

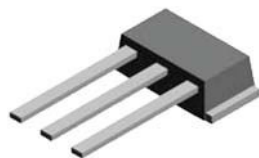


Schottky Rectifier

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



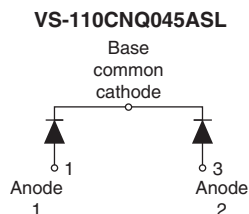
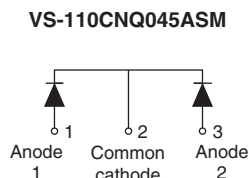
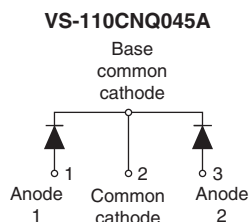
D-61-8



D-61-8-SM



D-61-8-SL



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
- 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	
Package	D-61-8, D-61-8-SM, D-61-8-SL
I _{F(AV)}	2 x 55 A
V _R	45 V
V _F at I _F	0.54 V
I _{RM}	350 mA at 125 °C
T _J max.	150 °C
Diode variation	Common cathode
E _{AS}	54 mJ

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	110	A
V _R		45	V
I _{FSM}	t _p = 5 μs sine	5400	A
V _F	55 A _{pk} , T _J = 125 °C (per leg)	0.5	V
T _J	Range	- 55 to 150	°C

VOLTAGE RATINGS			
PARAMETER	SYMBOL	VS-110CNQ045A	UNITS
Maximum DC reverse voltage	V _R	45	V
Maximum working peak reverse voltage	V _{RWM}		

VS-110CNQ045A, VS-110CNQ045ASM, VS-110CNQ045ASL



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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	per leg	55	A
			per device	110	
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
	maximum			58 (50)	(lb · in)
Marking device		Case style D-61-8		110CNQ045A	
		Case style D-61-8-SM		110CNQ045ASM	
		Case style D-61-8-SL		110CNQ045ASL	



VS-110CNQ045A, VS-110CNQ045ASM, VS-110CNQ045ASL

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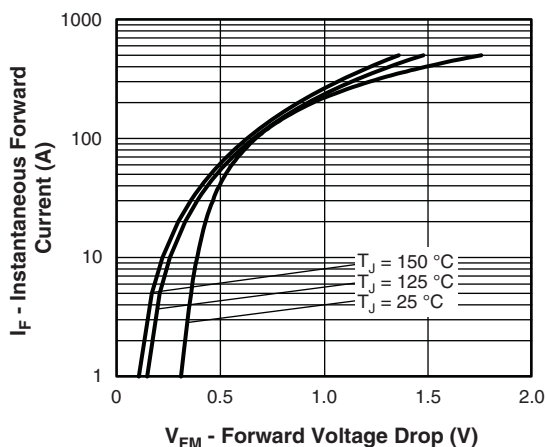


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

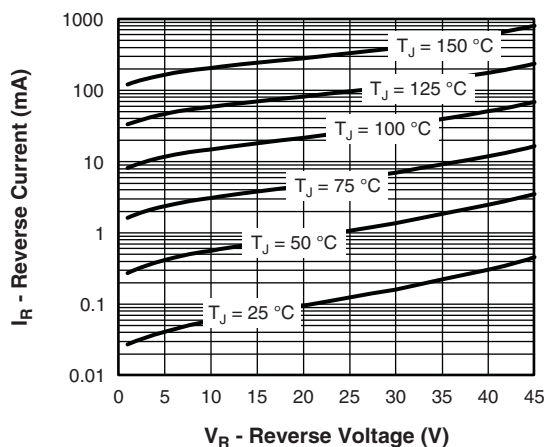


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

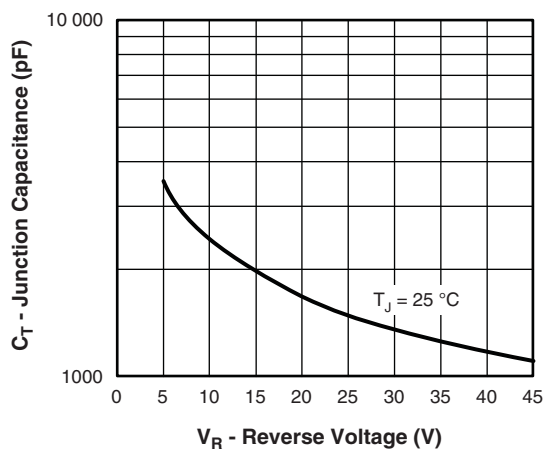


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

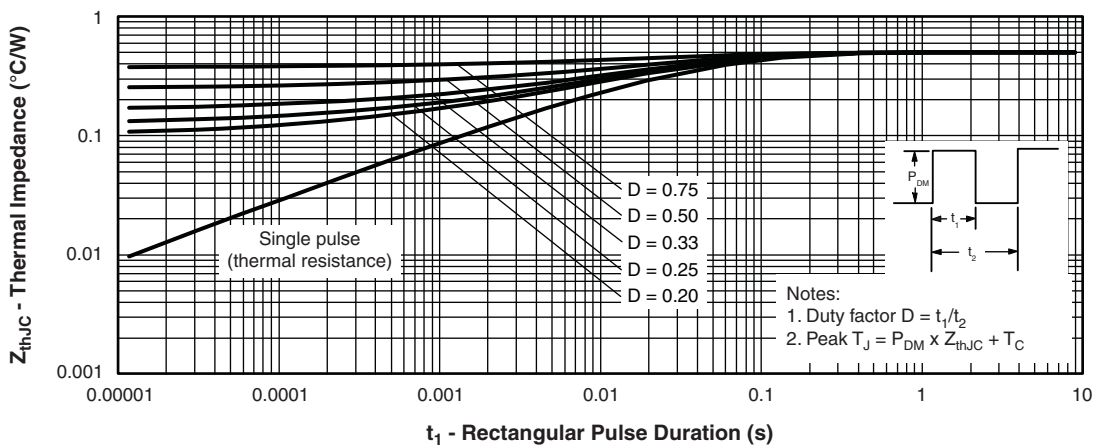


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-110CNQ045A, VS-110CNQ045ASM, VS-110CNQ045ASL



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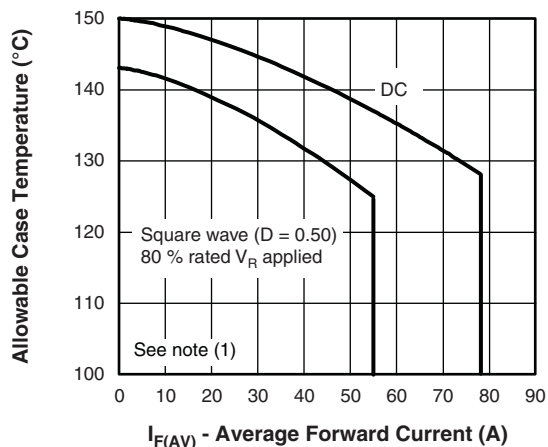


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

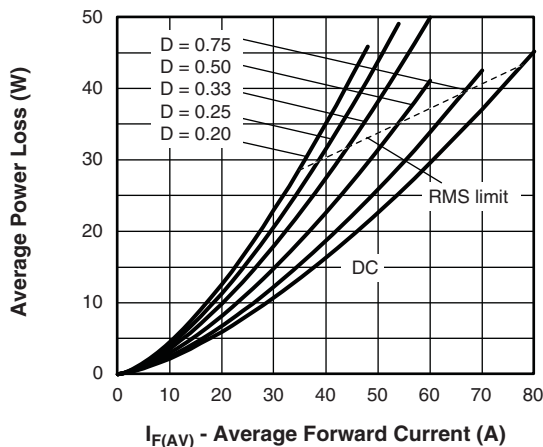


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

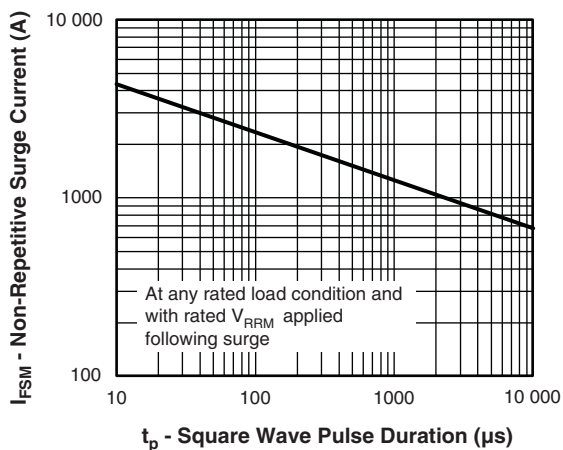


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

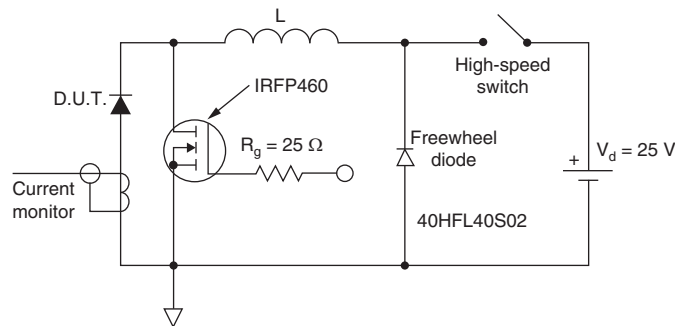


Fig. 8 - Unclamped Inductive Test Circuit

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, VS-110CNQ045ASM, VS-110CNQ045ASL

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ORDERING INFORMATION TABLE

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

- 1** - Vishay Semiconductors product
- 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 (D-61-8 only)

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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