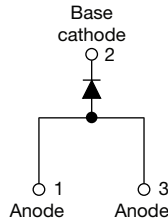




## High Voltage Surface Mount Input Rectifier Diode, 25 A



### FEATURES

- Glass passivated pellet chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### APPLICATIONS

- Input rectification
- Vishay switches and output rectifiers which are available in identical package outlines

### DESCRIPTION

The VS-25ETS..S-M3 rectifier High Voltage Series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150 °C junction temperature.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	25 A
$V_R$	800 V, 1000 V, 1200 V
$V_F$ at $I_F$	1.14 V
$I_{FSM}$	300 A
$T_j$ max.	150 °C
Package	D <sup>2</sup> PAK (TO-263AB)
Circuit configuration	Single

OUTPUT CURRENT IN TYPICAL APPLICATIONS			
APPLICATIONS	SINGLE-PHASE BRIDGE	THREE-PHASE BRIDGE	UNITS
Capacitive input filter $T_A = 55$ °C, $T_J = 125$ °C common heatsink of 1 °C/W	20	23	A

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	25	A
$V_{RRM}$		800 to 1200	V
$I_{FSM}$		300	A
$V_F$	10 A, $T_J = 25$ °C	1.0	V
$T_J$		-40 to +150	°C

VOLTAGE RATINGS			
PART NUMBER	$V_{RRM}$ , MAXIMUM PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ AT 150 °C mA
VS-25ETS08S-M3	800	900	1
VS-25ETS10S-M3	1000	1100	
VS-25ETS12S-M3	1200	1300	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 106$ °C, 180° conduction half sine wave	25	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	250	
		10 ms sine pulse, no voltage reapplied	300	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	316	A <sup>2</sup> s
		10 ms sine pulse, no voltage reapplied	442	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	4420	A <sup>2</sup> √s



<b>ELECTRICAL SPECIFICATIONS</b>					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	25 A, $T_J = 25\text{ }^\circ\text{C}$		1.14	V
Forward slope resistance	$r_t$	$T_J = 150\text{ }^\circ\text{C}$		9.62	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.87	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		1.0	

<b>THERMAL - MECHANICAL SPECIFICATIONS</b>					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$			-40 to +150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation		0.9	$^\circ\text{C}/\text{W}$
Maximum thermal resistance, junction to ambient	$R_{thJA}$			62	
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, and greased		0.5	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6 (5)	$\text{kgf} \cdot \text{cm}$ ( $\text{lbf} \cdot \text{in}$ )
	maximum			12 (10)	
Marking device		Case style D <sup>2</sup> PAK (TO-263AB)		25ETS08S	
				25ETS10S	
				25ETS12S	

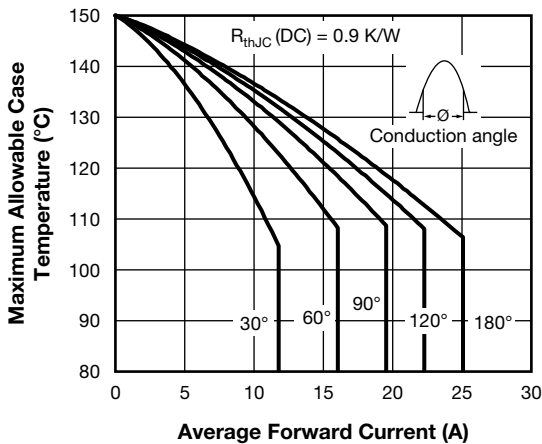


Fig. 1 - Current Rating Characteristics

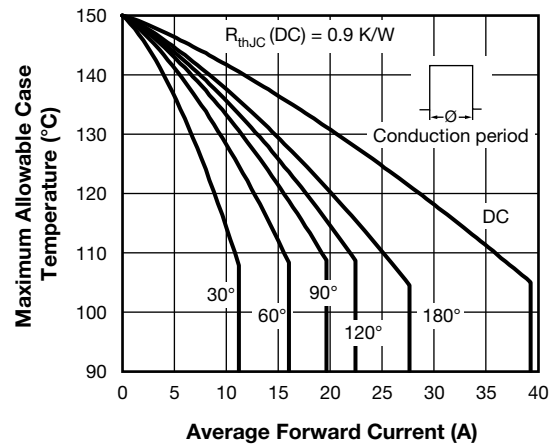


Fig. 2 - Current Rating Characteristics

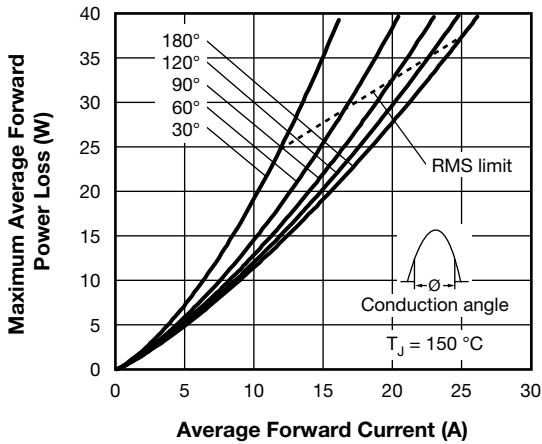


Fig. 3 - Forward Power Loss Characteristics

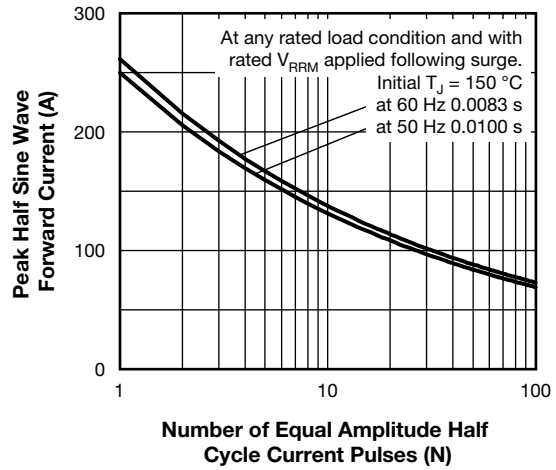


Fig. 5 - Maximum Non-Repetitive Surge Current

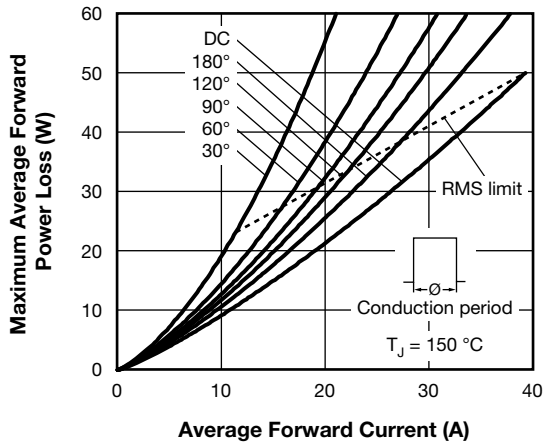


Fig. 4 - Forward Power Loss Characteristics

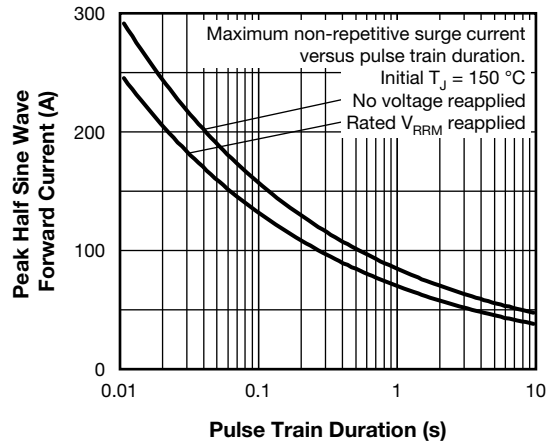


Fig. 6 - Maximum Non-Repetitive Surge Current

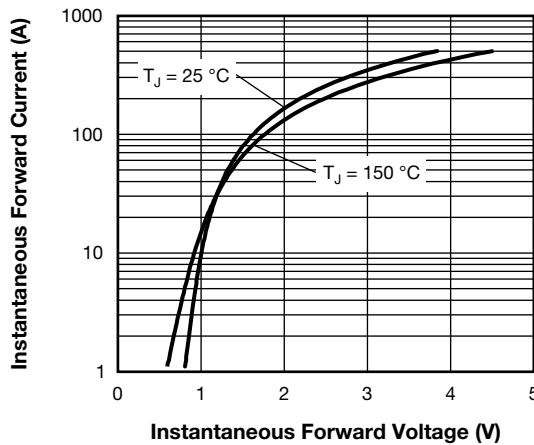


Fig. 7 - Forward Voltage Drop Characteristics

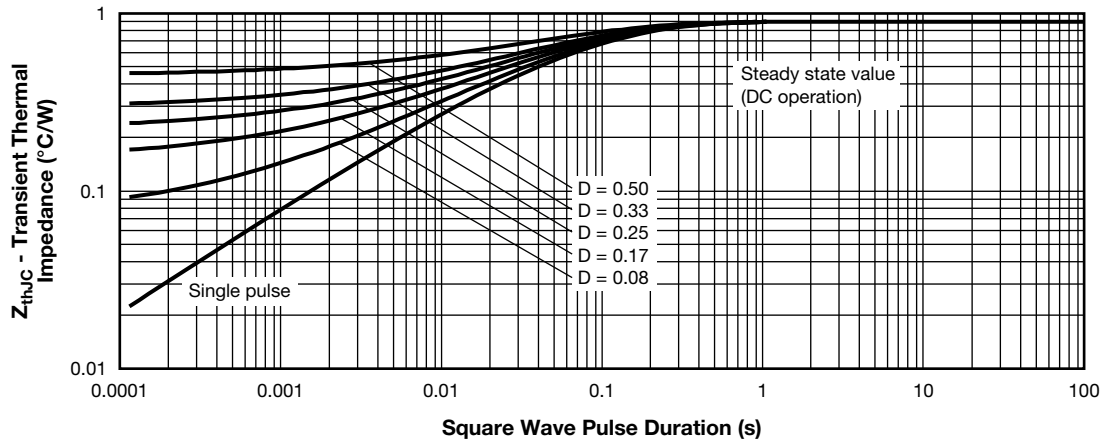


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

**ORDERING INFORMATION TABLE**

Device code	<b>VS-</b>	<b>25</b>	<b>E</b>	<b>T</b>	<b>S</b>	<b>12</b>	<b>S</b>	<b>TRL</b>	<b>-M3</b>
	①	②	③	④	⑤	⑥	⑦	⑧	⑨

- 1** - Vishay Semiconductors product
- 2** - Current rating (25 = 25 A)
- 3** - Circuit configuration  
E = single
- 4** - Package:  
T = D<sup>2</sup>PAK (TO-263AB)
- 5** - Type of silicon:  
S = standard recovery rectifier
- 6** - Voltage code x 100 =  $V_{RRM}$ 

08 = 800 V
10 = 1000 V
12 = 1200 V
- 7** - S = surface mountable
- 8** -
  - None = tube
  - TRL = tape and reel (left oriented)
  - TRR = tape and reel (right oriented)
- 9** - -M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free



<b>ORDERING INFORMATION</b> (Example)		
<b>PREFERRED P/N</b>	<b>BASE QUANTITY</b>	<b>PACKAGING DESCRIPTION</b>
VS-25ETS08S-M3	50	Antistatic plastic tube
VS-25ETS08STRR-M3	800	13" diameter reel
VS-25ETS08STRL-M3	800	13" diameter reel
VS-25ETS10S-M3	50	Antistatic plastic tube
VS-25ETS10STRR-M3	800	13" diameter reel
VS-25ETS10STRL-M3	800	13" diameter reel
VS-25ETS12S-M3	50	Antistatic plastic tube
VS-25ETS12STRR-M3	800	13" diameter reel
VS-25ETS12STRL-M3	800	13" diameter reel

<b>LINKS TO RELATED DOCUMENTS</b>	
Dimensions	<a href="http://www.vishay.com/doc?96164">www.vishay.com/doc?96164</a>
Part marking information	<a href="http://www.vishay.com/doc?95444">www.vishay.com/doc?95444</a>
Packaging information	<a href="http://www.vishay.com/doc?96424">www.vishay.com/doc?96424</a>





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