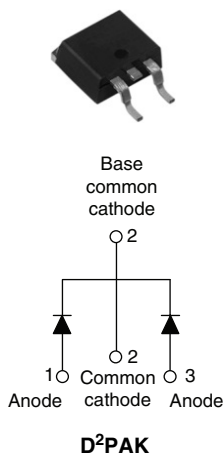
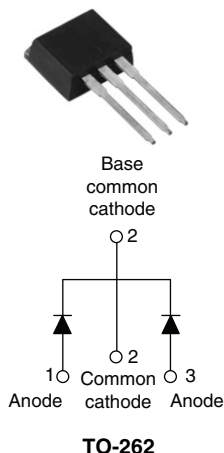


Schottky Rectifier, 2 x 8 A

16CTQ...SPbF



16CTQ...-1PbF



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
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for Q101 level



RoHS*
COMPLIANT

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 μs sine	850	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	16CTQ060SPbF 16CTQ060-1PbF	16CTQ080SPbF 16CTQ080-1PbF	16CTQ100SPbF 16CTQ100-1PbF	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	8	A
			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	275	
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

* Pb containing terminations are not RoHS compliant, exemptions may apply

16CTQ...SPbF/16CTQ...-1PbF 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	$T_J = 25\text{ }^{\circ}\text{C}$	0.88
		8 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.58
		16 A	$T_J = 125\text{ }^{\circ}\text{C}$	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
		$T_J = 125\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	7.0
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.415
Forward slope resistance	r_t			11.07
Maximum junction capacitance per leg	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$		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	$^{\circ}\text{C}$
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation	3.25	$^{\circ}\text{C/W}$
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
	maximum		12 (10)	(lbf · in)
Marking device		Case style D ² PAK	16CTQ...S	
		Case style TO-262	16CTQ...-1	



16CTQ...SPbF/16CTQ...-1PbF Series

Schottky Rectifier, 2 x 8 A Vishay High Power Products

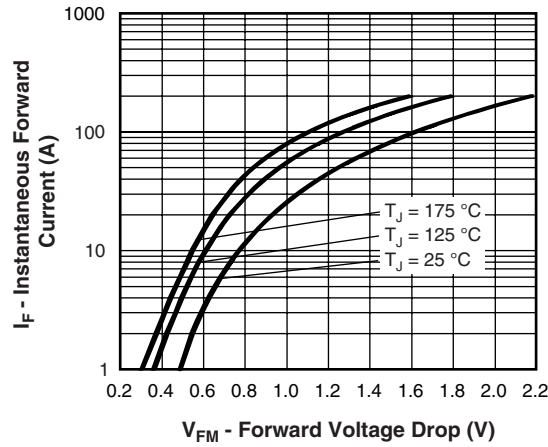


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

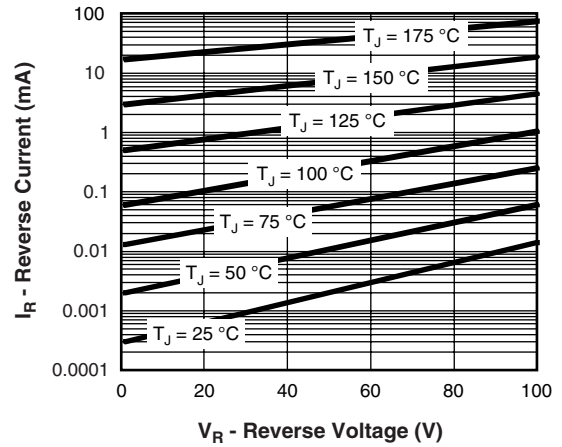


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

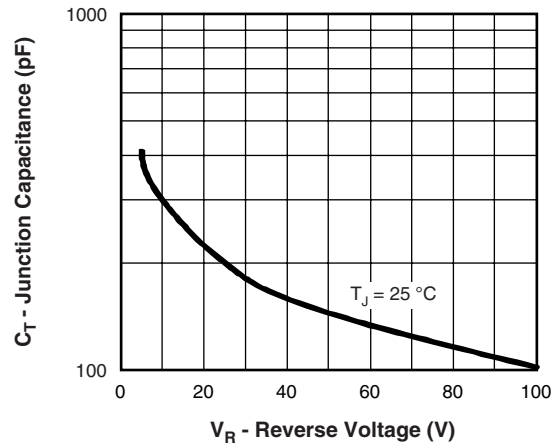


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

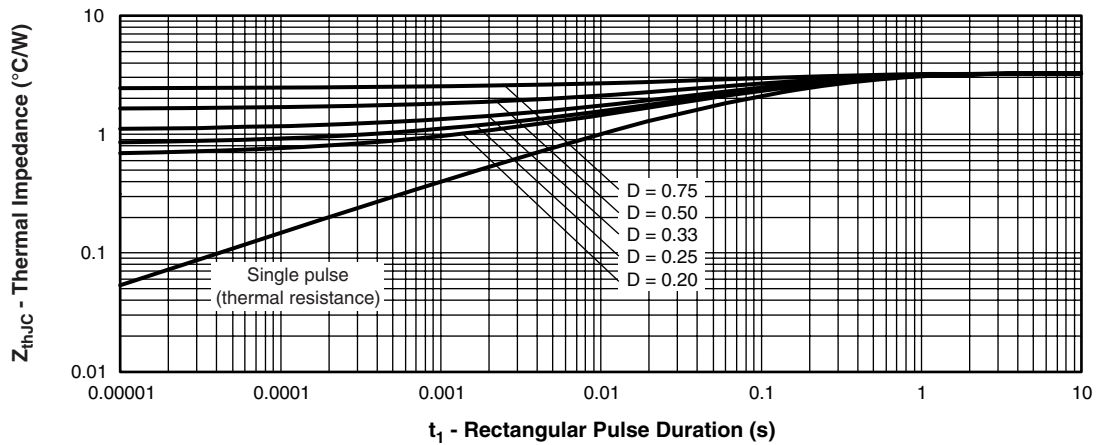


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

16CTQ...SPbF/16CTQ...-1PbF Series

Vishay High Power Products Schottky Rectifier, 2 x 8 A

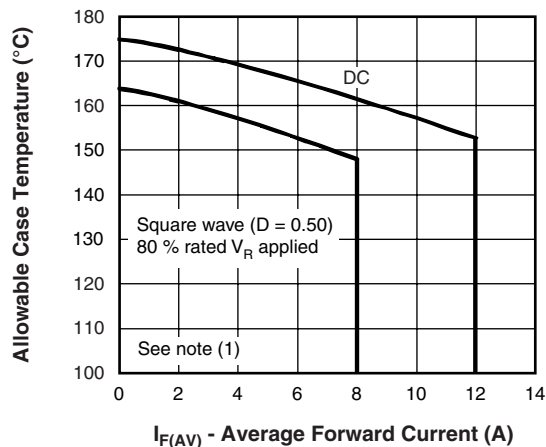


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

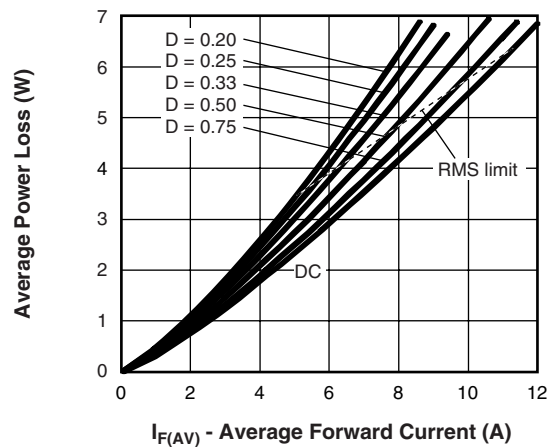


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

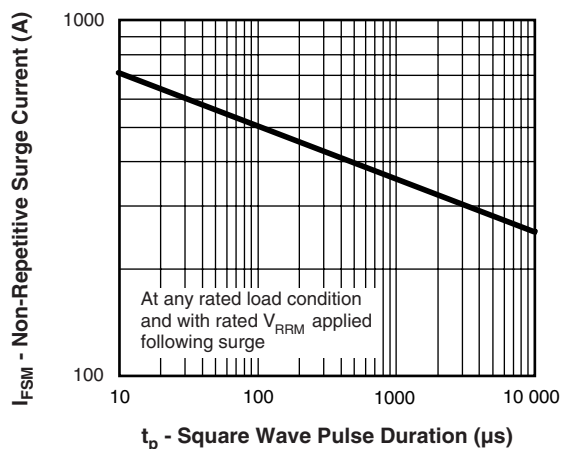


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

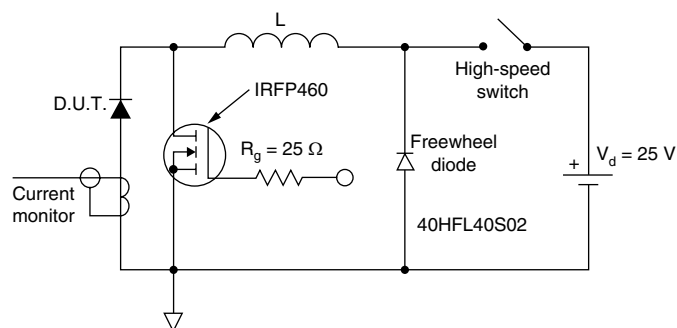


Fig. 8 - Unclamped Inductive Test Circuit

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...SPbF/16CTQ...-1PbF Series

Schottky Rectifier, 2 x 8 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	16	C	T	Q	100	S	TRL	PbF
	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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