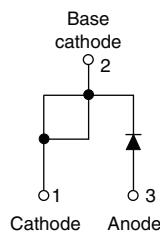


## Schottky Rectifier, 8 A


 D<sup>2</sup>PAK


### FEATURES

- 175 °C T<sub>J</sub> 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
- Designed and qualified for industrial level

### DESCRIPTION

The 8TQ 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.

#### PRODUCT SUMMARY

I <sub>F(AV)</sub>	8 A
V <sub>R</sub>	80/100 V

#### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I <sub>F(AV)</sub>	Rectangular waveform	8	A
V <sub>RRM</sub>	Range	80/100	V
I <sub>FSM</sub>	t <sub>p</sub> = 5 µs sine	850	A
V <sub>F</sub>	8 Apk, T <sub>J</sub> = 125 °C	0.58	V
T <sub>J</sub>	Range	- 55 to 175	°C

#### VOLTAGE RATINGS

PARAMETER	SYMBOL	8TQ080GS	8TQ100GS	UNITS
Maximum DC reverse voltage	V <sub>R</sub>	80	100	V
Maximum working peak reverse voltage	V <sub>RWM</sub>			

#### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current See fig. 5	I <sub>F(AV)</sub>	50 % duty cycle at T <sub>C</sub> = 157 °C, rectangular waveform		8	A	
Maximum peak one cycle non-repetitive surge current See fig. 7	I <sub>FSM</sub>	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V <sub>RRM</sub> applied	850	A	
		10 ms sine or 6 ms rect. pulse		230		
Non-repetitive avalanche energy	E <sub>AS</sub>	T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 0.5 A, L = 60 mH		7.50	mJ	
Repetitive avalanche current	I <sub>AR</sub>	Current decaying linearly to zero in 1 µs Frequency limited by T <sub>J</sub> maximum V <sub>A</sub> = 1.5 x V <sub>R</sub> typical		0.5	A	

**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	0.72	V	
		16 A		0.88		
		8 A	T <sub>J</sub> = 125 °C	0.58		
		16 A		0.69		
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>	0.28	mA	
		T <sub>J</sub> = 125 °C		7		
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		500	pF	
Typical series inductance	L <sub>S</sub>	Measured lead to lead 5 mm from package body		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub>		10 000	V/μs	

**Note**

(1) Pulse width &lt; 300 μs, duty cycle &lt; 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	R <sub>thJC</sub>	DC operation See fig. 4	2	°C/W	
Typical thermal resistance, case to heatsink	R <sub>thCS</sub>	Mounting surface, smooth and greased	0.50		
Approximate weight			2	g	
			0.07	oz.	
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)	
	maximum		12 (10)		
Marking device		Case style D <sup>2</sup> PAK	8TQ080GS		
			8TQ100GS		

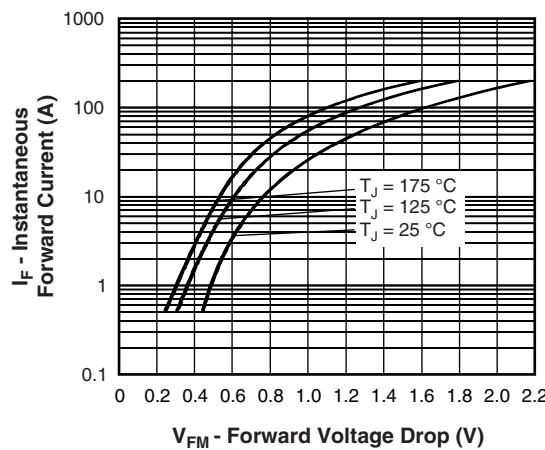


Fig. 1 - Maximum Forward Voltage Drop Characteristics

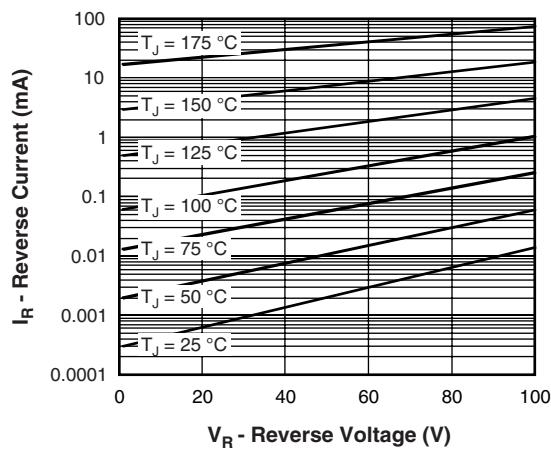


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

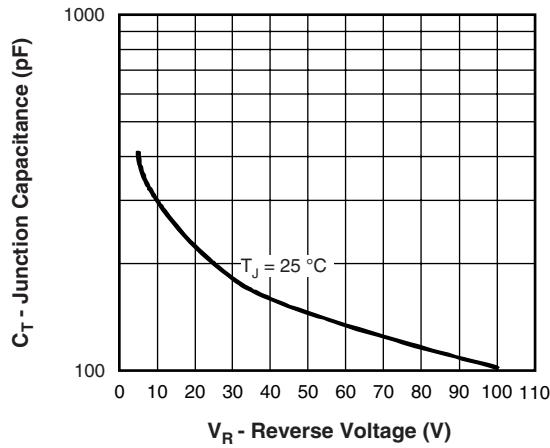
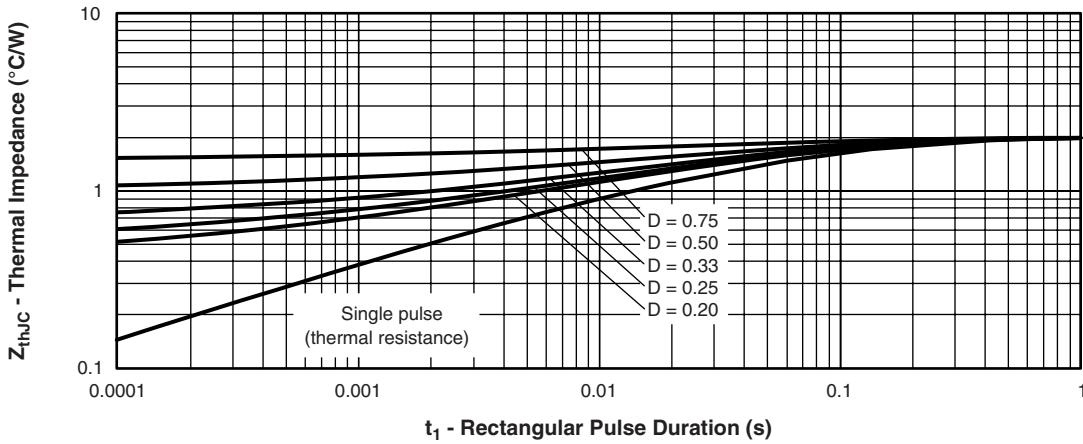


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


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

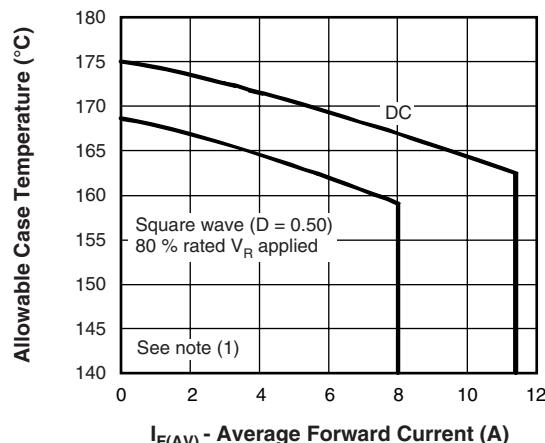


Fig. 5 - Maximum Allowable Case Temperature vs.  
Average Forward Current

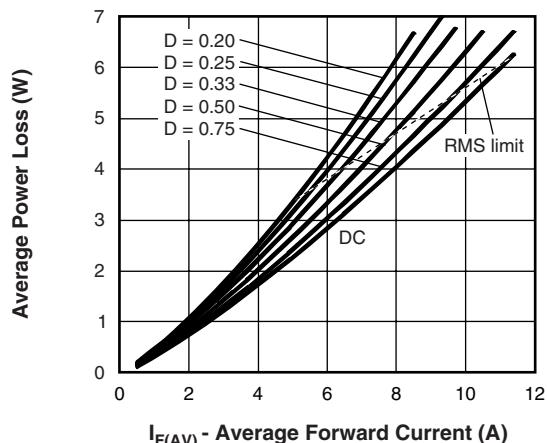


Fig. 6 - Forward Power Loss Characteristics

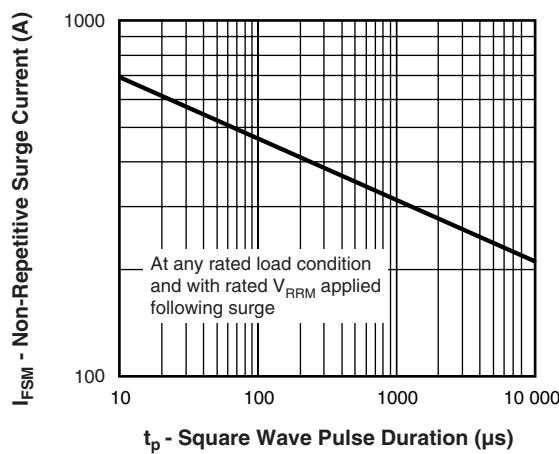


Fig. 7 - Maximum Non-Repetitive Surge Current

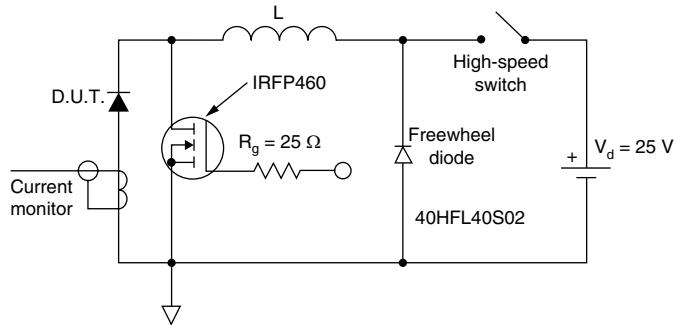


Fig. 8 - Unclamped Inductive Test Circuit

#### Note

(1) Formula used:  $T_C = T_J - (P_d + P_{d,REV}) \times R_{thJC}$   
 $P_d = \text{Forward power loss} = I_{F(AV)} \times V_{FM}$  at  $(I_{F(AV)}/D)$  (see fig. 6);  
 $P_{d,REV} = \text{Inverse power loss} = V_{R1} \times I_R (1 - D)$ ;  $I_R$  at  $V_{R1} = 80\%$  rated  $V_R$

**ORDERING INFORMATION TABLE**

Device code	8	T	Q	100	G	S	TRL	-
	1	2	3	4	5	6	7	8
<b>1</b>	-	Current rating (8 = 8 A)						
<b>2</b>	-	T = TO-220						
<b>3</b>	-	O = Schottky "Q" series						
<b>4</b>	-	Voltage ratings	080 = 80 V					
			100 = 100 V					
<b>5</b>	-	G = Schottky generation						
<b>6</b>	-	S = D <sup>2</sup> PAK						
<b>7</b>	-	<ul style="list-style-type: none"> <li>• None = Tube (50 pieces)</li> <li>• TRL = Tape and reel (left oriented)</li> <li>• TRR = Tape and reel (right oriented)</li> </ul>						
<b>8</b>	-	<ul style="list-style-type: none"> <li>• None = Standard production</li> <li>• PbF = Lead (Pb)-free</li> </ul>						

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95046">http://www.vishay.com/doc?95046</a>
Part marking information	<a href="http://www.vishay.com/doc?95058">http://www.vishay.com/doc?95058</a>
Packaging information	<a href="http://www.vishay.com/doc?95032">http://www.vishay.com/doc?95032</a>
SPICE model	<a href="http://www.vishay.com/doc?95291">http://www.vishay.com/doc?95291</a>

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