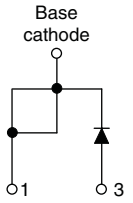
Input Rectifier Diode
TO-220 FULL-PAK, 10 A



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.

Available
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 °C, T_J = 125 °C common heatsink of 1 °C/W	12.0	16.0	A

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	**CHARACTERISTICS**	**VALUES**	**UNITS**
$I_{F(AV)}$	Sinusoidal waveform	10	A
V_{RRM}	Range	800/1200	V
I_{FSM}		200	A
V_F	10 A, T_J = 25 °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 °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	A
		10 ms sine pulse, no voltage reapplied	200	A
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	130	A^2s
		10 ms sine pulse, no voltage reapplied	145	A^2s
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied	1450	$A^2\sqrt{s}$

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

ELECTRICAL SPECIFICATIONS

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

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T_J, T_{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case		R_{thJC}	DC operation	2.5	°C/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)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style TO-220 FULL-PAK (94/V0)	10ETS12FP	

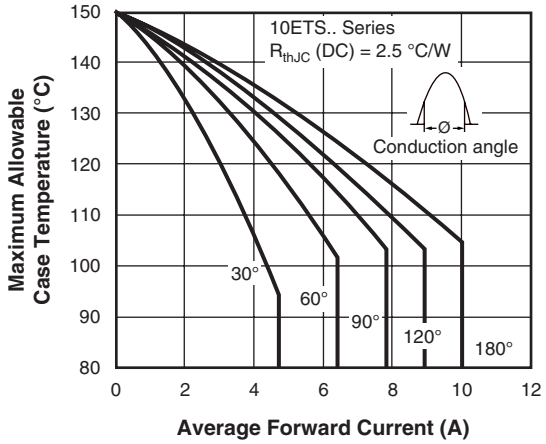


Fig. 1 - Current Rating Characteristics

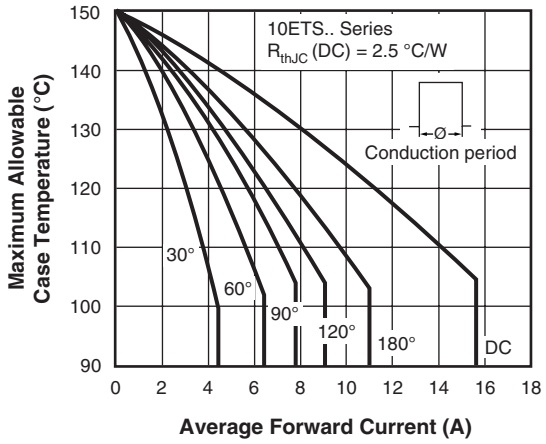


Fig. 2 - Current Rating Characteristics

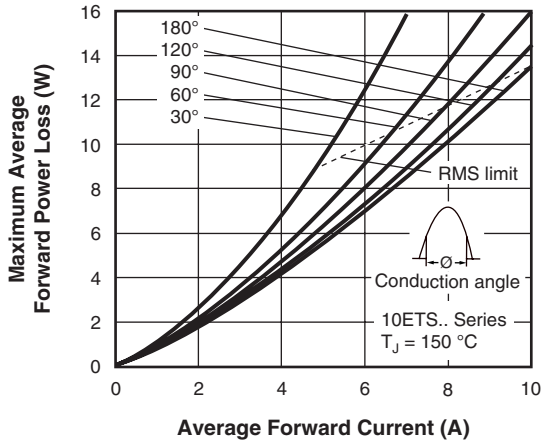


Fig. 3 - Forward Power Loss Characteristics

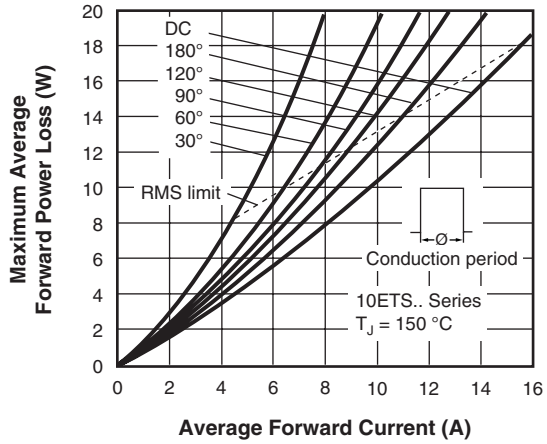


Fig. 4 - Forward Power Loss Characteristics

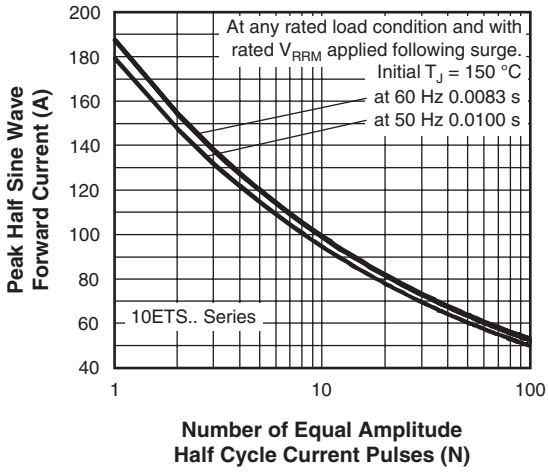


Fig. 5 - Maximum Non-Repetitive Surge Current

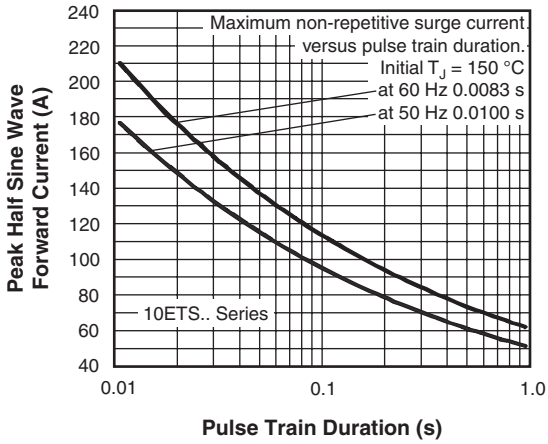


Fig. 6 - Maximum Non-Repetitive Surge Current

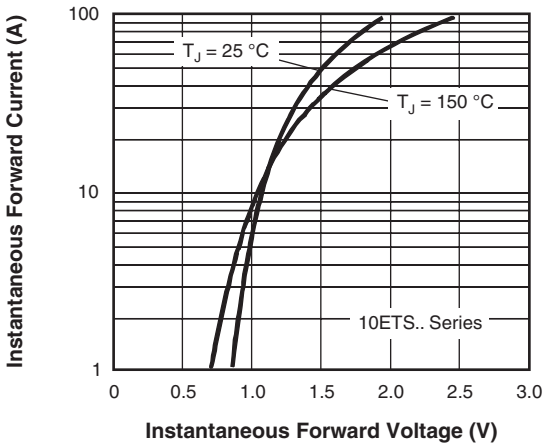


Fig. 7 - Forward Voltage Drop Characteristics

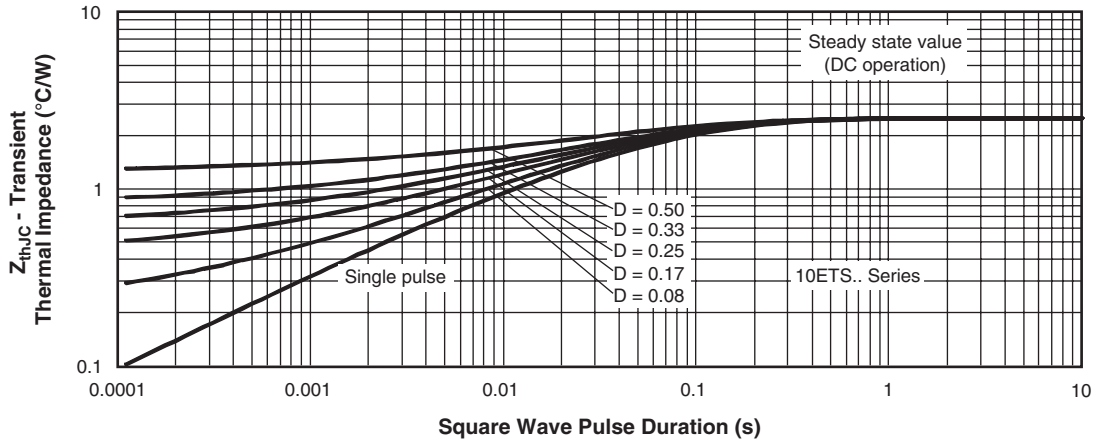


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

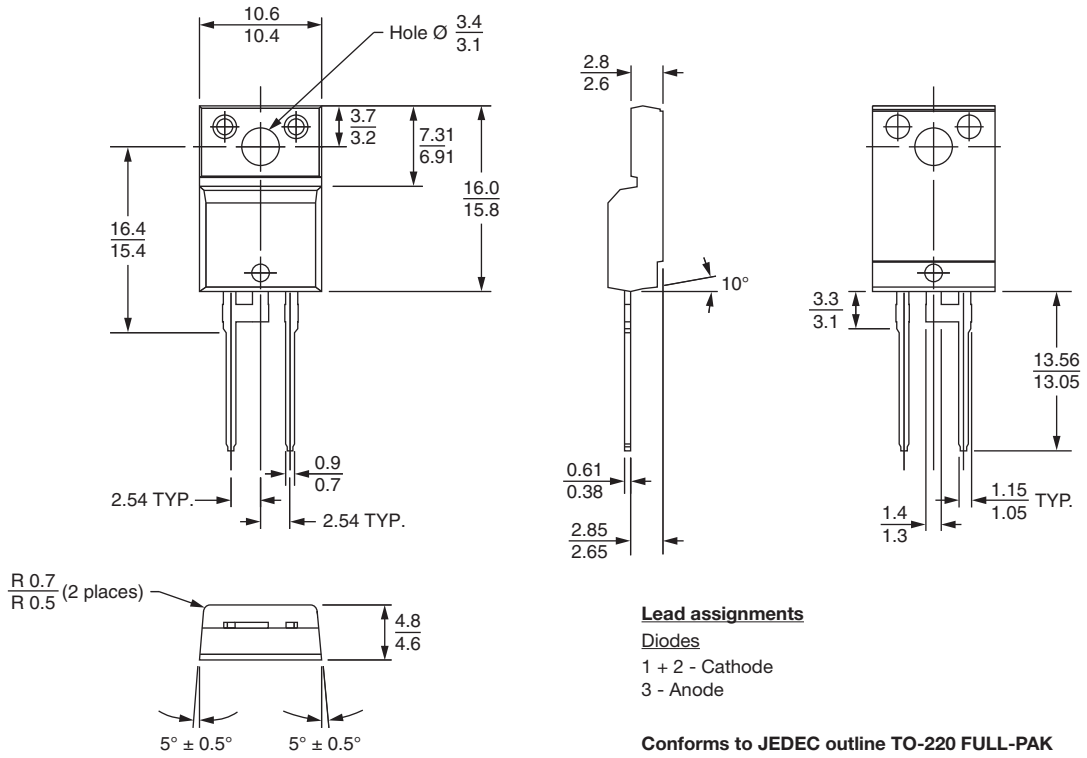
Device code

10	E	T	S	12	FP	PbF
(1)	(2)	(3)	(4)	(5)	(6)	(7)

- 1 - Current rating (10 = 10 A)
- 2 - Circuit configuration:
  E = Single diode
- 3 - Package:
  T = TO-220AC
- 4 - Type of silicon:
  S = Standard recovery rectifier
- 5 - Voltage rating — 08 = 800 V, 12 = 1200 V
- 6 - FULL-PAK
- 7 - • None = Standard production
  • PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95005
Part marking information	http://www.vishay.com/doc?95009

DIMENSIONS in millimeters



Lead assignments

Diodes

1 + 2 - Cathode

3 - Anode

Conforms to JEDEC outline TO-220 FULL-PAK

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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