



## 80SQ... Series

Vishay High Power Products

### Schottky Rectifier, 8 A



#### FEATURES

- 175 °C  $T_J$  operation
- 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
- Lead (Pb)-free plating
- Designed and qualified for industrial level



RoHS  
COMPLIANT

#### PRODUCT SUMMARY

$I_{F(AV)}$	8 A
$V_R$	30/35/40/45 V

#### DESCRIPTION

The 80SQ axial leaded Schottky rectifier 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.

#### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	8	A
$V_{RRM}$	Range	30 to 45	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	2400	A
$V_F$	8 Apk, $T_J = 125^\circ C$	0.44	V
$T_J$	Range	- 55 to 175	$^\circ C$

#### VOLTAGE RATINGS

PARAMETER	SYMBOL	80SQ030	80SQ035	80SQ040	80SQ045	UNITS
Maximum DC reverse voltage	$V_R$	30	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 $T_C = 119^\circ C$ , rectangular waveform	8	A
Maximum peak one cycle non-repetitive surge current See fig. 7	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	2400	
		10 ms sine or 6 ms rect. pulse	380	
Non-repetitive avalanche energy	$E_{AS}$	$T_J = 25^\circ C$ , $I_{AS} = 1.6 A$ , $L = 7.8 mH$	10	mJ
Repetitive avalanche current	$I_{AR}$	Current decaying linearly to zero in 1 $\mu s$ Frequency limited by, $T_J$ maximum $V_A = 1.5 \times V_R$ typical	1.6	A

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V <sub>FM</sub> <sup>(1)</sup>	8 A	T <sub>J</sub> = 25 °C	0.53	V
		16 A		0.60	
		8 A	T <sub>J</sub> = 125 °C	0.44	
		16 A		0.55	
Maximum reverse leakage current See fig. 2	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>R</sub>	2	mA
		T <sub>J</sub> = 125 °C		15	
Maximum junction capacitance	C <sub>T</sub>	V <sub>R</sub> = 5 V <sub>DC</sub> , (test signal range 100 kHz to 1 MHz) 25 °C		900	pF
Typical series inductance	L <sub>S</sub>	Measured lead to lead 5 mm from package body		10.0	nH
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub>		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 175	°C
Maximum thermal resistance, junction to lead	$R_{thJL}$	DC operation; see fig. 4 1/8" lead length	8.0	°C/W
Typical thermal resistance, junction to air	$R_{thJA}$		44	
Approximate weight			1.4	g
			0.049	oz.
Marking device		Case style DO-204AR (JEDEC)	80SQ030	
			80SQ035	
			80SQ040	
			80SQ045	

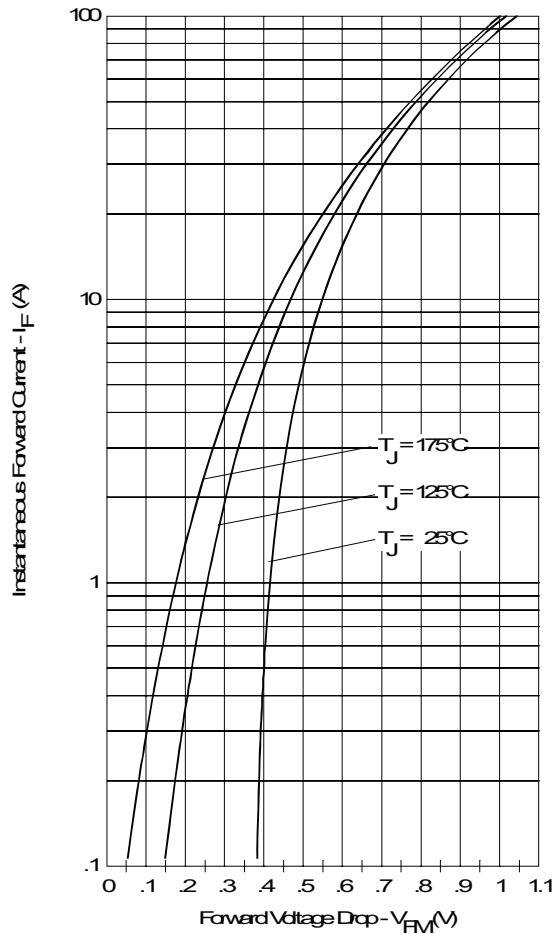


Fig. 1 - Maximum Forward Voltage Drop Characteristics

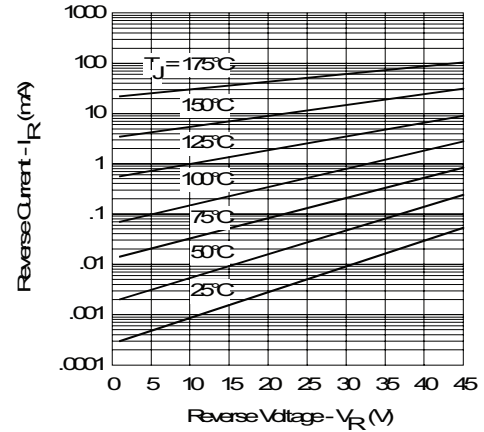


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

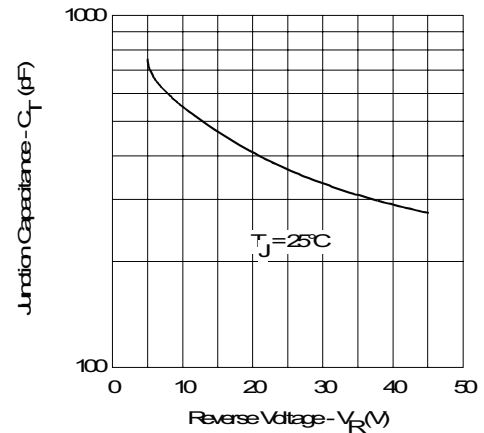
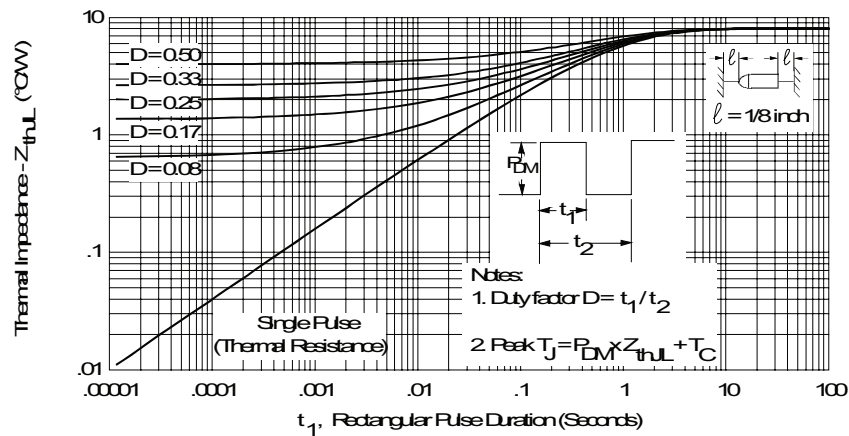


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

Fig. 4 - Maximum Thermal Impedance  $Z_{thJL}$  Characteristics

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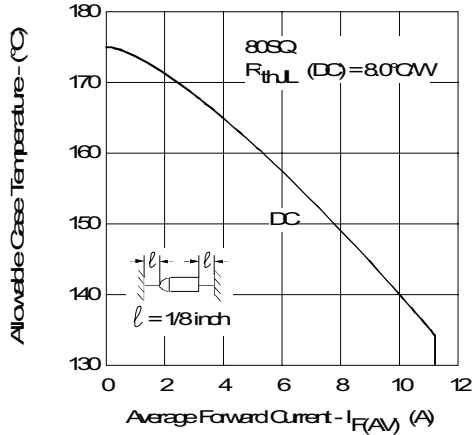


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

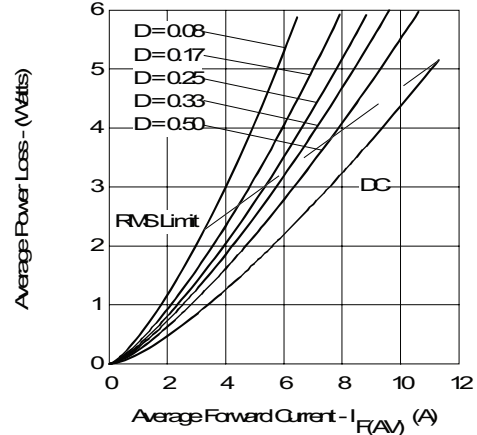


Fig. 6 - Forward Power Loss Characteristics

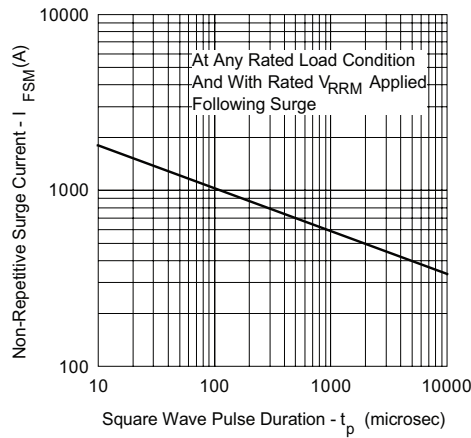


Fig. 7 - Maximum Non-Repetitive Surge Current

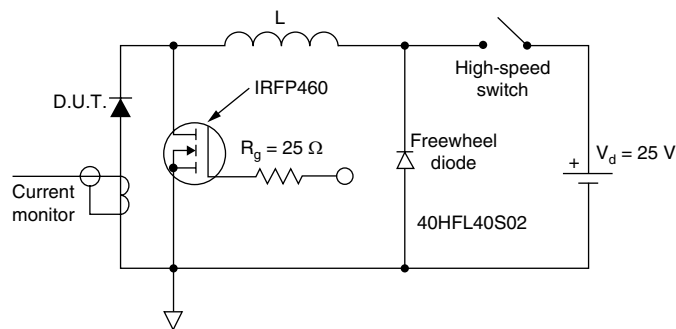


Fig. 8 - Unclamped Inductive Test Circuit



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### ORDERING INFORMATION TABLE

Device code	80	S	Q	045	TR
	1	2	3	4	5
1	- 80 = Current x 10				
2	- S = DO-204AR				
3	- Q = Schottky Q.. series				
4	- Voltage rating				
5	- • TR = Tape and reel package (1500 pcs) • None = Box package (300 pcs)				

030 = 30 V
035 = 35 V
040 = 40 V
045 = 45 V

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95243">http://www.vishay.com/doc?95243</a>
Part marking information	<a href="http://www.vishay.com/doc?95325">http://www.vishay.com/doc?95325</a>
Packaging information	<a href="http://www.vishay.com/doc?95332">http://www.vishay.com/doc?95332</a>



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