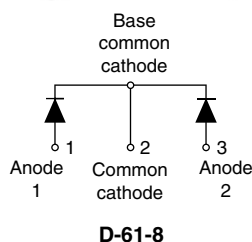


## Schottky Rectifier

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



#### 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
- Through-hole versions are currently available for use in lead (Pb)-free applications ("PbF" suffix)
- Designed and qualified for industrial level



**RoHS\***  
COMPLIANT

#### PRODUCT SUMMARY

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

#### DESCRIPTION

The center tap Schottky rectifier module 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.

#### MAJOR RATINGS AND CHARACTERISTICS

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

#### VOLTAGE RATINGS

PARAMETER	SYMBOL	81CNQ035APbF	81CNQ040APbF	81CNQ045APbF	UNITS
Maximum DC reverse voltage	$V_R$	35	40	45	V
Maximum working peak reverse voltage	$V_{RWM}$				

#### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 141\text{ }^{\circ}\text{C}$ , rectangular waveform		80	A
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	$I_{FSM}$	5 $\mu\text{s}$ sine or 3 $\mu\text{s}$ 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	$E_{AS}$	$T_J = 25\text{ }^{\circ}\text{C}$ , $I_{AS} = 8\text{ A}$ , $L = 1.7\text{ mH}$		54	mJ
Repetitive avalanche current per leg	$I_{AR}$	Current decaying linearly to zero in 1 $\mu\text{s}$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical		8	A

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

**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		0.66
		80 A				
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/ $\mu$ s	

**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 <sub>J</sub> , T <sub>Stg</sub>		- 55 to 175	°C
Maximum thermal resistance, junction to case per leg	R <sub>thJC</sub>	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	R <sub>thCS</sub>	Mounting surface, smooth and greased Device flatness < 5 mils	0.30	
Approximate weight			7.8	g
			0.28	oz.
Mounting torque	minimum		40 (35)	kgf · cm (lbf · in)
	maximum		58 (50)	
Marking device		Case style D-61	81CNQ035A	
			81CNQ040A	
			81CNQ045A	

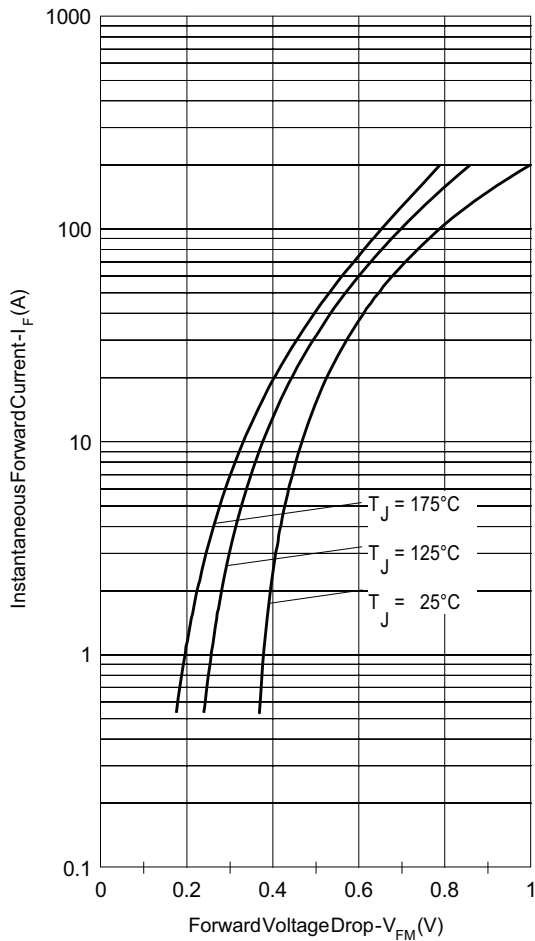


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

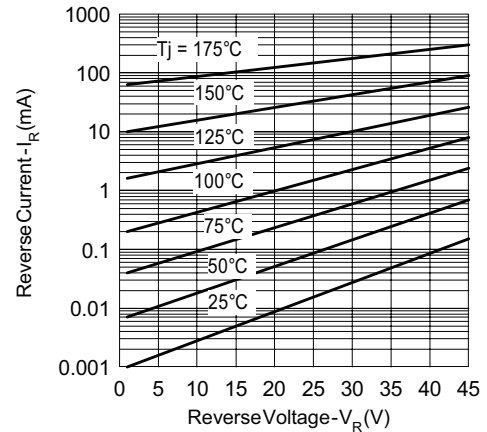


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

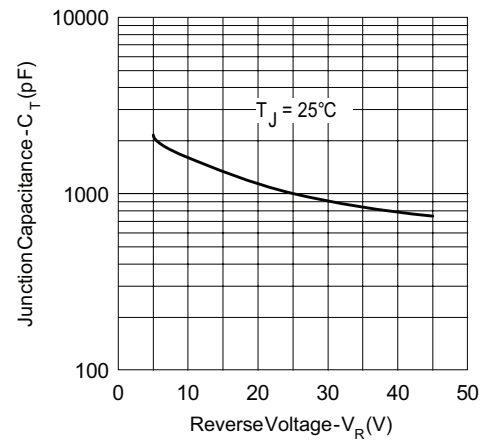


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

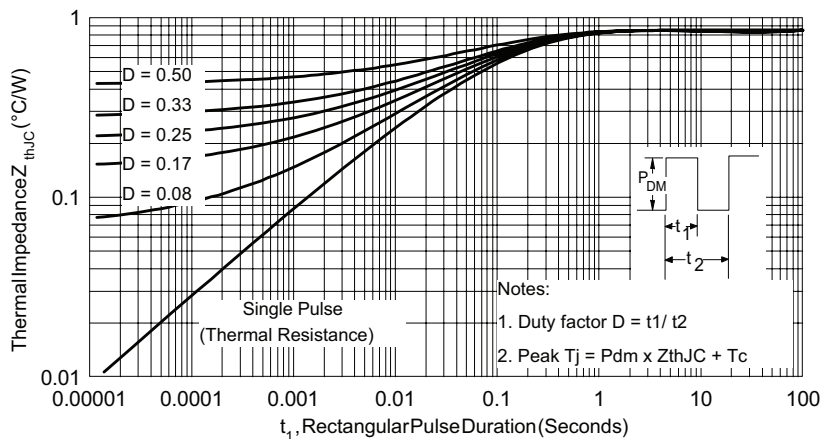


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

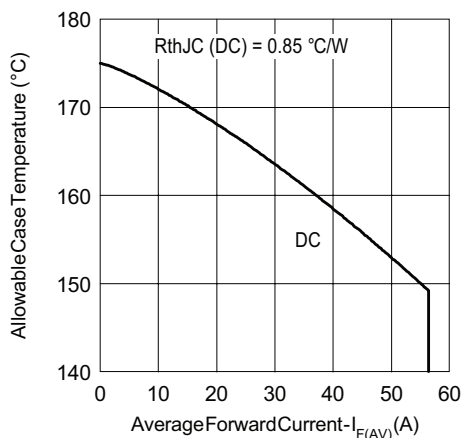


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

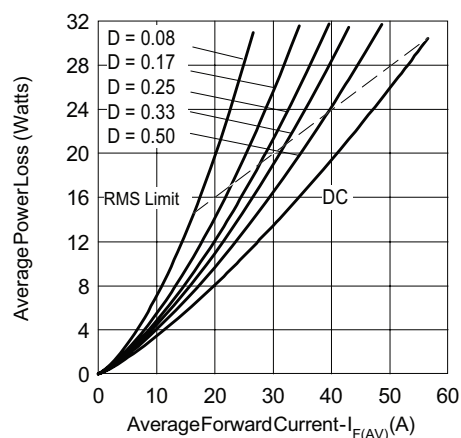


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

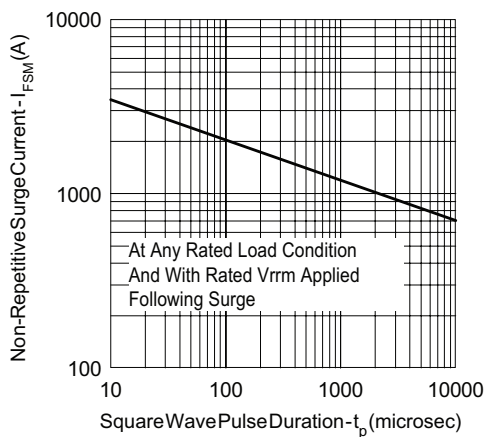


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

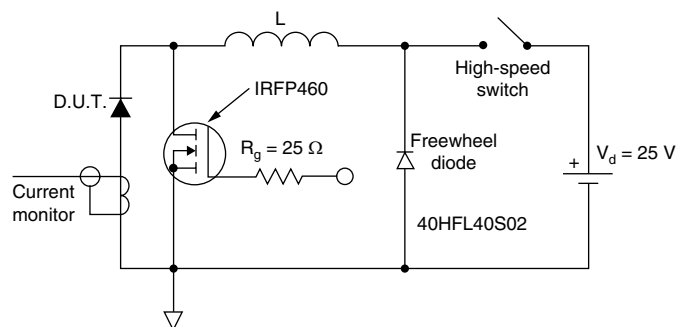


Fig. 8 - Unclamped Inductive Test Circuit



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

Vishay High Power Products

## ORDERING INFORMATION TABLE

Device code	81	C	N	Q	045	A	PbF
	1	2	3	4	5	6	7
	1	-	Current rating (80 A)				
	2	-	Circuit configuration:				
			C = Common cathode				
	3	-	Package:				
			N = D-61				
	4	-	Schottky "Q" series				
	5	-	Voltage ratings				
	6	-	A = D-61-8 package style				
	7	-	• None = Standard production				
			• PbF = Lead (Pb)-free				

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

Standard pack quantity: A = 10 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95019">http://www.vishay.com/doc?95019</a>
Part marking information	<a href="http://www.vishay.com/doc?95030">http://www.vishay.com/doc?95030</a>



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