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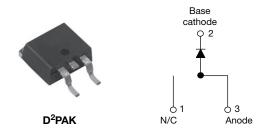
RoHS

COMPLIANT

HALOGEN

FREE

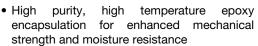
High Performance Schottky Rectifier, 8 A

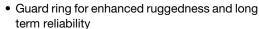


PRODUCT SUMMARY							
I _{F(AV)}	8 A						
V_{R}	80 V, 100 V						
V _F at I _F	0.58 V						
I _{RM}	7 mA at 125 °C						
T_J max.	175 °C						
E _{AS}	7.5 mJ						
Package	TO-263AB (D ² PAK)						
Diode variation	Single die						

FEATURES

- 175 °C T_J operation
- Low forward voltage drop
- · High frequency operation





- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>



The VS-8TQ... 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.

MAJOR RATINGS AND CHARACTERISTICS									
SYMBOL	CHARACTERISTICS	VALUES	UNITS						
I _{F(AV)}	Rectangular waveform	8	Α						
V _{RRM}	Range	80/100	V						
I _{FSM}	t _p = 5 μs sine	850	Α						
V _F	8 A _{pk} , T _J = 125 °C	0.58	V						
TJ	Range	- 55 to 175	°C						

VOLTAGE RATINGS								
PARAMETER	SYMBOL	VS-8TQ080S-M3	VS-8TQ100S-M3	UNITS				
Maximum DC reverse voltage	V_{R}	80	100	V				
Maximum working peak reverse voltage	V_{RWM}	00	100					

ABSOLUTE MAXIMUM RATINGS							
PARAMETER	SYMBOL	TEST COND	VALUES	UNITS			
Maximum average forward current See fig. 5	I _{F(AV)}	50 % duty cycle at T _C = 157 °C	8	Α			
Maximum peak one cycle non-repetitive surge current	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated	850	А		
See fig. 7		10 ms sine or 6 ms rect. pulse	V _{RRM} applied	230			
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 0.50 A, L = 60 mH		7.50	mJ		
Repetitive avalanche current	I _{AR}	Current decaying linearly to zer Frequency limited by T_J maxim	0.50	А			



VS-8TQ080S-M3, VS-8TQ100S-M3

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ELECTRICAL SPECIFICATIONS								
PARAMETER	SYMBOL	TEST CO	TEST CONDITIONS					
		8 A	T _{.1} = 25 °C	0.72				
Maximum forward voltage drop	V _{FM} ⁽¹⁾	16 A	1j=25 C	0.88	V			
See fig. 1	V _{FM} (1)	8 A	T _{.1} = 125 °C	0.58				
		16 A	1J=125 C	0.69				
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 25 °C	V _B = Rated V _B	0.55	mA			
See fig. 2	'RM (*)	T _J = 125 °C	VR = nateu VR	7	IIIA			
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), 25 °C		500	pF			
Typical series inductance	L _S	Measured lead to lead 5 m	8	nH				
Maximum voltage rate of change	dV/dt	Rated V _R	10 000	V/µs				

Note

 $^{^{(1)}\,}$ Pulse width < 300 $\mu s,$ duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS								
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS			
Maximum junction and storage temperature ran	ge	T _J , T _{Stg}		- 55 to 175	°C			
Maximum thermal resist junction to case	ance,	R _{thJC}	DC operation See fig. 4	2.0				
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.50	- °C/W			
Approximate weight				2	g			
Approximate weight				0.07	OZ.			
Mounting toward	minimum			6 (5)	kgf · cm			
Mounting torque	maximum			12 (10)	(lbf·in)			
Madine desire			Casa at da D ² DAV	8TQ(080S			
Marking device			Case style D ² PAK	8TQ ⁻	100S			



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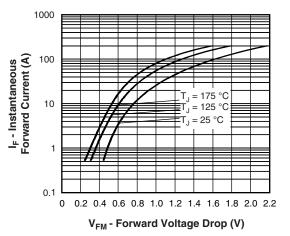


Fig. 1 - Maximum Forward Voltage Drop Characteristics

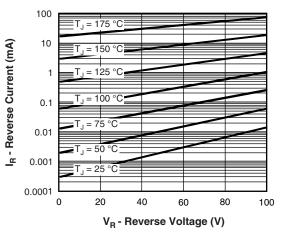


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

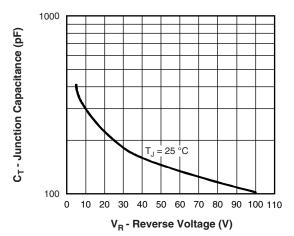


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

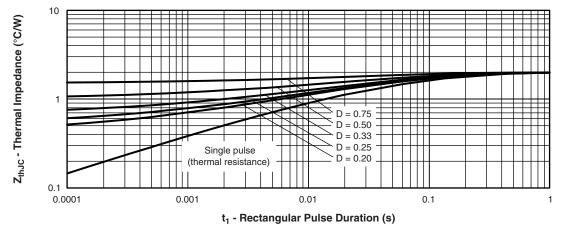


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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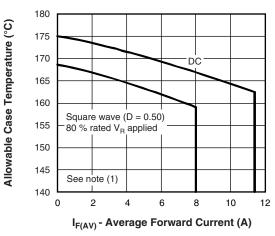


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

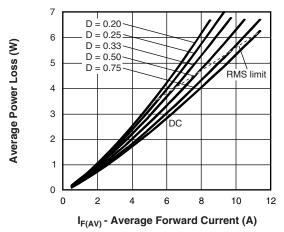


Fig. 6 - Forward Power Loss Characteristics

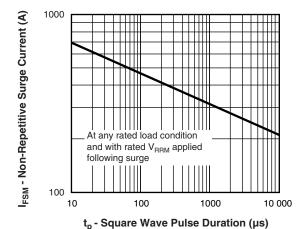


Fig. 7 - Maximum Non-Repetitive Surge Current

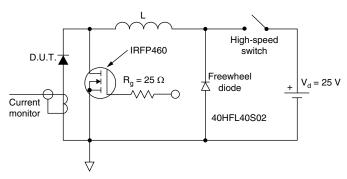


Fig. 8 - Unclamped Inductive Test Circuit

Note

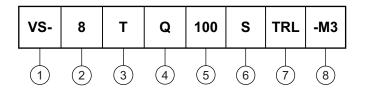
(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$; $Pd = Forward power loss = I_{F(AV)} \times V_{FM} at (I_{F(AV)}/D)$ (see fig. 6); $Pd_{REV} = Inverse power loss = V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80 \%$ rated V_R



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ORDERING INFORMATION TABLE

Device code



1 - Vishay Semiconductors product

2 - Current rating (8 A)

3 - Circuit configuration: T = TO-220

4 - Schottky "Q" series

080 = 80 V 100 = 100 V

6 - S = D²PAK

7 - • None = Tube

• TRL = Tape and reel (left oriented)

• TRR = Tape and reel (right oriented)

8 - -M3 = Halogen-free, RoHS-compliant and termination lead (Pb)-free

ORDERING INFORMATION									
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION						
VS-8TQ080S-M3	50	1000	Antistatic plastic tubes						
VS-8TQ080STRR-M3	800	800	13" diameter reel						
VS-8TQ080STRL-M3	800	800	13" diameter reel						
VS-8TQ100S-M3	50	1000	Antistatic plastic tubes						
VS-8TQ100STRR-M3	800	800	13" diameter reel						
VS-8TQ100STRL-M3	800	800	13" diameter reel						

LINKS TO RELATED DOCUMENTS						
Dimensions www.vishay.com/doc?95046						
Part marking information	www.vishay.com/doc?95444					
Packaging information	www.vishay.com/doc?95032					
SPICE model	www.vishay.com/doc?95291					



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D²PAK

DIMENSIONS in millimeters and inches



SYMBOL	MILLIM	MILLIMETERS	MILLIMETERS INCHES		NOTES	SYMBOL	MILLIMETERS		INCHES		NOTES	
STIVIBUL	MIN.	MAX.	MIN.	MAX.	NOIES	NOTES	STWIDOL	MIN.	MAX.	MIN.	MAX.	NOTES
Α	4.06	4.83	0.160	0.190			D1	6.86	8.00	0.270	0.315	3
A1	0.00	0.254	0.000	0.010			Е	9.65	10.67	0.380	0.420	2, 3
b	0.51	0.99	0.020	0.039			E1	7.90	8.80	0.311	0.346	3
b1	0.51	0.89	0.020	0.035	4		е	2.54	BSC	0.100) BSC	
b2	1.14	1.78	0.045	0.070			Н	14.61	15.88	0.575	0.625	
b3	1.14	1.73	0.045	0.068	4		L	1.78	2.79	0.070	0.110	
С	0.38	0.74	0.015	0.029			L1	-	1.65	-	0.066	3
c1	0.38	0.58	0.015	0.023	4		L2	1.27	1.78	0.050	0.070	
c2	1.14	1.65	0.045	0.065			L3	0.25	BSC	0.010	BSC	
D	8.51	9.65	0.335	0.380	2		L4	4.78	5.28	0.188	0.208	

Notes

- (1) Dimensioning and tolerancing per ASME Y14.5 M-1994
- (2) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outmost extremes of the plastic body
- (3) Thermal pad contour optional within dimension E, L1, D1 and E1
- (4) Dimension b1 and c1 apply to base metal only
- (5) Datum A and B to be determined at datum plane H
- (6) Controlling dimension: inch
- (7) Outline conforms to JEDEC® outline TO-263AB



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