### VS-10ETS08FP-M3, VS-10ETS12FP-M3

Vishay Semiconductors

COMPLIANT

HALOGEN

**FREE** 

## High Voltage, Input Rectifier Diode, 10 A



T	0-2	220	Fu	IIP	AK	2L

PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	10 A			
$V_{R}$	800 V to 1200 V			
V <sub>F</sub> at I <sub>F</sub>	1.1 V			
I <sub>FSM</sub>	160 A			
T <sub>J</sub> max.	150 °C			
Package	TO-220 FullPAK 2L			
Circuit configuration	Single			

#### **FEATURES**

- Very low forward voltage drop
- 150 °C max. operating junction temperature
- · Glass passivated pellet chip junction
- Designed and qualified according to JEDEC®-JESD 47
- Fully isolated package (V<sub>INS</sub> = 2500 V<sub>RMS</sub>)
- UL pending
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **APPLICATIONS**

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

#### **DESCRIPTION**

High voltage rectifiers optimized for very low forward voltage drop with moderate leakage.

These devices are intended for use in main rectification (single or three phase bridge).

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	12.0	16.0	A			

MAJOR RATINGS AND CHARACTERISTICS							
SYMBOL	CHARACTERISTICS	VALUES	UNITS				
I <sub>F(AV)</sub>	Sinusoidal waveform	10	Α				
V <sub>RRM</sub>	Range	800, 1200	V				
I <sub>FSM</sub>		160	Α				
V <sub>F</sub>	10 A, T <sub>J</sub> = 25 °C	1.1	V				
TJ		-40 to +150	°C				

VOLTAGE RATINGS							
PART NUMBER	V <sub>RRM</sub> , MAXIMUM PEAK REVERSE VOLTAGE V	V <sub>RSM</sub> , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I <sub>RRM</sub> AT 150 °C mA				
VS-10ETS08FP-M3 800		900	0.5				
VS-10ETS12FP-M3	1200	1300	0.5				



# VS-10ETS08FP-M3, VS-10ETS12FP-M3

# Vishay Semiconductors

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum average forward current	I <sub>F(AV)</sub>	T <sub>C</sub> = 105 °C, 180° conduction half sine wave	10		
Maximum peak one cycle		10 ms sine pulse, rated V <sub>RRM</sub> applied	135	А	
non-repetitive surge current	I <sub>FSM</sub>	10 ms sine pulse, no voltage reapplied	160		
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	10 ms sine pulse, rated V <sub>RRM</sub> applied	91	- A <sup>2</sup> s	
Maximum i-t for fusing	1-1	10 ms sine pulse, no voltage reapplied	130	A-S	
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 ms to 10 ms, no voltage reapplied	1300	A²√s	

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CON	IDITIONS	VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	10 A, T <sub>J</sub> = 25 °C		1.1	V
Forward slope resistance	r <sub>t</sub>	T <sub>.1</sub> = 150 °C		20	mΩ
Threshold voltage	V <sub>F(TO)</sub>	I <sub>J</sub> = 150 <sup>-</sup> C		0.82	V
Maximum reverse leakage current	I <sub>RM</sub>	T <sub>J</sub> = 25 °C	V Dated V	0.05	mA
waxiinuiii reveise leakage current		T <sub>J</sub> = 150 °C	V <sub>R</sub> = Rated V <sub>RRM</sub>	0.50	IIIA

THERMAL - MECH	THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	PARAMETER		TEST CONDITIONS	VALUES	UNITS	
Maximum junction and stor temperature range	age	T <sub>J</sub> , T <sub>Stg</sub>		-40 to +150	°C	
Maximum thermal resistant junction to case	ce,	$R_{thJC}$	DC operation	2.5		
Maximum thermal resistance, junction to ambient		R <sub>thJA</sub>		62	°C/W	
Typical thermal resistance, case to heatsink		R <sub>thCS</sub>	Mounting surface, smooth, and greased	0.5		
Approximate weight	Aind			2	g	
Approximate weight				0.07	oz.	
Mounting torque	minimum			6 (5)	kgf · cm	
Mounting torque –	maximum			12 (10)	(lbf $\cdot$ in)	
Marking device			Coop atula TO 200 FullPAK 0	10ETS08FP		
		Case style TO-220 FullPAK 2L		10ETS12FP		



## Vishay Semiconductors

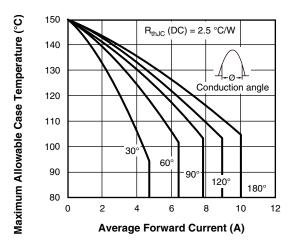


Fig. 1 - Current Rating Characteristics

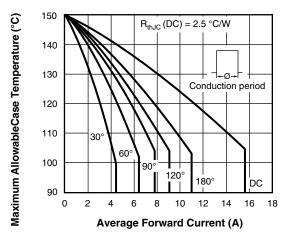


Fig. 2 - Current Rating Characteristics

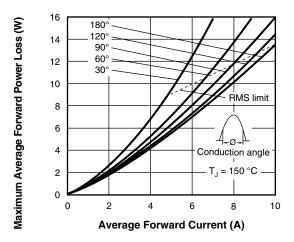


Fig. 3 - Forward Power Loss Characteristics

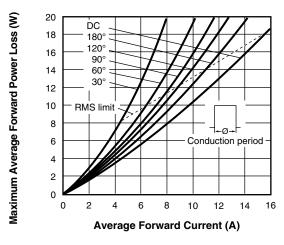


Fig. 4 - Forward Power Loss Characteristics

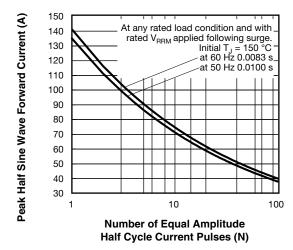


Fig. 5 - Maximum Non-Repetitive Surge Current

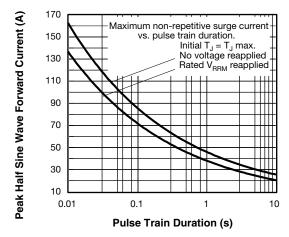


Fig. 6 - Maximum Non-Repetitive Surge Current

## Vishay Semiconductors

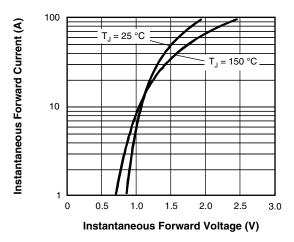


Fig. 7 - Forward Voltage Drop Characteristics

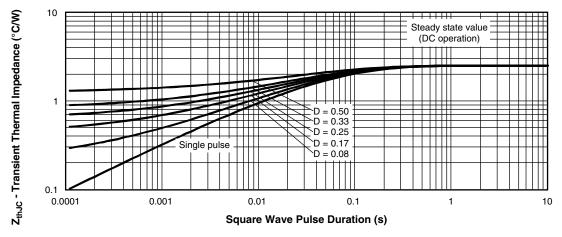


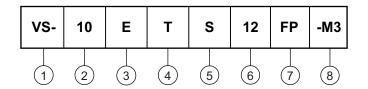
Fig. 8 - Thermal Impedance Z<sub>thJC</sub> Characteristics

## **VS-10ETS08FP-M3, VS-10ETS12FP-M3**

Vishay Semiconductors

### **ORDERING INFORMATION TABLE**

Device code



1 - Vishay Semiconductors product

2 - Current rating (10 = 10 A)

Circuit configuration:

E = single diode

4 - Package:

T = TO-220

5 - Type of silicon:

S = standard recovery rectifier

6 - Voltage rating - 08 = 800 V

7 - FullPAK

8 - Environmental digit:

-M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free

12 = 1200 V

ORDERING INFORMATION (Example)							
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION				
VS-10ETS08FP-M3	50	1000	Antistatic plastic tubes				
VS-10ETS12FP-M3	50	1000	Antistatic plastic tubes				

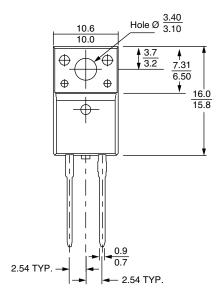
LINKS TO RELATED DOCUMENTS				
Dimensions www.vishay.com/doc?96157				
Part marking information	www.vishay.com/doc?95392			

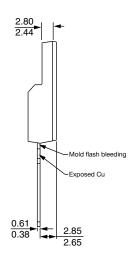


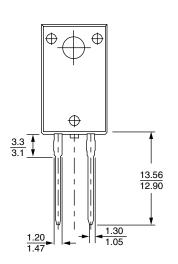
Vishay Semiconductors

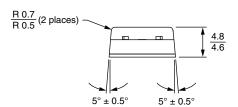
## 2L TO-220 FullPAK

### **DIMENSIONS** in millimeters









Bottom view



### **Legal Disclaimer Notice**

Vishay

### **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.