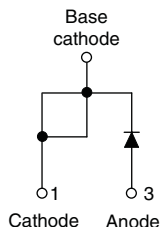


## Input Rectifier Diode TO-220 FULL-PAK, 10 A



TO-220AC FULL-PAK




### DESCRIPTION

The 10ETS12FPPbF rectifier 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.



RoHS\*  
COMPLIANT

Typical applications are in input rectification and these products are designed to be used with Vishay HPP switches and output rectifiers which are available in identical package outlines.

Fully isolated package ( $V_{INS} = 2500 V_{RMS}$ ) is UL E78996 approved 

This product has been designed and qualified for industrial level and lead (Pb)-free ("PbF" suffix).

### PRODUCT SUMMARY

$V_F$ at 10 A	< 1.1 V
$I_{FSM}$	200 A
$V_{RRM}$	800/1200 V

### OUTPUT CURRENT IN TYPICAL APPLICATIONS

APPLICATIONS	SINGLE-PHASE BRIDGE	THREE-PHASE BRIDGE	UNITS
Capacitive input filter $T_A = 55\text{ °C}$ , $T_J = 125\text{ °C}$ common heatsink of 1 °C/W	12.0	16.0	A

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	10	A
$V_{RRM}$	Range	800/1200	V
$I_{FSM}$		200	A
$V_F$	10 A, $T_J = 25\text{ °C}$	1.1	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
10ETS08FPPbF	800	900	0.5
10ETS12FPPbF	1200	1300	

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 105\text{ °C}$ , 180° conduction half sine wave	10	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	170	
		10 ms sine pulse, no voltage reapplied	200	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	130	A <sup>2</sup> s
		10 ms sine pulse, no voltage reapplied	145	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	1450	A <sup>2</sup> /s

\* Pb containing terminations are not RoHS compliant, exemptions may apply

# 10ETS..FPPbF High Voltage Series

Vishay High Power Products      Input Rectifier Diode  
TO-220 FULL-PAK, 10 A



## ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	10 A, $T_J = 25\text{ }^{\circ}\text{C}$		1.1	V
Forward slope resistance	$r_t$	$T_J = 150\text{ }^{\circ}\text{C}$		20	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.82	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.05	mA
		$T_J = 150\text{ }^{\circ}\text{C}$		0.50	

## THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>		- 40 to 150	°C
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation	2.5	°C/W
Maximum thermal resistance, junction to ambient	R <sub>thJA</sub>		62	
Typical thermal resistance, case to heatsink	R <sub>thCS</sub>	Mounting surface, smooth and greased	0.5	
Approximate weight			2	g
			0.07	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-220 FULL-PAK (94/V0)	10ETS12FP	



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Vishay High Power Products

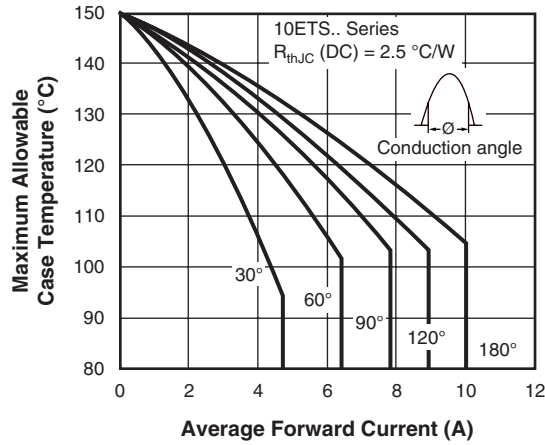


Fig. 1 - Current Rating Characteristics

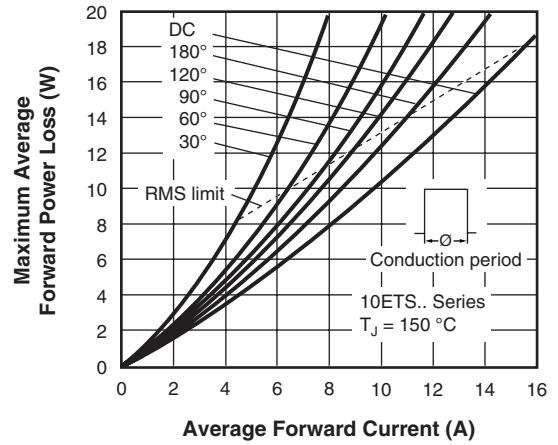


Fig. 4 - Forward Power Loss Characteristics

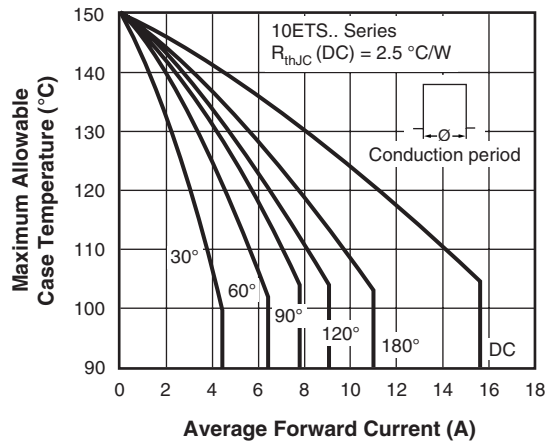


Fig. 2 - Current Rating Characteristics

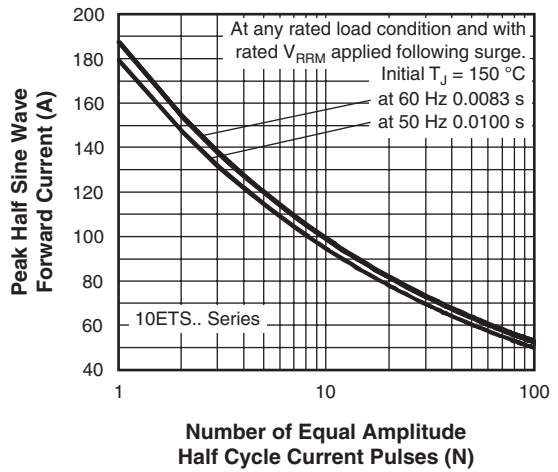


Fig. 5 - Maximum Non-Repetitive Surge Current

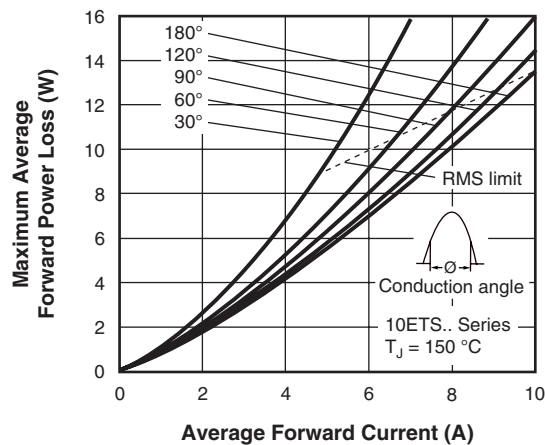


Fig. 3 - Forward Power Loss Characteristics

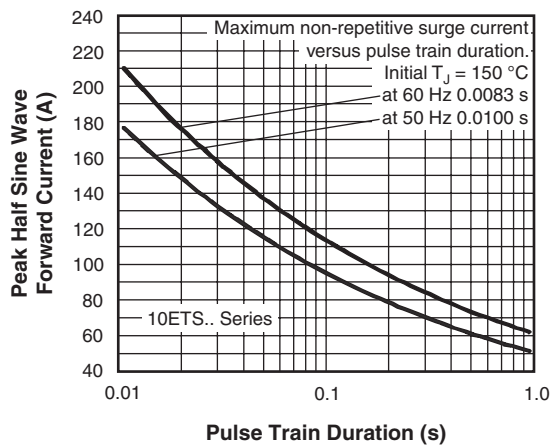


Fig. 6 - Maximum Non-Repetitive Surge Current

# 10ETS..FPPbF High Voltage Series

Vishay High Power Products

Input Rectifier Diode  
TO-220 FULL-PAK, 10 A

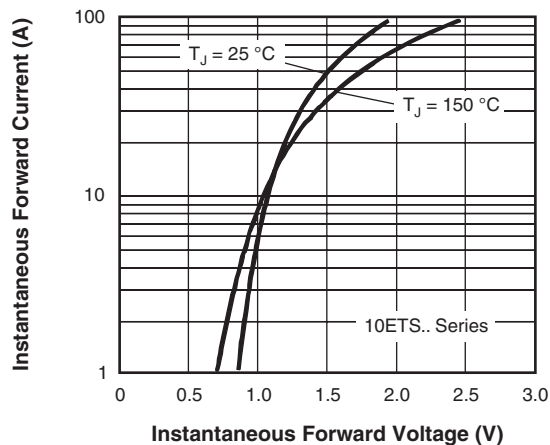


Fig. 7 - Forward Voltage Drop Characteristics

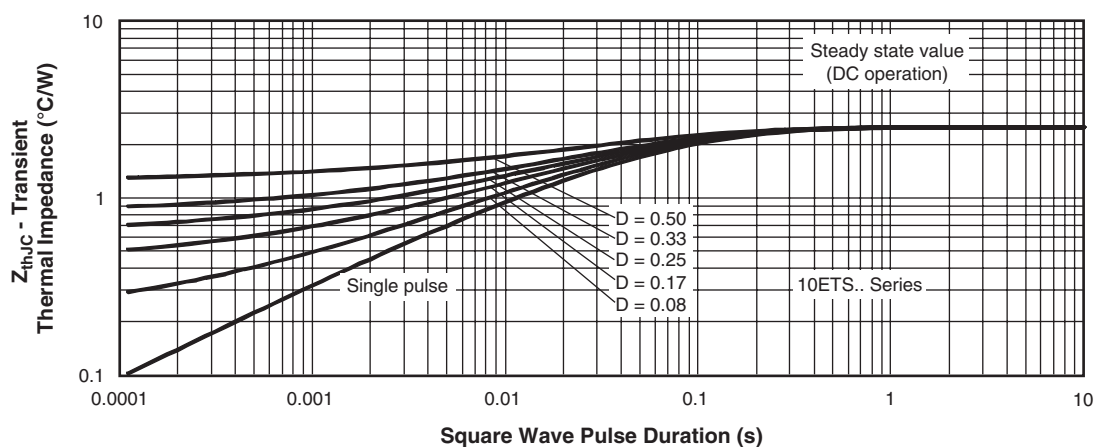


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics



# 10ETS..FPPbF High Voltage Series

Input Rectifier Diode  
TO-220 FULL-PAK, 10 A

Vishay High Power Products

## ORDERING INFORMATION TABLE

Device code	10	E	T	S	12	FP	PbF
	①	②	③	④	⑤	⑥	⑦

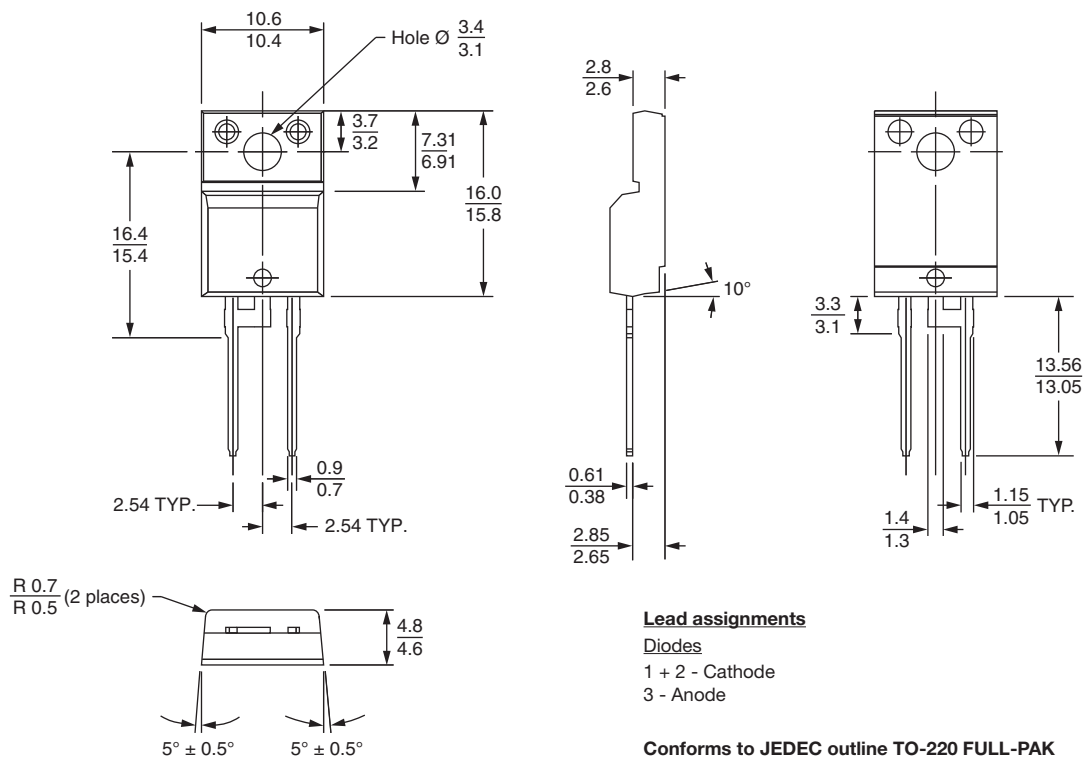
<b>1</b>	-	Current rating (10 = 10 A)
<b>2</b>	-	Circuit configuration: E = Single diode
<b>3</b>	-	Package: T = TO-220AC
<b>4</b>	-	Type of silicon: S = Standard recovery rectifier
<b>5</b>	-	Voltage rating _____
<b>6</b>	-	FULL-PAK
<b>7</b>	-	<ul style="list-style-type: none"> <li>None = Standard production</li> <li>PbF = Lead (Pb)-free</li> </ul>

08 = 800 V  
 12 = 1200 V

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95005">http://www.vishay.com/doc?95005</a>
Part marking information	<a href="http://www.vishay.com/doc?95009">http://www.vishay.com/doc?95009</a>



**DIMENSIONS** in millimeters



#### Lead assignments

##### Diodes

1 + 2 - Cathode  
3 - Anode

Conforms to JEDEC outline TO-220 FULL-PAK



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