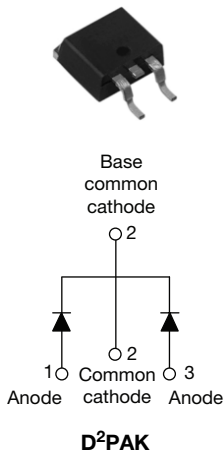
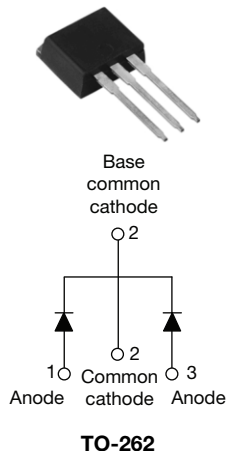


Schottky Rectifier, 2 x 8 A

VS-16CTQ...SPbF



VS-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
- 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 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	VS-16CTQ060SPbF VS-16CTQ060-1PbF	VS-16CTQ080SPbF VS-16CTQ080-1PbF	VS-16CTQ100SPbF VS-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 $T_C = 148^\circ C$, rectangular waveform	8 16	A
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse 10 ms sine or 6 ms rect. pulse	850 275	A
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

VS-16CTQ...SPbF, VS-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 °C	0.72	V	
		16 A		0.88		
		8 A	T _J = 125 °C	0.58		0.69
		16 A				
Maximum reverse leakage current per leg See fig. 2	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.55	mA	
		T _J = 125 °C		7.0		
Threshold voltage	V _{F(TO)}	T _J = T _J 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 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	°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	16CTQ...S	
		Case style TO-262	16CTQ...-1	



VS-16CTQ...SPbF, VS-16CTQ...-1PbF Series

Schottky Rectifier,
2 x 8 A

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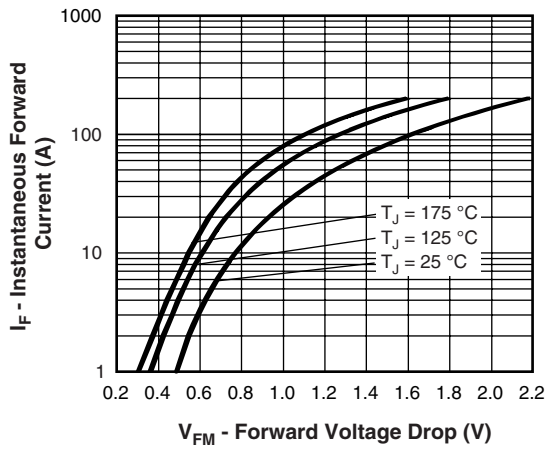


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

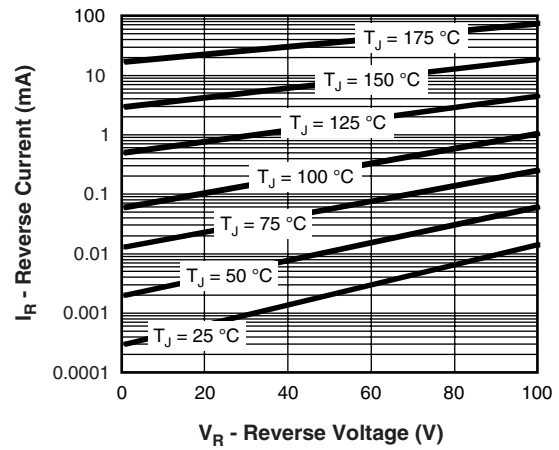


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

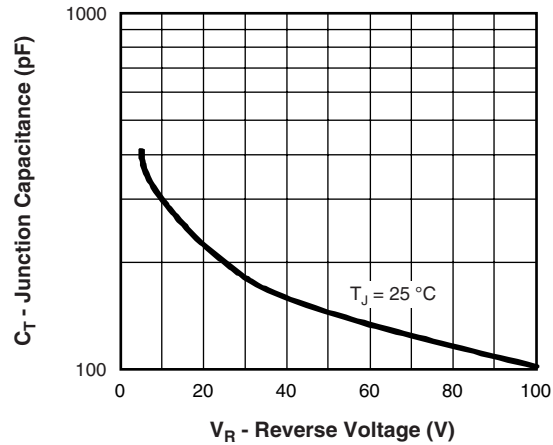


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

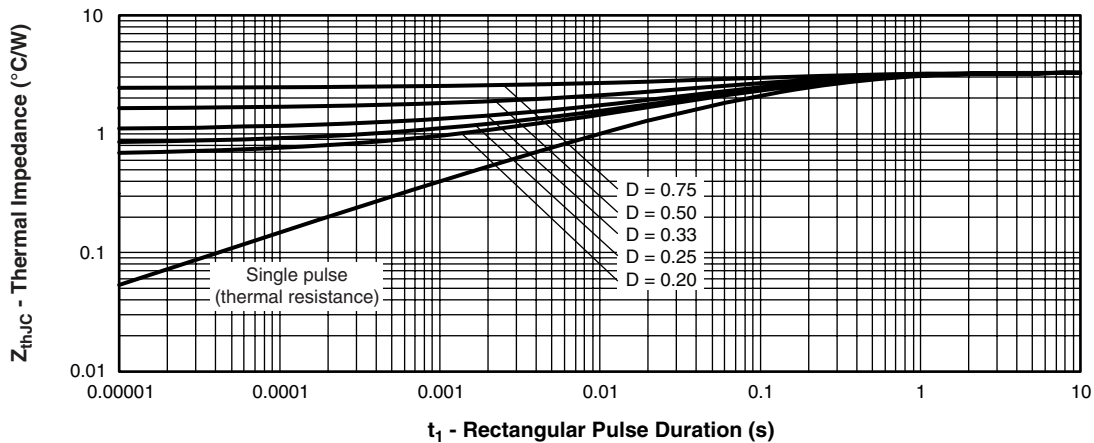


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-16CTQ...SPbF, VS-16CTQ...-1PbF Series

Vishay High Power Products

Schottky Rectifier,
2 x 8 A

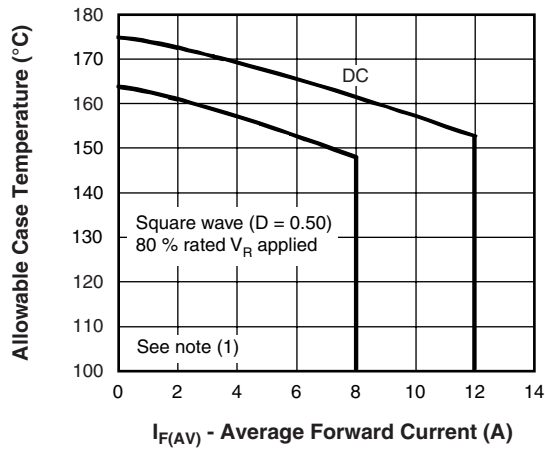


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

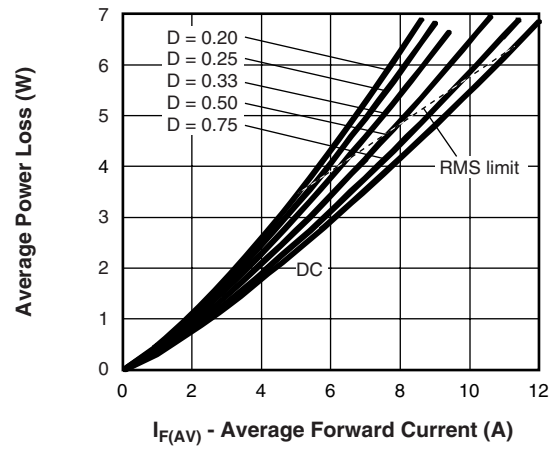


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

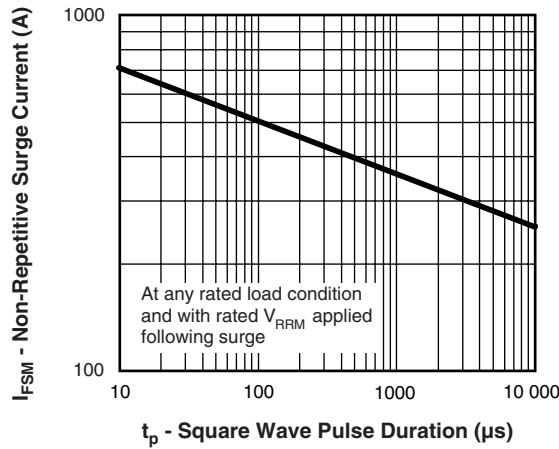


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

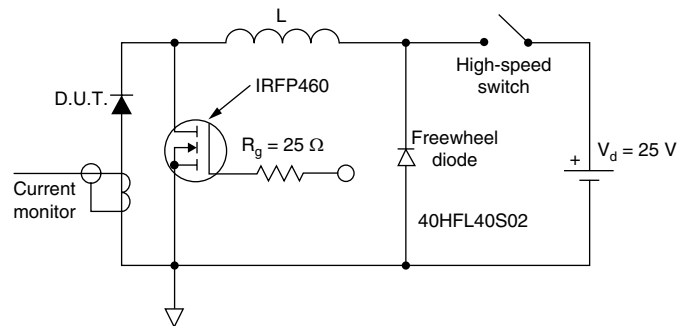


Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 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 $V_{R1} = 80\%$ rated V_R applied



VS-16CTQ...SPbF, VS-16CTQ...-1PbF Series

Schottky Rectifier,
2 x 8 A

Vishay High Power Products

ORDERING INFORMATION TABLE

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

- | | | | |
|----------|---|--|---|
| 1 | - | HPP product suffix | |
| 2 | - | Current rating (16 A) | |
| 3 | - | Circuit configuration: C = Common cathode | |
| 4 | - | T = TO-220 | |
| 5 | - | Schottky "Q" series | |
| 6 | - | Voltage ratings | 060 = 60 V
080 = 80 V
100 = 100 V |
| 7 | - | • S = D ² PAK
• -1 = TO-262 | |
| 8 | - | • 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) | |
| 9 | - | PbF = Lead (Pb)-free | |

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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