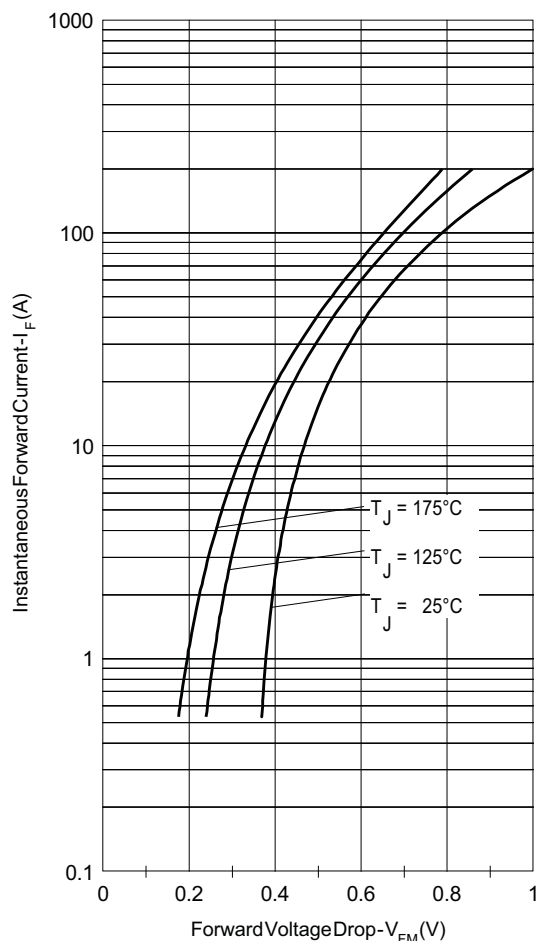


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

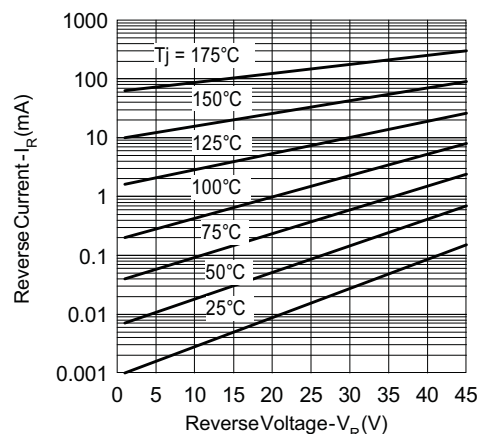


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

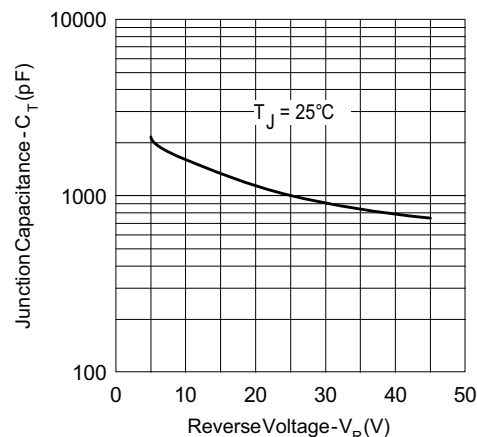


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

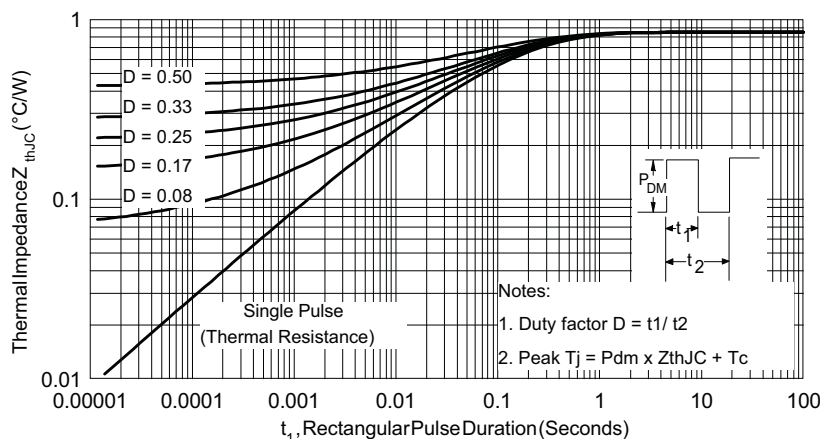


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)



VS-81CNQ035A, VS-81CNQ040A, VS-81CNQ045A

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

Vishay Semiconductors

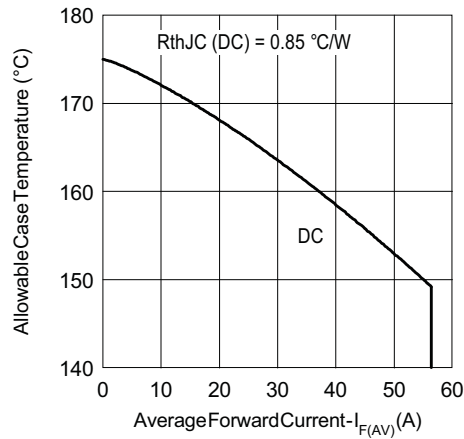


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

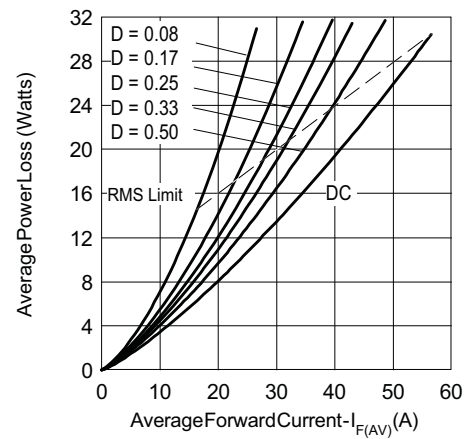


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

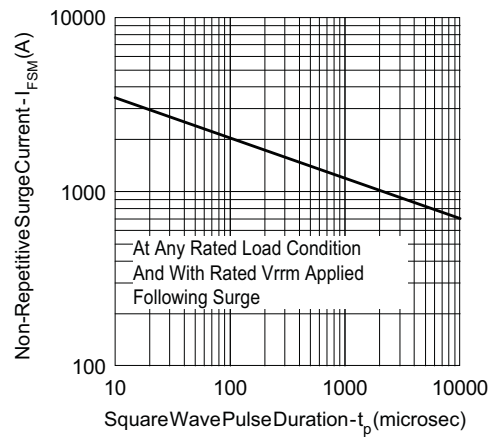


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

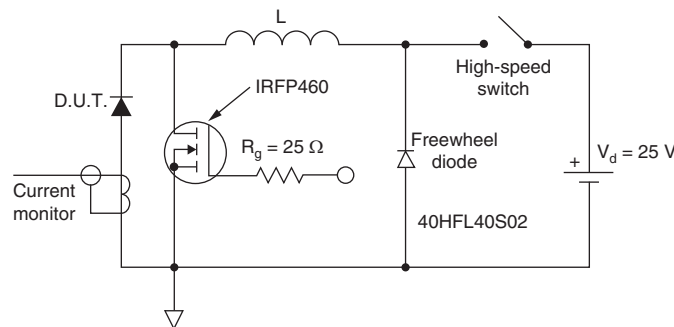


Fig. 8 - Unclamped Inductive Test Circuit

VS-81CNQ035A, VS-81CNQ040A, VS-81CNQ045A



Vishay Semiconductors

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

ORDERING INFORMATION TABLE

| | | | | | | | | |
|-------------|-----|----|---|---|---|-----|---|---|
| Device code | VS- | 81 | C | N | Q | 045 | A | - |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

- 1** - Vishay Semiconductors product
- 2** - Current rating (81 = 80 A)
- 3** - Circuit configuration:
C = Common cathode
- 4** - Package:
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage ratings
- 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)

| |
|------------|
| 035 = 35 V |
| 040 = 40 V |
| 045 = 45 V |

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 |



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