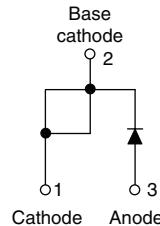


## Input Rectifier Diode, 20 A



TO-220 FULL-PAK

## DESCRIPTION/FEATURES

The 20ETS..FPPbF 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.


 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<sub>RMS</sub>) is UL E78996 approved 

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

## PRODUCT SUMMARY

$V_F$ at 10 A	< 1 V
$I_{FSM}$	300 A
$V_{RRM}$	800/1200 V

## OUTPUT CURRENT IN TYPICAL APPLICATIONS

APPLICATIONS	SINGLE-PHASE BRIDGE	THREE-PHASE BRIDGE	UNITS
Capacitive input filter $T_A = 55$ °C, $T_J = 125$ °C common heatsink of 1 °C/W	18	22	A

## MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	20	A
$V_{RRM}$	Range	800/1200	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
20ETS08FPPbF	800	900	1
20ETS12FPPbF	1200	1300	

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 51$ °C, 180° conduction half sine wave	20	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	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	4420	A <sup>2</sup> √s

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

# 20ETS..FPPbF High Voltage Series

Vishay High Power Products Input Rectifier Diode, 20 A



## ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	20 A, $T_J = 25^\circ\text{C}$		1.1	V
Forward slope resistance	$r_f$	$T_J = 150^\circ\text{C}$		10.4	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.85	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150^\circ\text{C}$		1.0	

## THERMAL - MECHANICAL SPECIFICATIONS

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		2.8	$^\circ\text{C}/\text{W}$
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			6.0 (5.0)	$\text{k}\text{gf} \cdot \text{cm}$ (lbf · in)
	maximum			12 (10)	
Marking device		Case style TO-220 FULL-PAK (94/V0)		20ETS08FP 20ETS12FP	

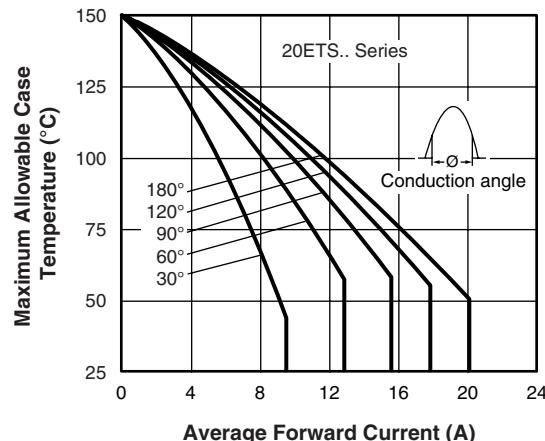


Fig. 1 - Current Rating Characteristics

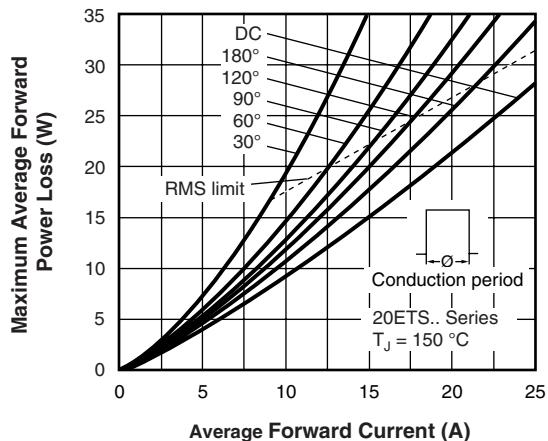


Fig. 4 - Forward Power Loss Characteristics

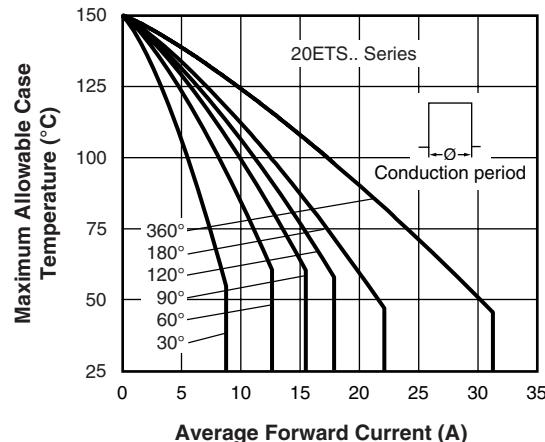


Fig. 2 - Current Rating Characteristics

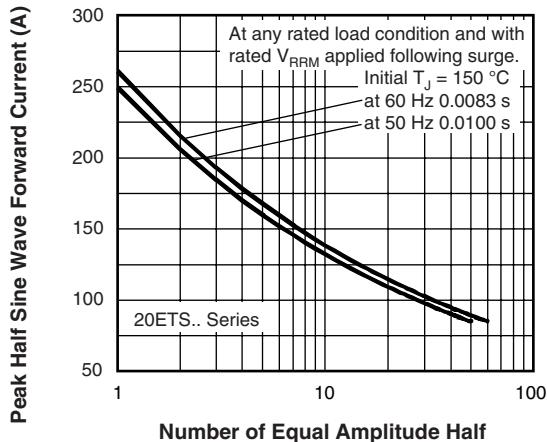


Fig. 5 - Maximum Non-Repetitive Surge Current

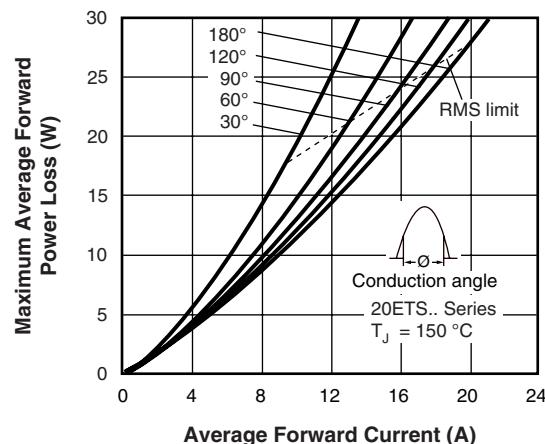


Fig. 3 - Forward Power Loss Characteristics

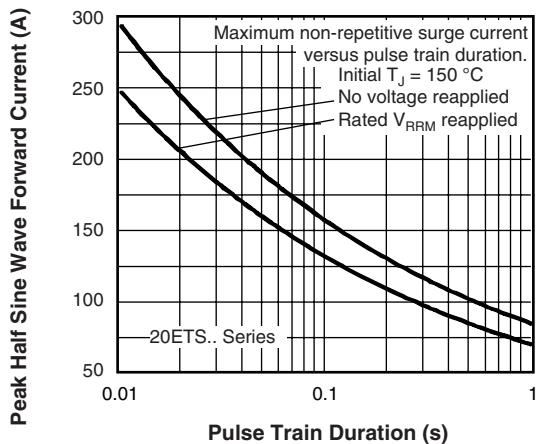


Fig. 6 - Maximum Non-Repetitive Surge Current

# 20ETS..FPPbF High Voltage Series

Vishay High Power Products Input Rectifier Diode, 20 A

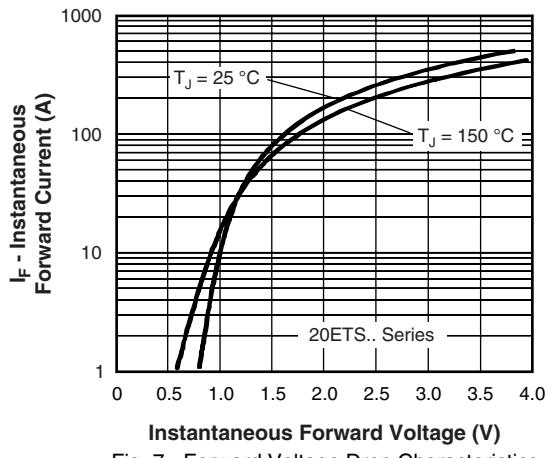


Fig. 7 - Forward Voltage Drop Characteristics

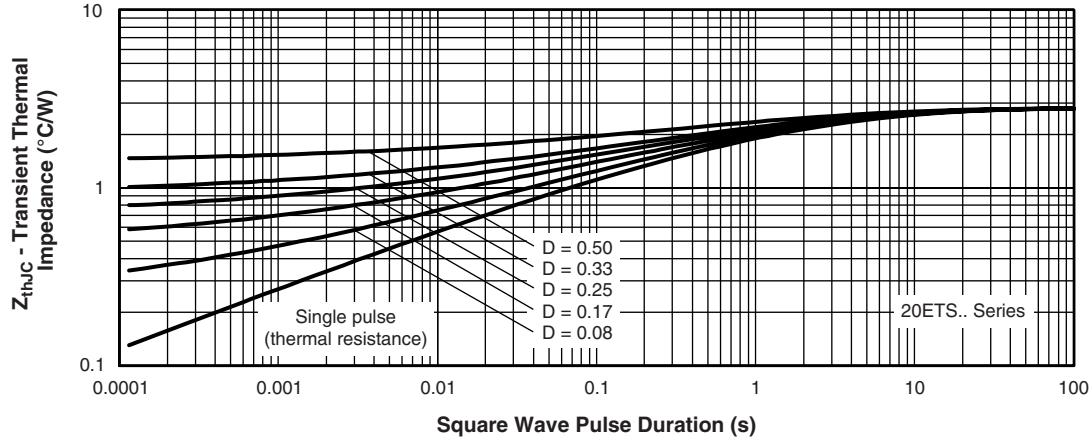


Fig. 8 - Thermal Impedance  $Z_{\text{thJC}}$  Characteristics



# 20ETS..FPPbF High Voltage Series

Input Rectifier Diode, 20 A Vishay High Power Products

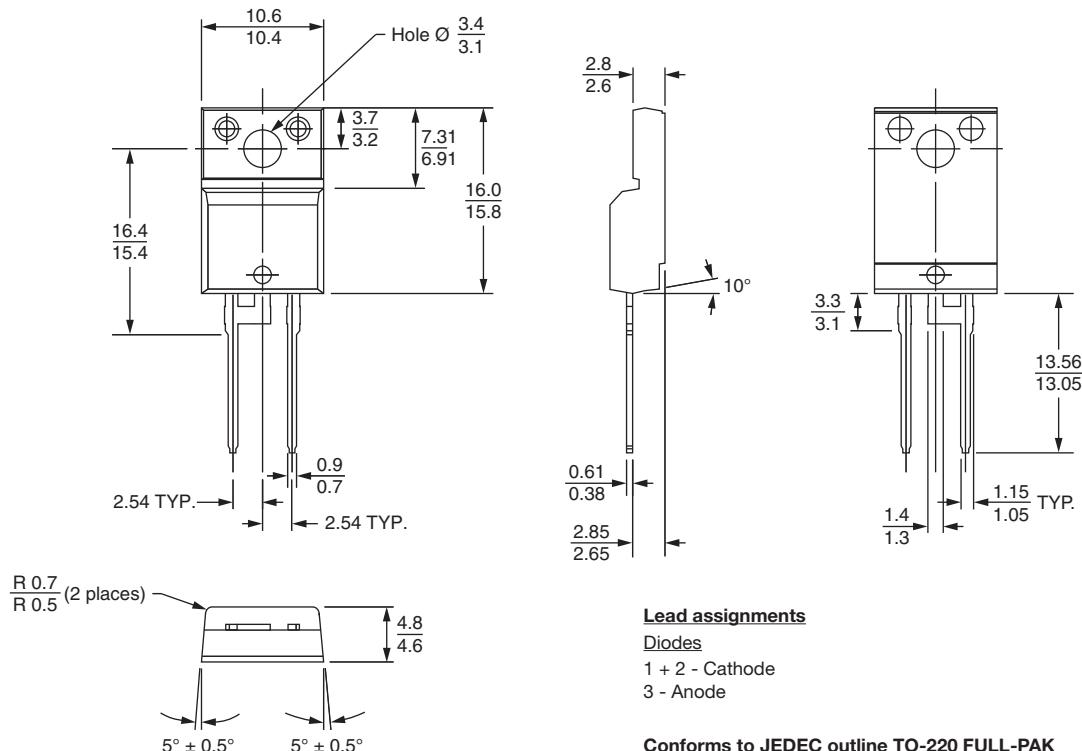
## ORDERING INFORMATION TABLE

Device code	20	E	T	S	12	FP	PbF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<b>1</b>	- Current rating (20 = 20 A)					
	<b>2</b>	- Circuit configuration:					
	<b>3</b>	E = Single diode					
	<b>4</b>	- Package:					
	<b>5</b>	T = TO-220					
	<b>6</b>	- Type of silicon:					
	<b>7</b>	S = Standard recovery rectifier					
	<b>5</b>	- Voltage ratings			08 = 800 V		
	<b>6</b>	FULL-PAK			12 = 1200 V		
	<b>7</b>	- • None = Standard production					
		• PbF = Lead (Pb)-free					

### 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



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