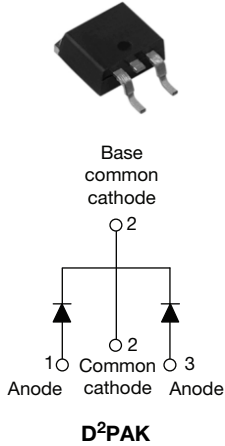
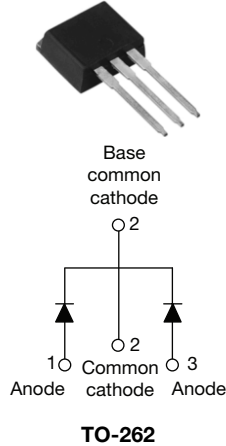


Schottky Rectifier, 2 x 8 A

VS-16CTQ...GSPbF



VS-16CTQ...G-1PbF



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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified



RoHS
COMPLIANT
HALOGEN
FREE

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 V/100 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	16	A
V _{R(RM)}		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	VS-16CTQ060GSPbF VS-16CTQ060G-1PbF	VS-16CTQ080GSPbF VS-16CTQ080G-1PbF	VS-16CTQ100GSPbF VS-16CTQ100G-1PbF	UNITS
Maximum DC reverse voltage	V _R	60	80	100	V
Maximum working peak reverse voltage	V _{R(WM)}				

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 °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	650	A
		10 ms sine or 6 ms rect. pulse	210	
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

VS-16CTQ...GSPbF, VS-16CTQ...G-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	$T_J = 25\text{ °C}$	0.72	V
		16 A		0.88	
		8 A	$T_J = 125\text{ °C}$	0.58	
		16 A		0.69	
Maximum reverse leakage current per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ °C}$	$V_R = \text{Rated } V_R$	0.28	mA
		$T_J = 125\text{ °C}$		7.0	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.415	V
Forward slope resistance	r_t			11.07	mΩ
Maximum junction capacitance per leg	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), 25 °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	°C
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation See fig. 4		3.25	°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	



VS-16CTQ...GSPbF, VS-16CTQ...G-1PbF Series

Schottky Rectifier,
2 x 8 A

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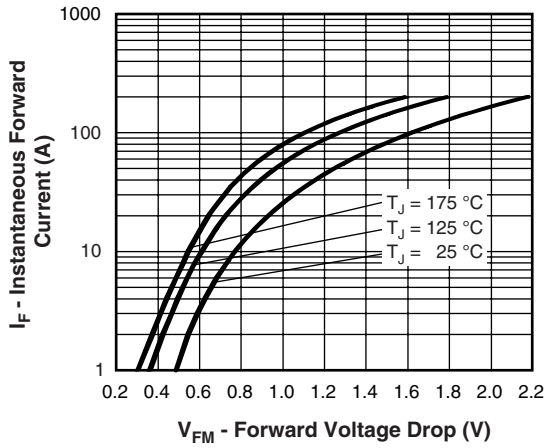


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

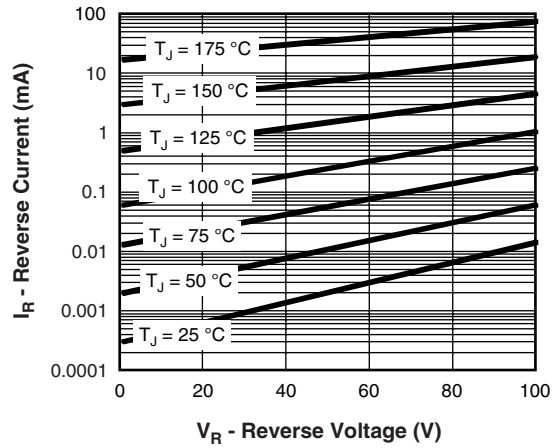


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

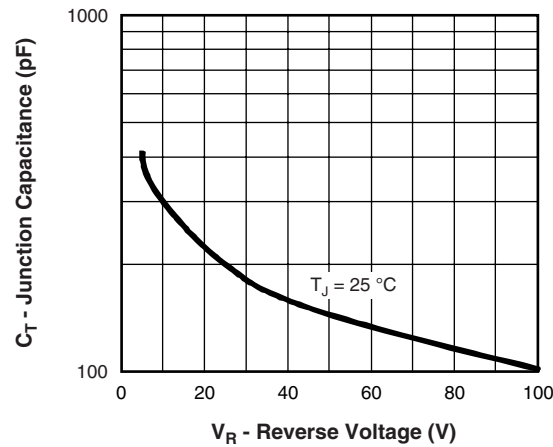


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

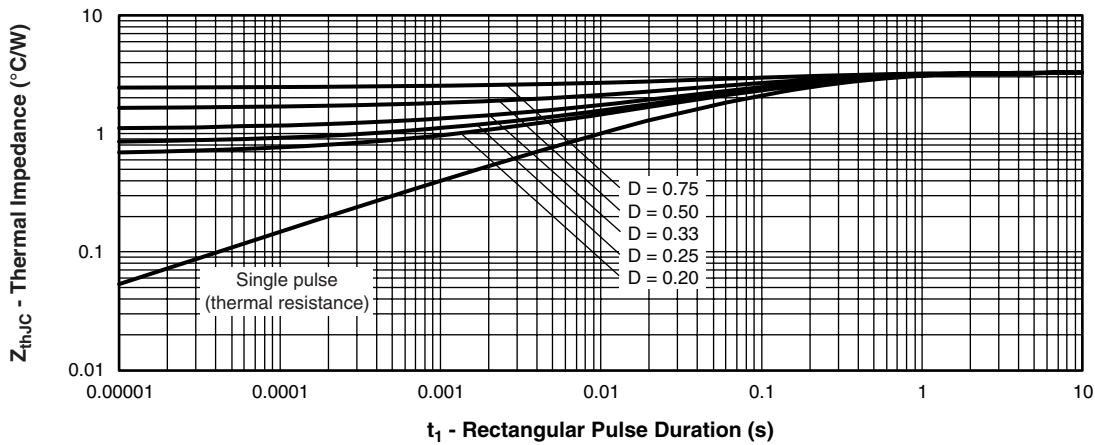


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-16CTQ...GSPbF, VS-16CTQ...G-1PbF Series



Vishay High Power Products

Schottky Rectifier,
2 x 8 A

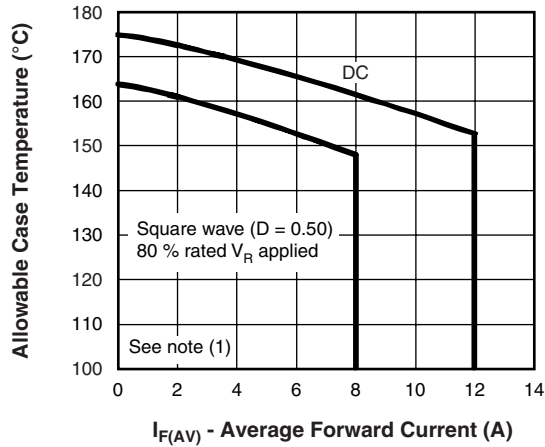


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

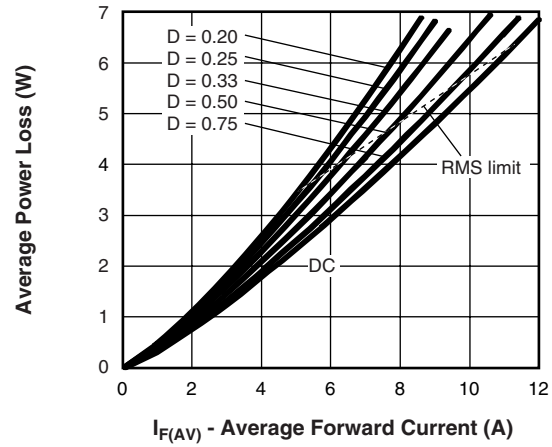


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

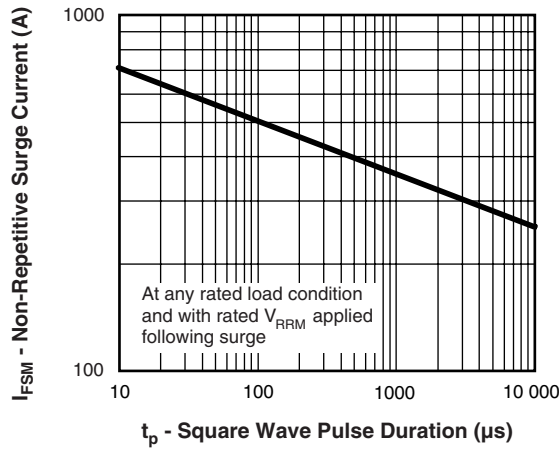


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

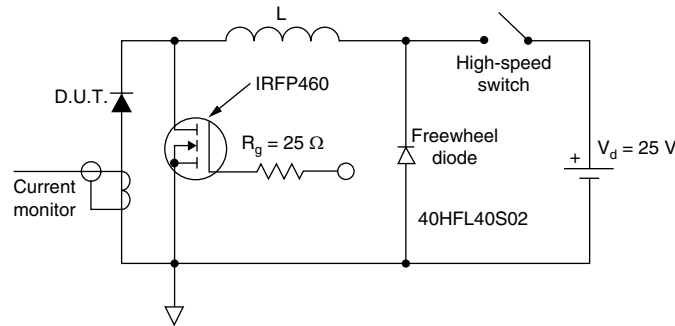


Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
- 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 $V_{R1} = 10 V$



VS-16CTQ...GSPbF, VS-16CTQ...G-1PbF Series

Schottky Rectifier,
2 x 8 A

Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	VS-	16	C	T	Q	100	G	S	TRL	PbF
	1	2	3	4	5	6	7	8	9	10

- | | | | |
|-----------|---|--|---|
| 1 | - | HPP product suffix | |
| 2 | - | Current rating (16 = 16 A) | |
| 3 | - | C = Common cathode | |
| 4 | - | T = TO-220, TO-262, D ² PAK | |
| 5 | - | Q = Schottky "Q" series | 060 = 60 V
080 = 80 V
100 = 100 V |
| 6 | - | Voltage ratings | |
| 7 | - | G = Schottky generation | |
| 8 | - | <ul style="list-style-type: none"> • None = TO-220 • -1 = TO-262 • S = D²PAK | |
| 9 | - | <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) | |
| 10 | - | <ul style="list-style-type: none"> • PbF = Lead (Pb)-free (for D²PAK tube and TO-262) • P = Lead (Pb)-free (for D²PAK TRL and TRR) | |

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



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