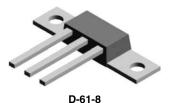


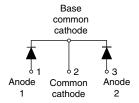
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COMPLIANT

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

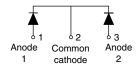
VS-87CNQ020APbF





VS-87CNQ020ASMPbF



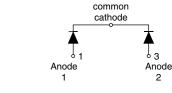


Base

D-61-8-SM

VS-87CNQ020ASLPbF





D-61-8-SL

PRODUCT SUMMARY			
I _{F(AV)}	2 x 40 A		
V _R at 125 °C	20 V		
V _R at 150 °C	10 V		
I _{RM}	550 mA at 125 °C		

FEATURES

- 150 °C T_J operation
- · Center tap module
- Optimized for 3.3 V application
- Ultralow 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
- 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

DESCRIPTION

The center tap Schottky rectifier module has been optimized for ultralow forward voltage drop specifically for 3.3 V output power supplies. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

MAJOR RATINGS AND CHARACTERISTICS					
SYMBOL	CHARACTERISTICS	VALUES	UNITS		
I _{F(AV)}	Rectangular waveform	80	A		
V _{RRM}		20	V		
I _{FSM}	t _p = 5 μs sine	6000	А		
V _F	40 Apk, T _J = 125 °C (per leg)	0.32	V		
T _J	Range	- 55 to 150	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VS-87CNQ020APbF	UNITS
Maximum DC reverse voltage	V_R	125 °C	20	V
		150 °C	10	

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

VS-87CNQ020A PbF Series

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

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS VA		VALUES	UNITS
Maximum average pe	r leg	50 % duty cycle at T _C = 135 °C, rectangular waveform		40	
forward current per de	vice I _{F(AV)}			80	
Maximum peak one cycle		5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	6000	Α
non-repetitive surge current per leg	IFSM	10 ms sine or 6 ms rect. pulse		1100	
Non-repetitive avalanche energy per leg	j 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 μ s Frequency limited by T _J maximum V _A = 1.5 x V _R typical		8	Α

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg	V _{FM} ⁽¹⁾	40 A	T 05 °C	0.45	
		80 A	T _J = 25 °C	0.51	
		40 A	T _{.1} = 125 °C	0.32	V
		80 A	- IJ = 125 C	0.39	V
		40 A	T _J = 150 °C	0.29	
		80 A		0.37	
	I _{RM} ⁽¹⁾	T _J = 125 °C	V _R = 5 V	90	
			V _R = 3.3 V	70	
Maximum reverse leakage current per leg		T _J = 150 °C	V _R = 10 V	480	mA
		T _J = 25 °C	V _R = Rated V _R	5.5	
		T _J = 125 °C		550	
Threshold voltage	V _{F(TO)}	$T_J = T_J$ maximum		0.191	V
Forward slope resistance	r _t			2.3	mΩ
Maximum junction capacitance per leg	C _T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), 25 °C		6500	pF
Typical series inductance per leg	L _S	Measured lead to lead 5 mm from package body 5.5		nΗ	
Maximum voltage rate of change	dV/dt	Rated V _R 10 000		V/µs	

Note

 $^{^{(1)}\,}$ Pulse width $<300~\mu s,$ 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	°C
Maximum thermal	per leg	D	DC operation	0.85	
resistance, junction to case	per package	R_{thJC}		0.42	°C/W
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased Device flatness < 5 mils	0.30	O/ VV
Approximate weight				7.8	g
Approximate weight				0.28	OZ.
Manustina tarana	minimum			40 (35)	kgf · cm
Mounting torque	maximum			58 (50)	(lbf · in)
Marking device			Case style D-61	87CN0	Q020A
			Case style D-61-8-SM	87CNQ020ASM	
			Case style D-61-8-SL	87CNQ	020ASL

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

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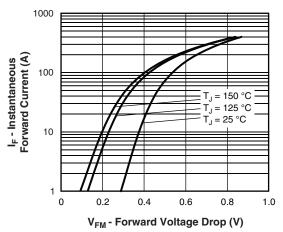


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

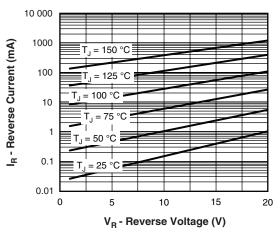


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

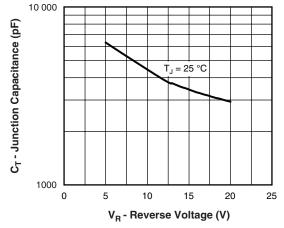


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

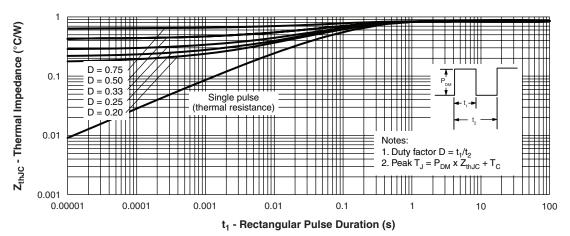


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-87CNQ020A PbF Series

Vishay High Power Products

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



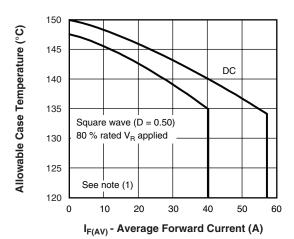


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

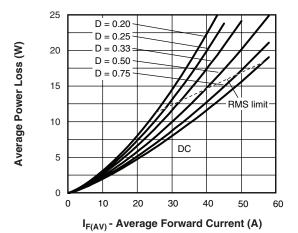


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

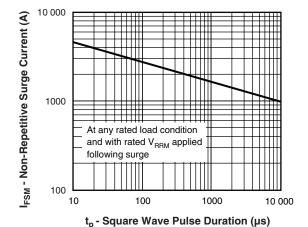


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

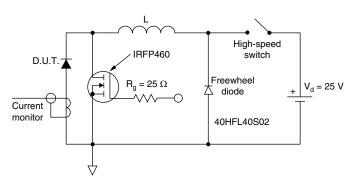


Fig. 8 - Unclamped Inductive Test Circuit

Note

 $^{(1)}$ Formula used: T_C = T_J - (Pd + Pd_{REV}) x R_{thJC}; Pd = Forward power loss = I_{F(AV)} x V_{FM} at (I_{F(AV)}/D) (see fig. 6); Pd_{REV} = Inverse power loss = V_{R1} x I_R (1 - D); I_R at V_{R1} = 80 % rated V_R

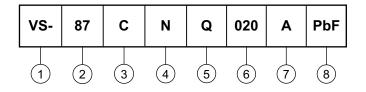


VS-87CNQ020A PbF Series

Schottky Rectifier Vishay High Power Products New Generation 3 D-61 Package, 2 x 40 A

ORDERING INFORMATION TABLE

Device code



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 rating (020 = 20 A)

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			

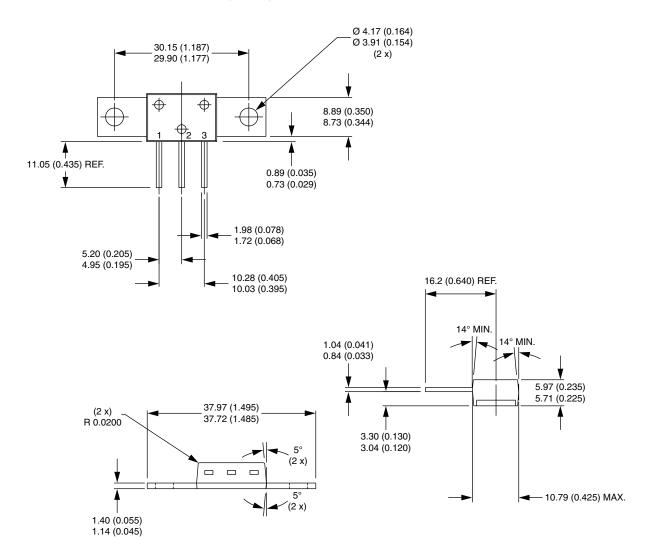
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Vishay Semiconductors

D-61-8, D-61-8-SM, D-61-8-SL

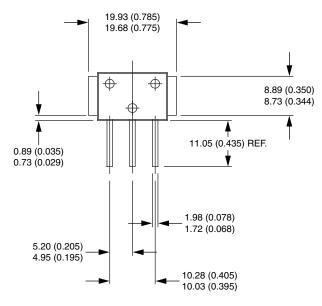
DIMENSIONS - D-61-8 in millimeters (inches)

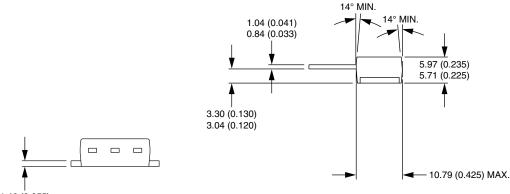




Vishay Semiconductors

DIMENSIONS - D-61-8-SM in millimeters (inches)

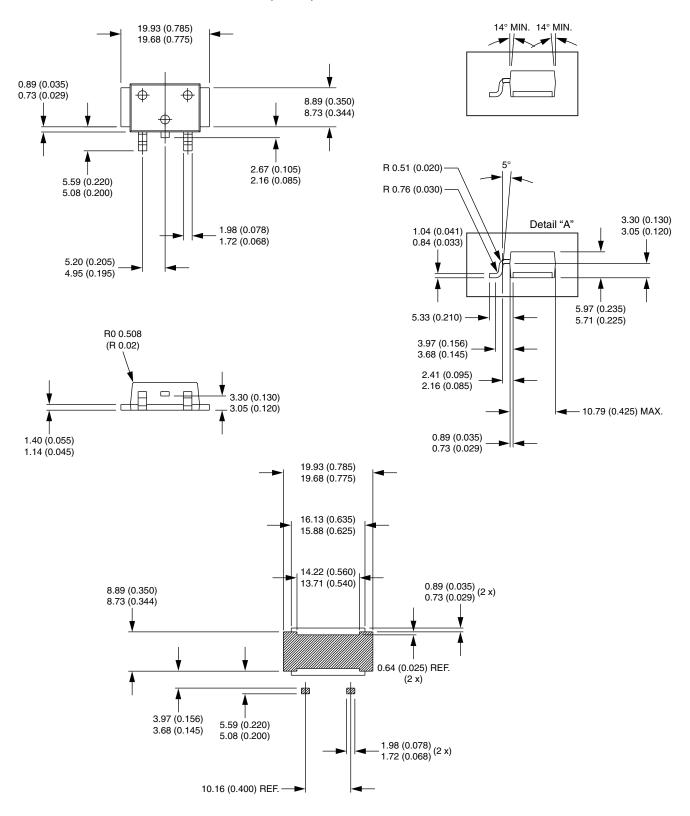






Vishay Semiconductors

DIMENSIONS - D-61-8-SL in millimeters (inches)





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