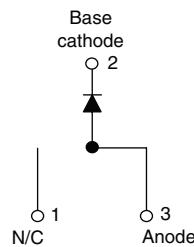


Schottky Rectifier, 8 A


D²PAK


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
- Designed and qualified for Q101 level

DESCRIPTION

The 8TQ...S 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 _{F(AV)}	8 A
V _R	80/100 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	8	A
V _{RRM}	Range	80/100	V
I _{FSM}	t _p = 5 µs sine	850	A
V _F	8 Apk, T _J = 125 °C	0.58	V
T _J	Range	- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	8TQ080S	8TQ100S	UNITS
Maximum DC reverse voltage	V _R	80	100	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 = 157 °C, rectangular waveform	8	A
Maximum peak one cycle non-repetitive surge current See fig. 7	I _{FSM}	5 µs sine or 3 µs rect. pulse	850	A
		10 ms sine or 6 ms rect. pulse	230	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 0.50 A, L = 60 mH	7.50	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T _J maximum V _A = 1.5 x V _R typical	0.50	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	8 A	$T_J = 25 \text{ }^\circ\text{C}$	0.72	V	
		16 A		0.88		
		8 A	$T_J = 125 \text{ }^\circ\text{C}$	0.58		
		16 A		0.69		
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25 \text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.55	mA	
		$T_J = 125 \text{ }^\circ\text{C}$		7		
Maximum junction capacitance	C_T	$V_R = 5 \text{ V}_{\text{DC}}$ (test signal range 100 kHz to 1 MHz) $25 \text{ }^\circ\text{C}$		500	pF	
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		8	nH	
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μ s	

Note(1) Pulse width < 300 μ 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	$^\circ\text{C}$	
Maximum thermal resistance, junction to case	R_{thJC}	DC operation See fig. 4		2.0	$^\circ\text{C}/\text{W}$	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased		0.50		
Approximate weight				2	g	
				0.07	oz.	
Mounting torque	minimum			6 (5)	$\text{k}\text{gf} \cdot \text{cm}$ (lbf · in)	
	maximum			12 (10)		
Marking device		Case style D ² PAK		8TQ080S		
				8TQ100S		

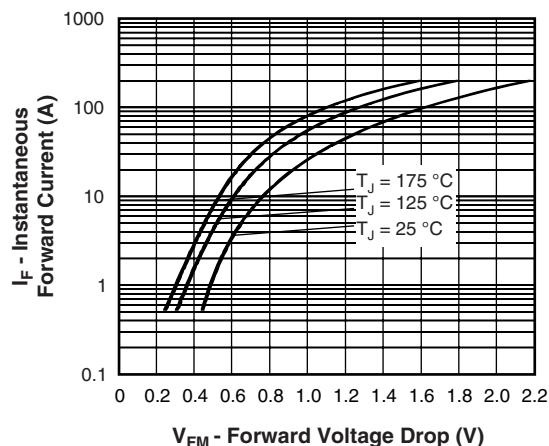


Fig. 1 - Maximum Forward Voltage Drop Characteristics

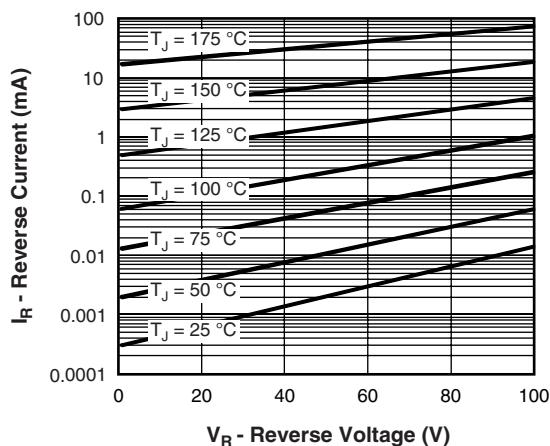


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

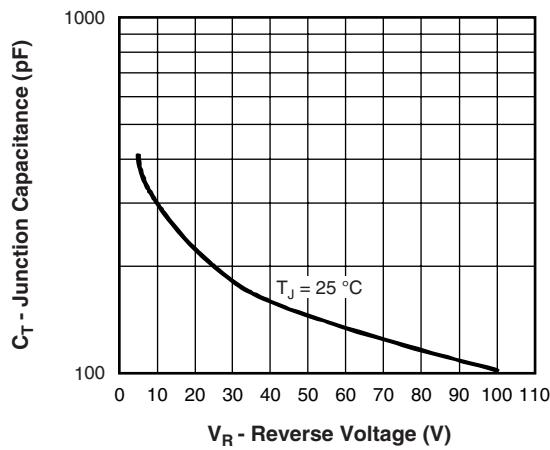


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

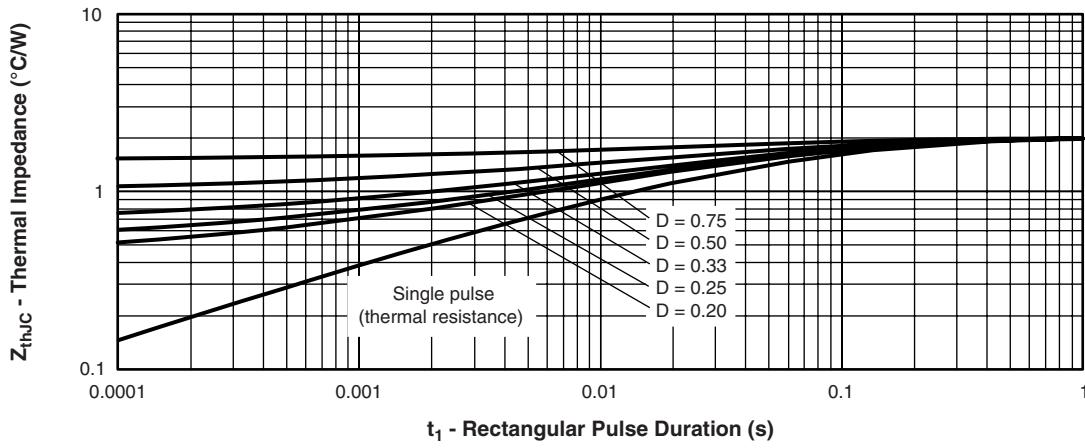


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

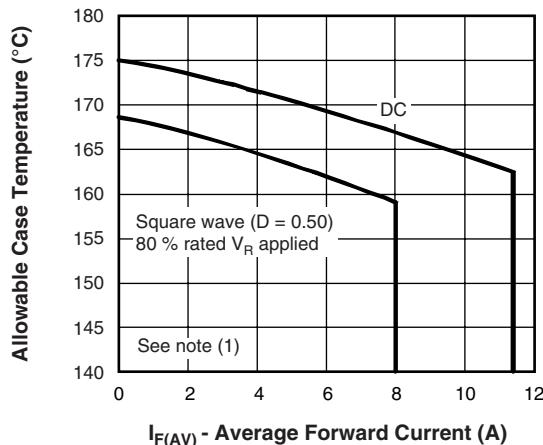


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

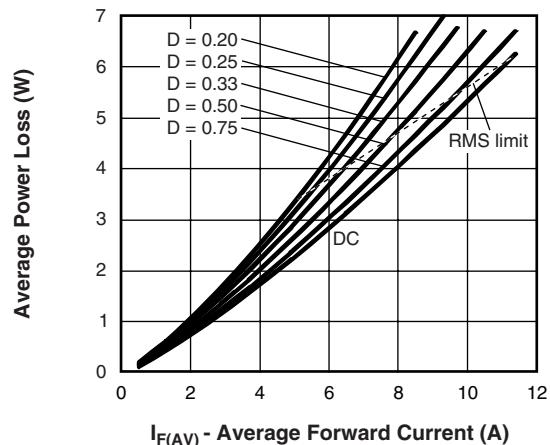


Fig. 6 - Forward Power Loss Characteristics

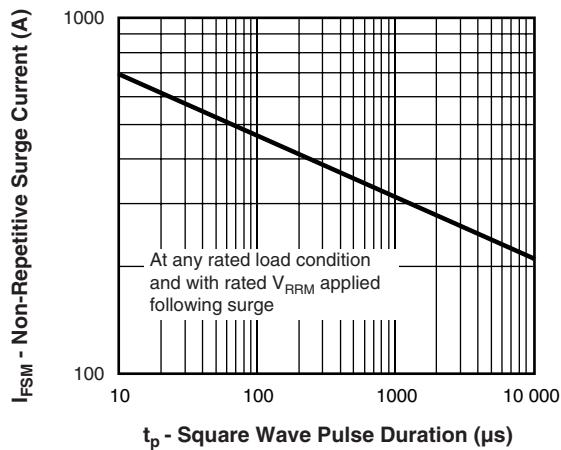


Fig. 7 - Maximum Non-Repetitive Surge Current

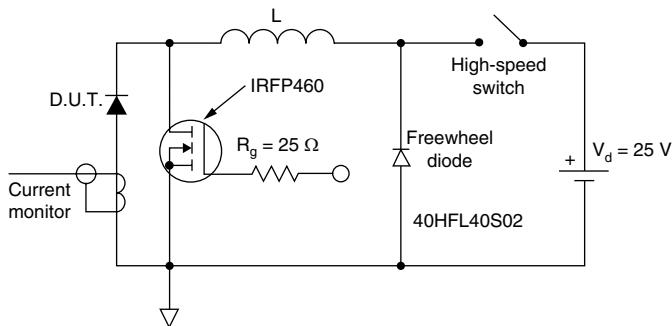


Fig. 8 - Unclamped Inductive Test Circuit

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	S	TRL	-
	1	2	3	4	5	6	7

- 1** - Current rating (8 A)
- 2** - Package:
T = TO-220
- 3** - Schottky "Q" series
- 4** - Voltage ratings
 - 080 = 80 V
 - 100 = 100 V
- 5** - S = D²PAK
- 6** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented)
 - TRR = Tape and reel (right oriented)
- 7** -
 - None = Standard production
 - PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95046
Part marking information	http://www.vishay.com/doc?95054
Packaging information	http://www.vishay.com/doc?95032
SPICE models	http://www.vishay.com/doc?95291

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