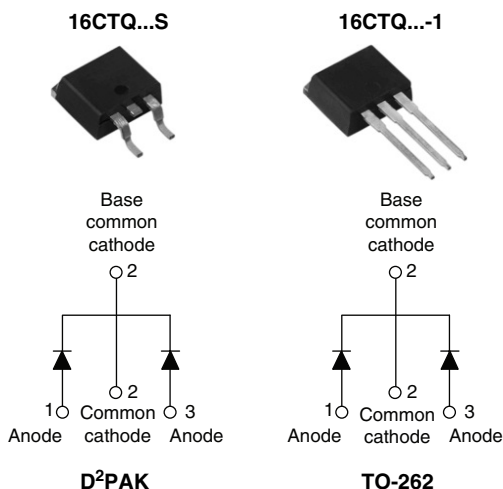


Schottky Rectifier, 2 x 8 A



FEATURES

- 175 °C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for Q101 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 to 100 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	16	A
V_{RRM}		60 to 100	V
I_{FSM}	$t_p = 5 \mu s$ sine	850	A
V_F	8 Apk, $T_J = 125^\circ C$ (per leg)	0.58	V
T_J	Range	- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	16CTQ060S 16CTQ060-1	16CTQ080S 16CTQ080-1	16CTQ100S 16CTQ100-1	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 per leg See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 148^\circ C$, rectangular waveform	8	A
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	850	A
		10 ms sine or 6 ms rect. pulse		
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 0.50$ 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 $V_A = 1.5 \times V_R$ typical	0.50	A

16CTQ...S/16CTQ...-1 Series

Vishay High Power Products Schottky Rectifier, 2 x 8 A



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
		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	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	0.55
		$T_J = 125\text{ }^{\circ}\text{C}$		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	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^{\circ}\text{C}$		500
Typical series inductance per leg	L_S	Measured lead to lead 5 mm from package body		8.0
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	°C
Maximum thermal resistance, junction to case per leg	R _{thJC}	DC operation	3.25	°C/W
Maximum thermal resistance, junction to case per package			1.63	
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	16CTQ060S	
			16CTQ080S	
			16CTQ100S	
		Case style TO-262	16CTQ060-1	
			16CTQ080-1	
			16CTQ100-1	

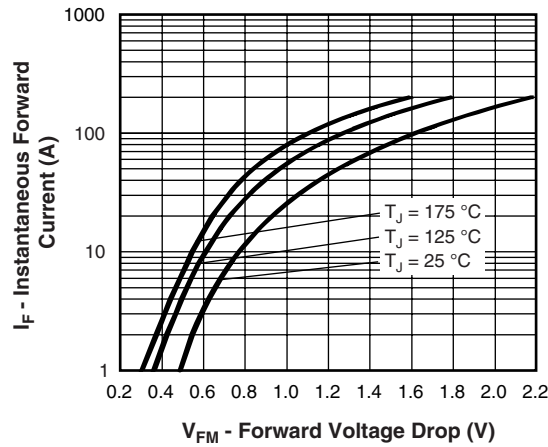


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

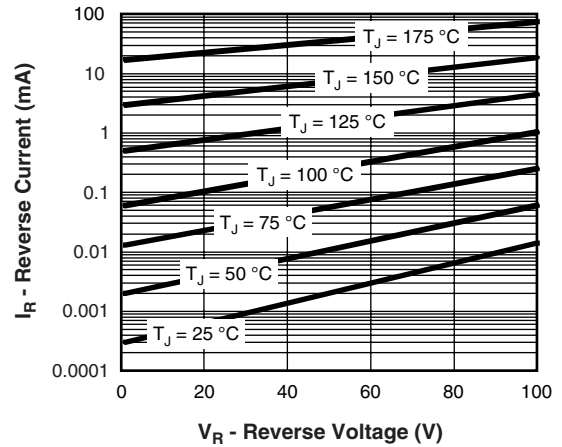


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

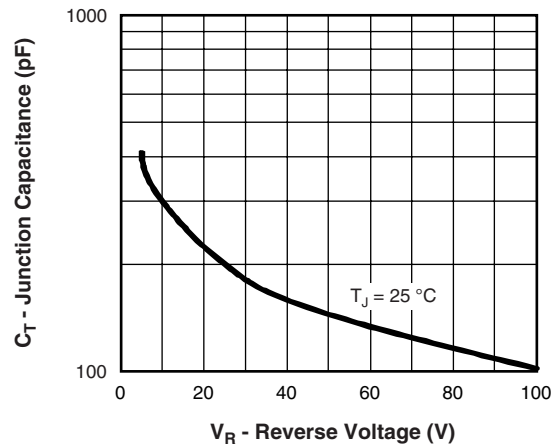


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

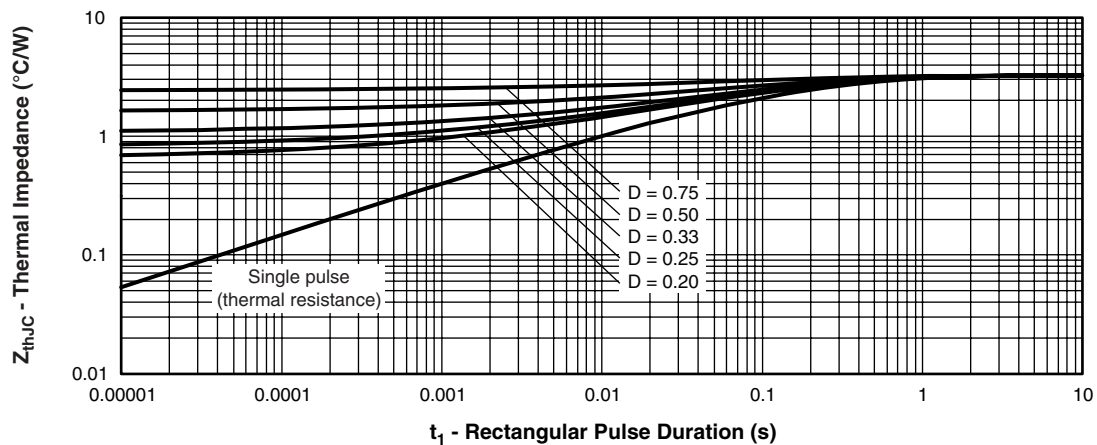


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

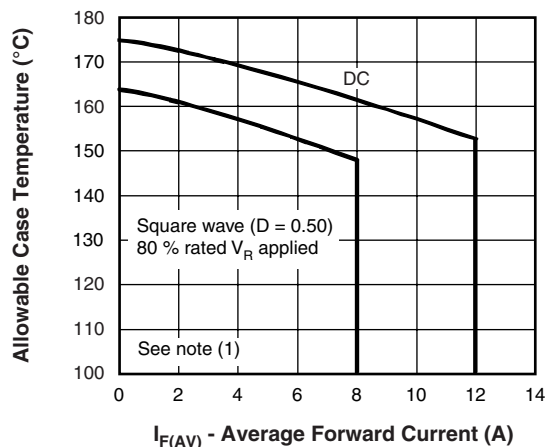


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

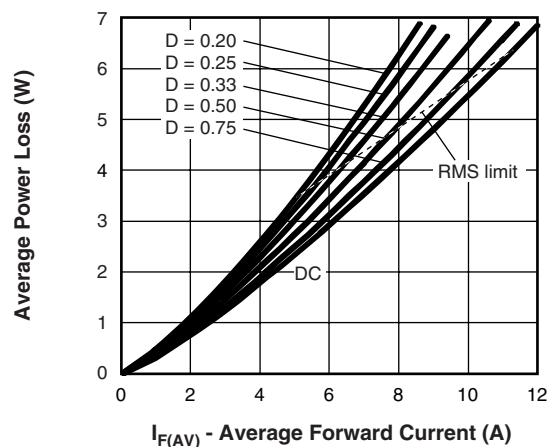


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

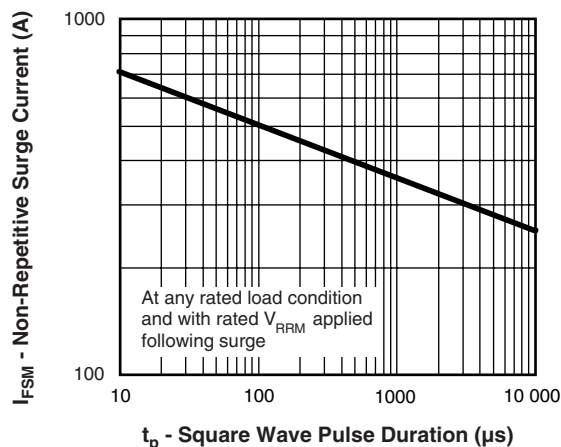


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

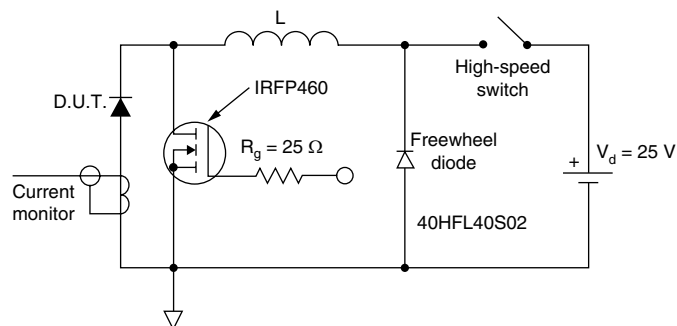


Fig. 8 - Unclamped Inductive Test Circuit

Note

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



16CTQ...S/16CTQ...-1 Series

Schottky Rectifier, 2 x 8 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	16	C	T	Q	100	S	TRL	-
	①	②	③	④	⑤	⑥	⑦	⑧

- | | | | |
|----------|---|--|---|
| 1 | - | Current rating (16 A) | |
| 2 | - | Circuit configuration | |
| | | C = Common cathode | |
| 3 | - | T = TO-220 | |
| 4 | - | Schottky "Q" series | |
| 5 | - | Voltage ratings | 060 = 60 V
080 = 80 V
100 = 100 V |
| 6 | - | • S = D ² PAK | |
| | | • -1 = TO-262 | |
| 7 | - | • None = Tube (50 pieces) | |
| | | • TRL = Tape and reel (left oriented - for D ² PAK only) | |
| | | • TRR = Tape and reel (right oriented - for D ² PAK only) | |
| 8 | - | • None = Standard production | |
| | | • PbF = Lead (Pb)-free | |

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
SPICE model	http://www.vishay.com/doc?95279



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