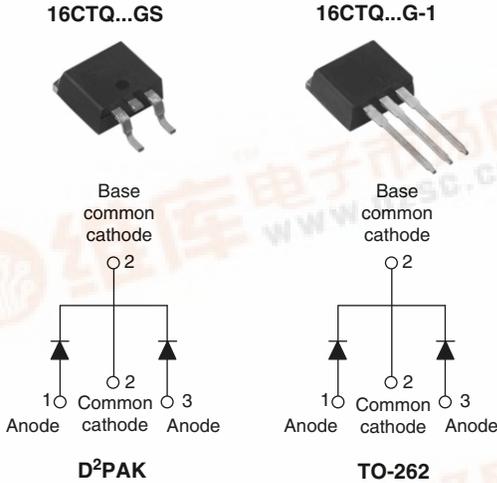




16CTQ...GS/16CTQ...G-1

Vishay High Power Products

Schottky Rectifier, 2 x 8 A



FEATURES

- 175 °C T_J operation
- Center tap configuration
- 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

This center tap 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)}	2 x 8 A
V _R	60/100 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	16	A
V _{RRM}		60/100	V
I _{FSM}	t _p = 5 μs sine	650	A
V _F	8 Apk, T _J = 125 °C (per leg)	0.58	V
T _J	Range	- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	16CTQ060GS 16CTQ060G-1	16CTQ080GS 16CTQ080G-1	16CTQ100GS 16CTQ100G-1	UNITS
Maximum DC reverse voltage	V _R	60	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 = 148 °C, rectangular waveform	per leg	8
			per device	16
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	650
		10 ms sine or 6 ms rect. pulse		
Non-repetitive avalanche energy per leg	E _{AS}	T _J = 25 °C, I _{AS} = 0.50 A, L = 60 mH	7.50	mJ
Repetitive avalanche current per leg	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



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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg 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 per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.28	mA
		$T_J = 125\text{ }^\circ\text{C}$		7.0	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.415	V
Forward slope resistance	r_t			11.07	m Ω
Maximum junction capacitance per leg	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$		500	pF
Typical series inductance per leg	L_S	Measured lead to lead 5 mm from package body		8.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μs

Note

(1) Pulse width < 300 μs , 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 per leg	R_{thJC}	DC operation See fig. 4		3.25	$^\circ\text{C/W}$
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)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device		Case style D ² PAK	16CTQ060GS		
			16CTQ080GS		
			16CTQ100GS		
		Case style TO-262	16CTQ060G-1		
			16CTQ080G-1		
			16CTQ100G-1		



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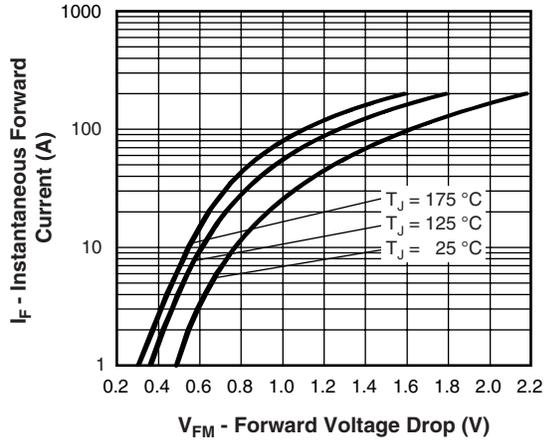


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

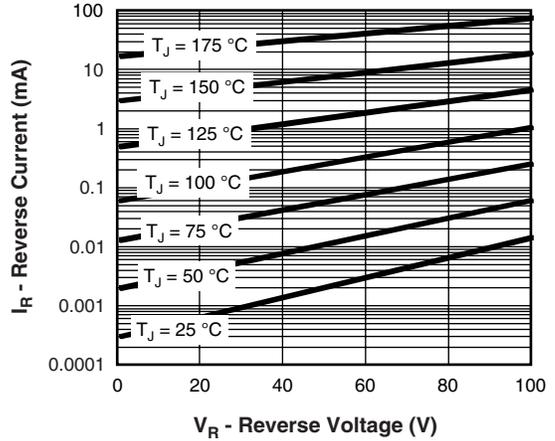


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

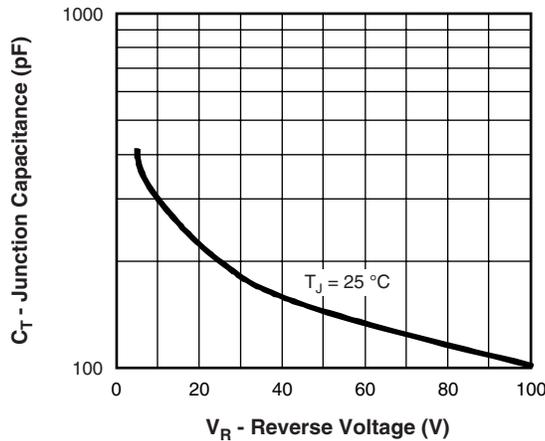


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

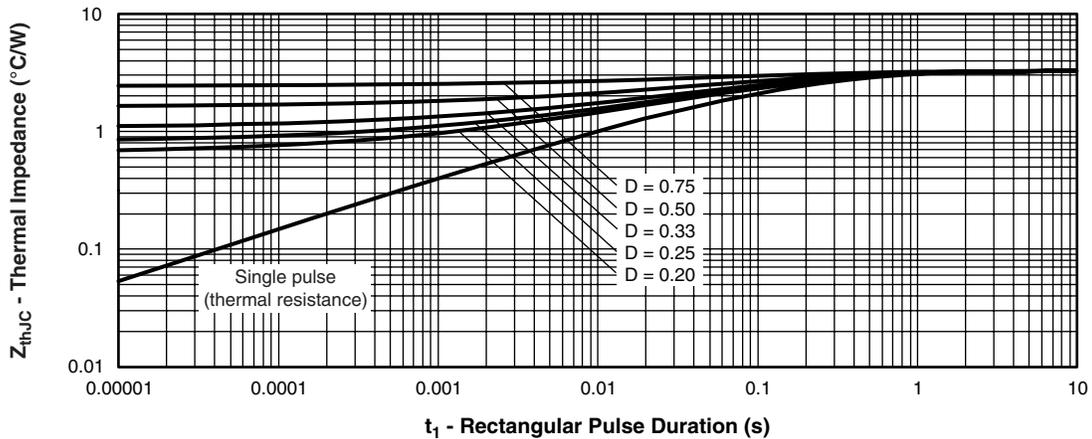


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

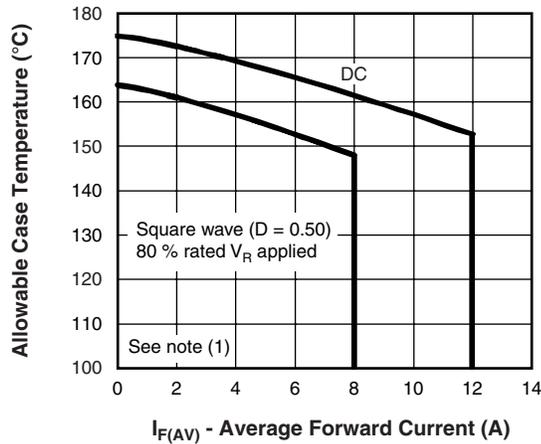


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

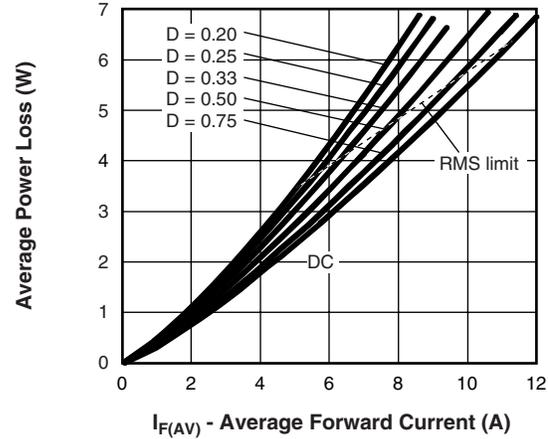


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

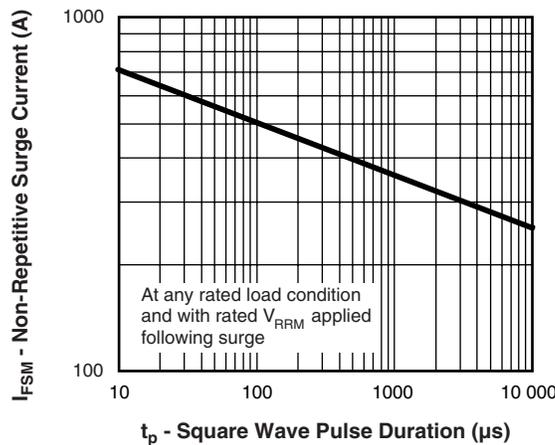


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

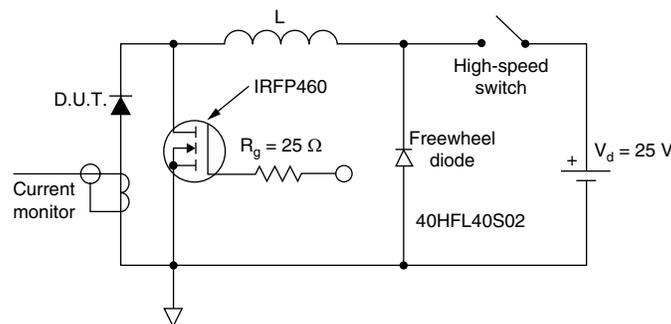


Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
- P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
- $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 10V$



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ORDERING INFORMATION TABLE

Device code	16	C	T	Q	100	G	S	TRL	-
	①	②	③	④	⑤	⑥	⑦	⑧	⑨
	1	-	Current rating (16 = 16 A)						
	2	-	C = Common cathode						
	3	-	T = TO-220, TO-262, D ² PAK						
	4	-	Q = Schottky "Q" series						
	5	-	Voltage ratings						
	6	-	G = Schottky generation						
	7	-	<ul style="list-style-type: none"> • None = TO-220 • -1 = TO-262 • S = D²PAK 						
	8	-	<ul style="list-style-type: none"> • None = Tube (50 pieces) • TRL = Tape and reel (left oriented - for D²PAK only) • TRR = Tape and reel (right oriented - for D²PAK only) 						
	9	-	<ul style="list-style-type: none"> • None = Standard production • PbF = Lead (Pb)-free (for D²PAK tube and TO-262) • P = Lead (Pb)-free (for D²PAK TRL and TRR) 						

060 = 60 V
080 = 80 V
100 = 100 V

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95014
Part marking information	http://www.vishay.com/doc?95008
Packaging information	http://www.vishay.com/doc?95032
SPIICE model	http://www.vishay.com/doc?95279



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