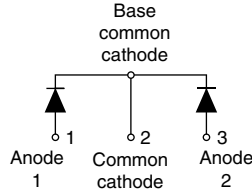
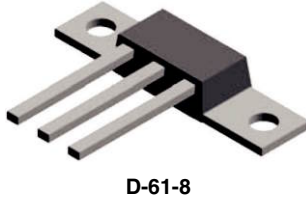
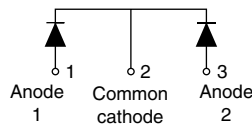
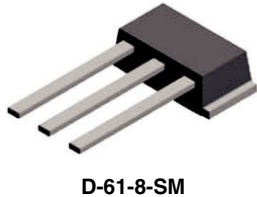


Schottky Rectifier New Generation 3 D-61 Package, 2 x 55 A

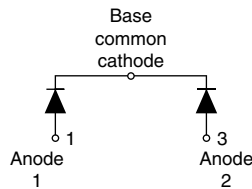
VS-110CNQ045APbF



VS-110CNQ045ASMPbF



VS-110CNQ045ASLPbF



FEATURES

- 150 °C T_J operation
- 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
- 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 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 55 A |
| V_R | 45 V |

MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
|-------------|---------------------------------------|-------------|------------|
| $I_{F(AV)}$ | Rectangular waveform | 110 | A |
| V_{RRM} | | 45 | V |
| I_{FSM} | $t_p = 5 \mu s$ sine | 5400 | A |
| V_F | 55 Apk, $T_J = 125^\circ C$ (per leg) | 0.5 | V |
| T_J | Range | - 55 to 150 | $^\circ C$ |

VOLTAGE RATINGS

| PARAMETER | SYMBOL | VS-110CNQ045APbF | UNITS |
|--------------------------------------|-----------|------------------|-------|
| Maximum DC reverse voltage | V_R | 45 | V |
| Maximum working peak reverse voltage | V_{RWM} | | |

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

VS-110CNQ045A PbF Series



Vishay High Power Products

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

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|---|-------------|---|---|---------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current See fig. 5 | $I_{F(AV)}$ | 50 % duty cycle at $T_C = 125\text{ }^\circ\text{C}$, rectangular waveform | | 55 | A |
| | | | | per leg | |
| 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 | 5400 | A |
| | | 10 ms sine or 6 ms rect. pulse | | 800 | |
| Non-repetitive avalanche energy per leg | E_{AS} | $T_J = 25\text{ }^\circ\text{C}$, $I_{AS} = 8\text{ A}$, $L = 1.7\text{ mH}$ | | 54 | mJ |
| Repetitive avalanche current per leg | I_{AR} | Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical | | 8 | A |

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|----------------|--|-----------------------------------|--------|------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum forward voltage drop per leg See fig. 1 | $V_{FM}^{(1)}$ | 55 A | $T_J = 25\text{ }^\circ\text{C}$ | 0.54 | V |
| | | 110 A | | 0.7 | |
| | | 55 A | $T_J = 125\text{ }^\circ\text{C}$ | 0.5 | |
| | | 110 A | | 0.69 | |
| Maximum reverse leakage current per leg See fig. 2 | $I_{RM}^{(1)}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_R = \text{Rated } V_R$ | 3 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 350 | |
| Maximum junction capacitance per leg | C_T | $V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$ | | 3800 | 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 %

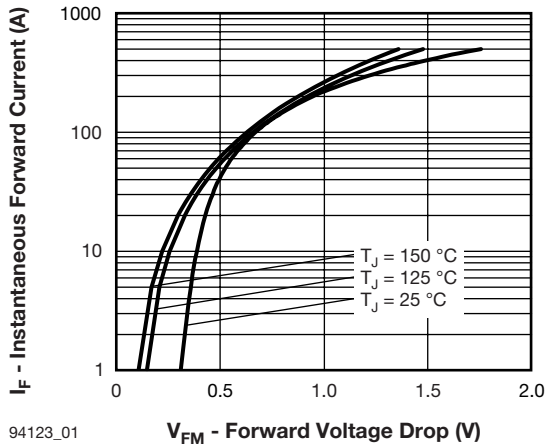
| THERMAL - MECHANICAL SPECIFICATIONS | | | | | |
|--|----------------|--|--|--------------|------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | | - 55 to 150 | $^\circ\text{C}$ |
| Maximum thermal resistance, 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 | | | 40 (35) | kgf · cm (lbf · in) |
| | maximum | | | 58 (50) | |
| Marking device | | Case style D-61 | | 110CNQ045A | |
| | | Case style D-61-8-SM | | 110CNQ045ASM | |
| | | Case style D-61-8-SL | | 110CNQ045ASL | |



VS-110CNQ045A PbF Series

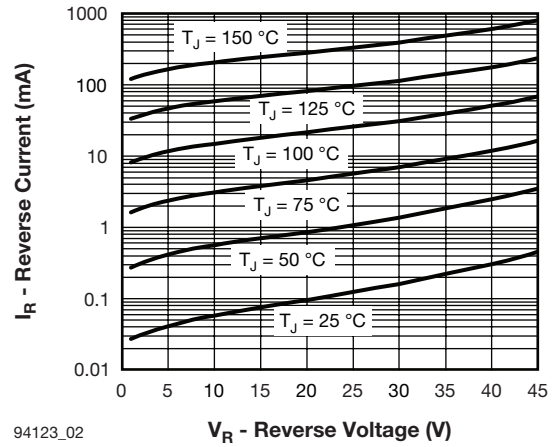
Schottky Rectifier
New Generation 3 D-61 Package, 2 x 55 A

Vishay High Power Products



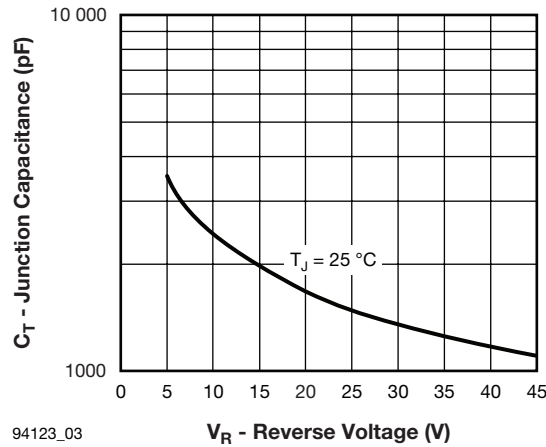
94123_01

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



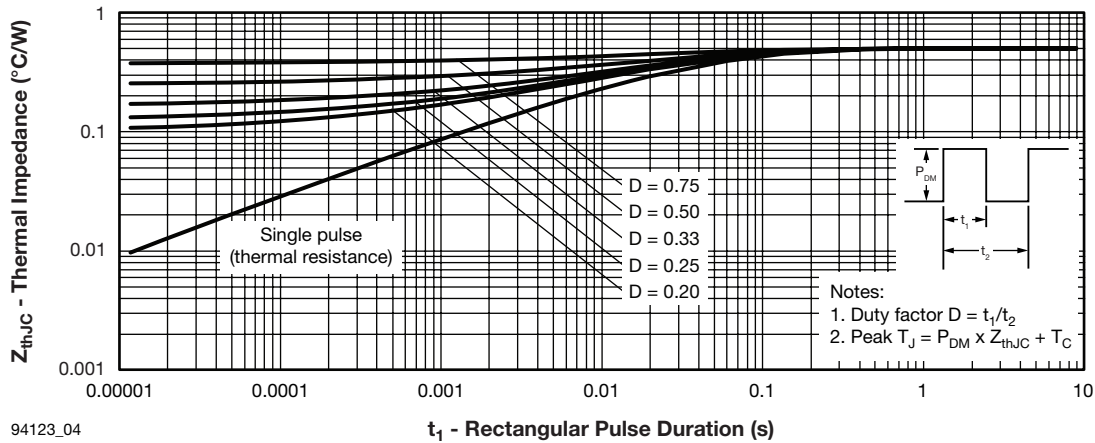
94123_02

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



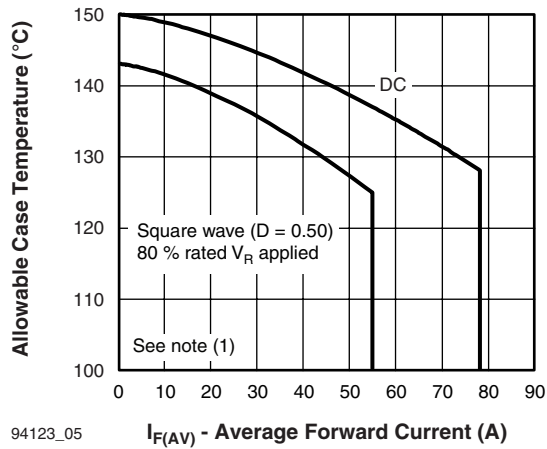
94123_03

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



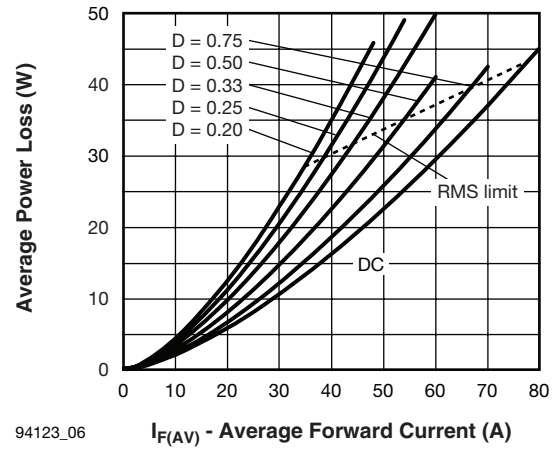
94123_04

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



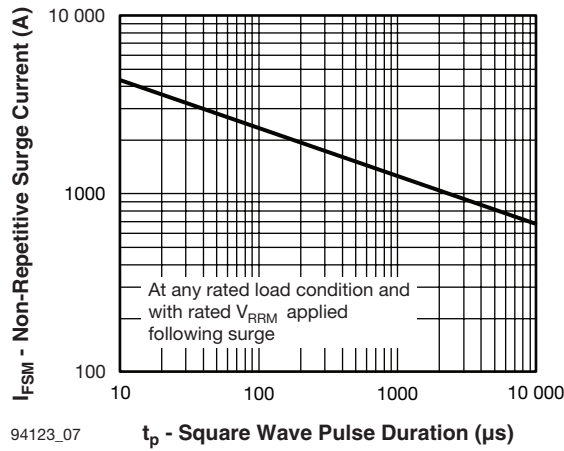
94123_05

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



94123_06

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



94123_07

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

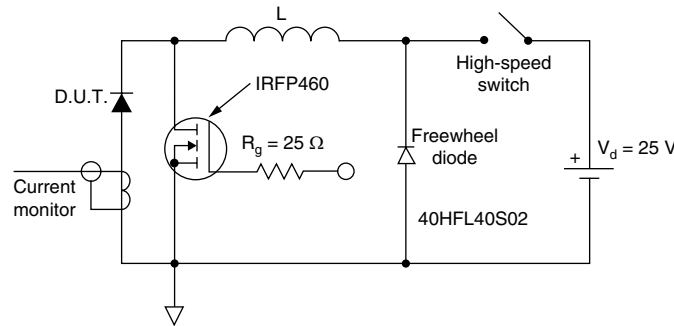


Fig. 8 - Unclamped Inductive Test Circuit

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



VS-110CNQ045A PbF Series

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

Vishay High Power Products

ORDERING INFORMATION TABLE

| | | | | | | | | |
|-------------|------------|------------|----------|----------|----------|------------|----------|------------|
| Device code | VS- | 110 | C | N | Q | 045 | A | PbF |
| | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ |

- 1** - HPP product suffix
- 2** - Current rating (110 = 110 A)
- 3** - Circuit configuration:
C = Common cathode
- 4** - Package:
N = D-61
- 5** - Schottky "Q" series
- 6** - Voltage rating (045 = 45 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 |



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