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Stocking Distributor

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[Vishay Semiconductor/Diodes Division](#)  
[VS-8TQ100SPBF](#)

For any questions, you can email us directly:

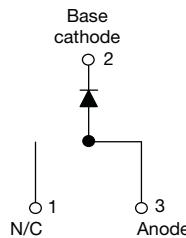
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



## High Performance Schottky Rectifier, 8 A



TO-263AB (D<sup>2</sup>PAK)



### PRODUCT SUMMARY

Package	TO-263AB (D <sup>2</sup> PAK)
$I_{F(AV)}$	8 A
$V_R$	80 V, 100 V
$V_F$ at $I_F$	0.72 V
$I_{RM}$ max.	7 mA at 125 °C
$T_J$ max.	175 °C
Diode variation	Single die
$E_{AS}$	7.5 mJ

### FEATURES

- 175 °C  $T_J$  operation
- 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
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### DESCRIPTION

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	A
$V_{RRM}$	Range	80, 100	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	850	A
$V_F$	8 A <sub>pk</sub> , $T_J = 125$ °C	0.58	V
$T_J$	Range	-55 to +175	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-8TQ080SPbF	VS-8TQ100SPbF	UNITS
Maximum DC reverse voltage	$V_R$	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 $T_C = 157$ °C, rectangular waveform	8	A
Maximum peak one cycle non-repetitive surge current See fig. 7	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	850	A
		10 ms sine or 6 ms rect. pulse		
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 zero in 1 $\mu s$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical	0.50	A



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## VS-8TQ080SPbF, VS-8TQ100SPbF

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<b>ELECTRICAL SPECIFICATIONS</b>					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum forward voltage drop 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 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	
Maximum junction capacitance	$C_T$	$V_R = 5 \text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz), $25 \text{ }^\circ\text{C}$		500	
Typical series inductance	$L_S$	Measured lead to lead 5 mm from package body		8	
Maximum voltage rate of change	$dV/dt$	Rated $V_R$		10 000	
				$\text{V}/\mu\text{s}$	

**Note**

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

<b>THERMAL - MECHANICAL SPECIFICATIONS</b>					
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	$R_{thJC}$	DC operation See fig. 4	2.0	$^\circ\text{C}/\text{W}$	
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)	$\text{kgf} \cdot \text{cm}$ (lbf · in)	
	maximum		12 (10)		
Marking device		Case style D <sup>2</sup> PAK	8TQ080S		
			8TQ100S		

## VS-8TQ080SPbF, VS-8TQ100SPbF

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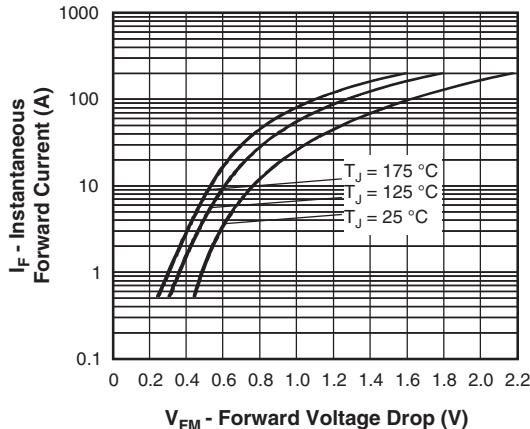


Fig. 1 - Maximum Forward Voltage Drop Characteristics

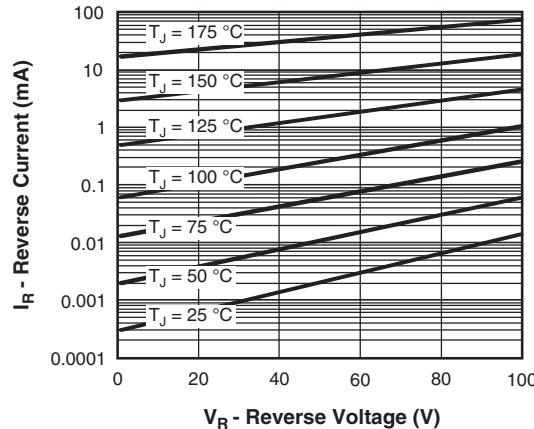


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

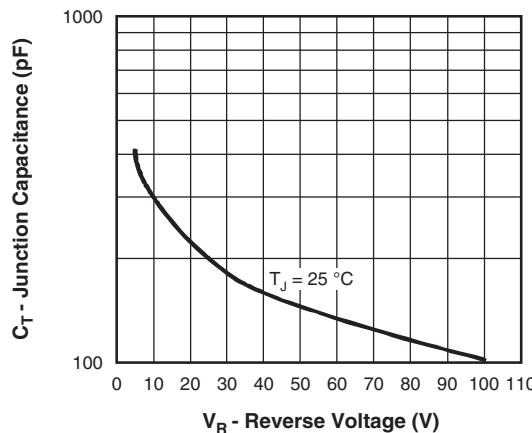


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

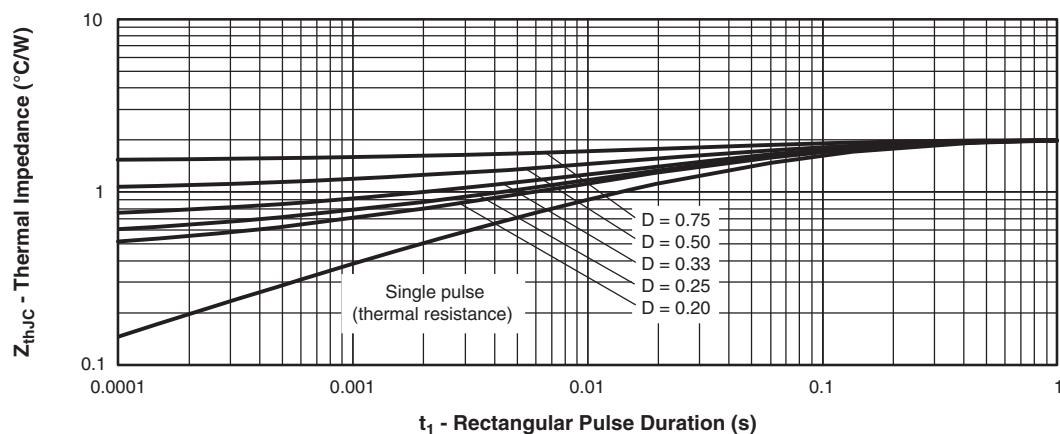


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

## VS-8TQ080SPbF, VS-8TQ100SPbF

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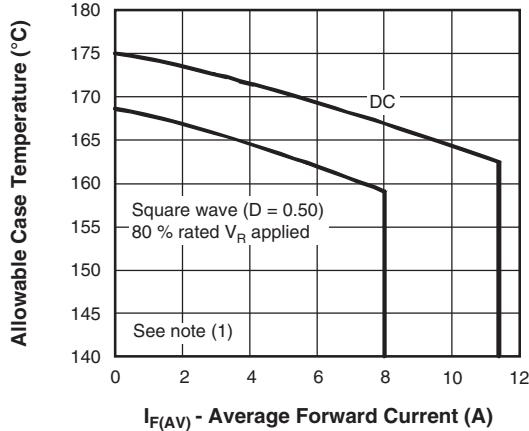


Fig. 5 - Maximum Allowable Case Temperature vs.  
Average Forward Current

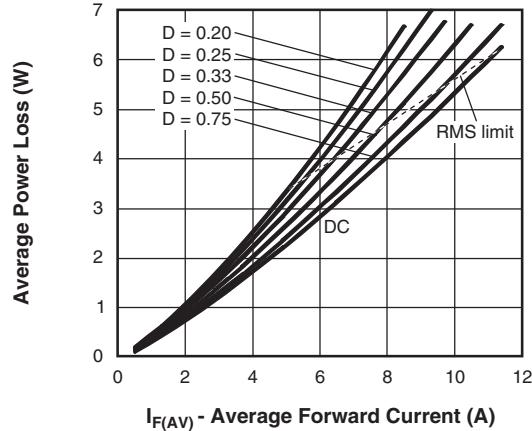


Fig. 6 - Forward Power Loss Characteristics

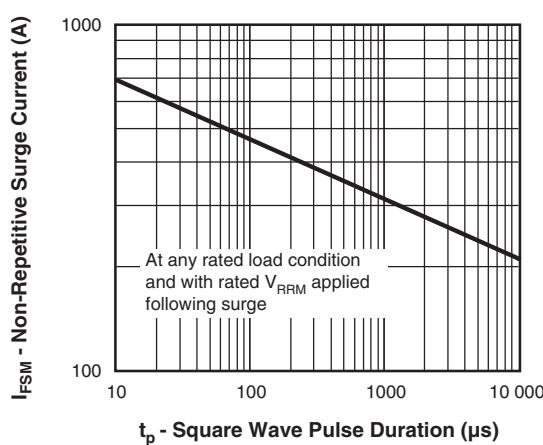


Fig. 7 - Maximum Non-Repetitive Surge Current

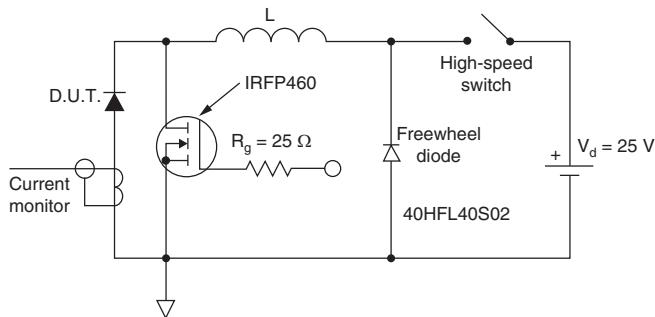


Fig. 8 - Unclamped Inductive Test Circuit

### Note

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



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## VS-8TQ080SPbF, VS-8TQ100SPbF

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### ORDERING INFORMATION TABLE

Device code	VS-	8	T	Q	100	S	TRL	PbF
	1	2	3	4	5	6	7	8
<b>1</b>	- Vishay Semiconductors product							
<b>2</b>	- Current rating (8 A)							
<b>3</b>	- Circuit configuration: T = TO-220							
<b>4</b>	- Schottky "Q" series							
<b>5</b>	- Voltage ratings							
<b>6</b>	080 = 80 V 100 = 100 V							
<b>7</b>	<ul style="list-style-type: none"> <li>- None = tube (50 pieces)</li> <li>- TRL = tape and reel (left oriented)</li> <li>- TRR = tape and reel (right oriented)</li> </ul>							
<b>8</b>	- PbF = lead (Pb)-free							

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95046">www.vishay.com/doc?95046</a>
Part marking information	<a href="http://www.vishay.com/doc?95054">www.vishay.com/doc?95054</a>
Packaging information	<a href="http://www.vishay.com/doc?95032">www.vishay.com/doc?95032</a>
SPICE models	<a href="http://www.vishay.com/doc?95291">www.vishay.com/doc?95291</a>

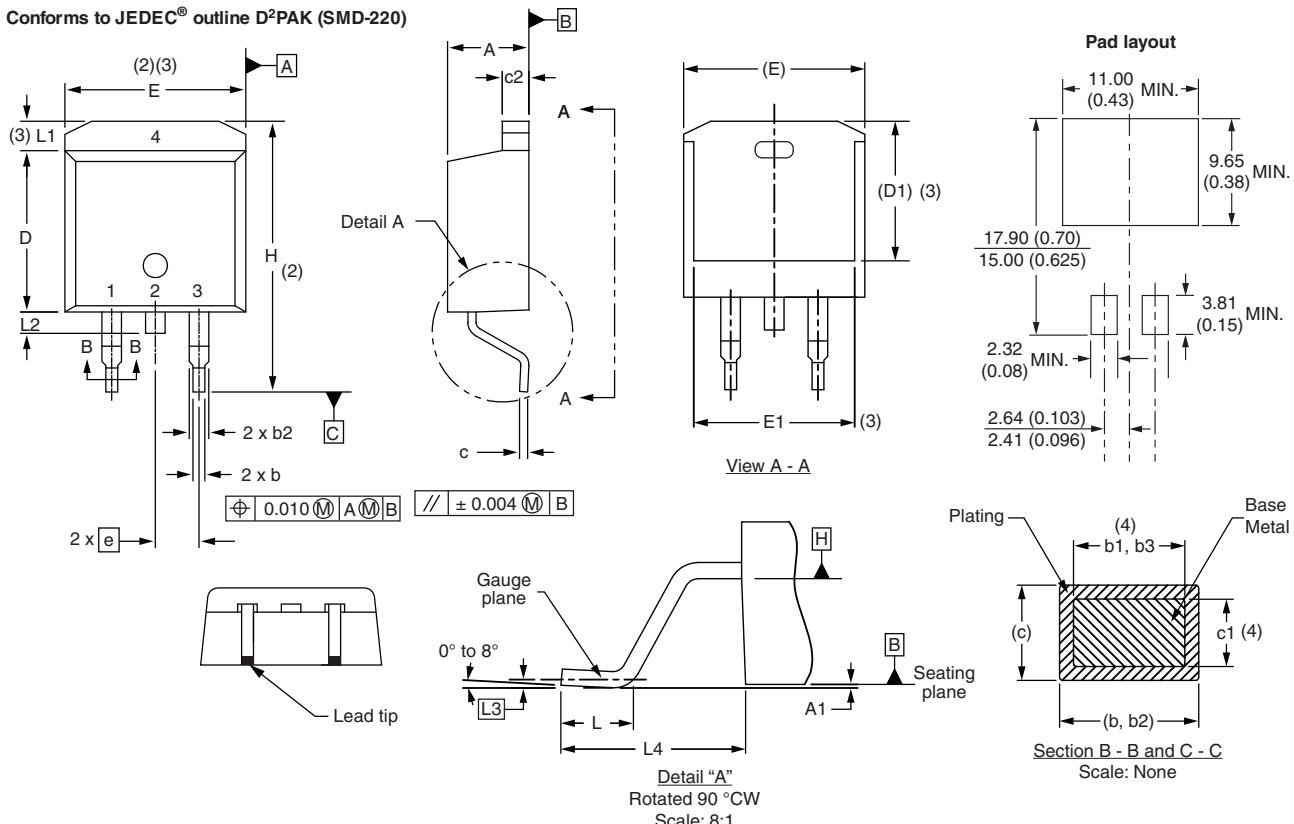
## Outline Dimensions

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### D<sup>2</sup>PAK

**DIMENSIONS** in millimeters and inches

Conforms to JEDEC® outline D<sup>2</sup>PAK (SMD-220)



SYMBOL	MILLIMETERS		INCHES		NOTES		SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.				MIN.	MAX.	MIN.	MAX.	
A	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			E	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		e	2.54 BSC		0.100 BSC		
b2	1.14	1.78	0.045	0.070			H	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	
c	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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