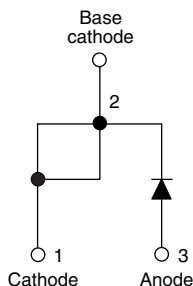




Fast Soft Recovery Rectifier Diode, 10 A




TO-220AC FULL-PAK



FEATURES/DESCRIPTION

The 10ETF...FPPbF fast soft recovery rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

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

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



RoHS*
COMPLIANT

PRODUCT SUMMARY

V_F at 10 A	< 1.33 V
t_{rr}	80 ns
V_{RRM}	1000 to 1200 V

APPLICATIONS

- Output rectification and freewheeling in inverters, choppers and converters
- Input rectifications where severe restrictions on conducted EMI should be met

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	10	A
V_{RRM}		1000 to 1200	V
I_{FSM}		160	A
V_F	10 A, $T_J = 25^\circ C$	1.33	V
t_{rr}	1 A, 100 A/ μs	80	ns
T_J		- 40 to 150	$^\circ C$

VOLTAGE RATINGS

PART NUMBER	V_{RRM} , MAXIMUM PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} AT 150 $^\circ C$ mA
10ETF10FPPbF	1000	1100	4
10ETF12FPPbF	1200	1300	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 95^\circ C$, 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	160	
		10 ms sine pulse, no voltage reapplied	185	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	128	A^2s
		10 ms sine pulse, no voltage reapplied	180	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	1800	$A^2\sqrt{s}$

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

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ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM}	10 A, $T_J = 25\text{ }^{\circ}\text{C}$		1.33	V
Forward slope resistance	r_t	$T_J = 150\text{ }^{\circ}\text{C}$		22.9	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.96	V
Maximum reverse leakage current	I_{RM}	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^{\circ}\text{C}$		4	

RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Reverse recovery time	t_{rr}	I_F at 10 Apk 25 A/ μs 25 $^{\circ}\text{C}$	310	ns	
Reverse recovery current	I_{rr}		4.7	A	
Reverse recovery charge	Q_{rr}		1.05	μC	
Typical snap factor	S		0.6		

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-220AC FULL-PAK (JEDEC)	10ETF12FP	



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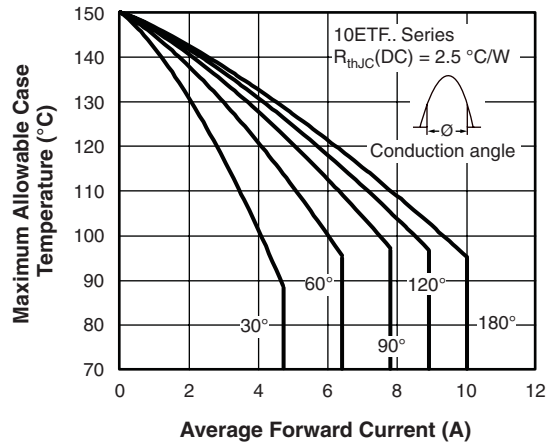


Fig. 1 - Current Rating Characteristics

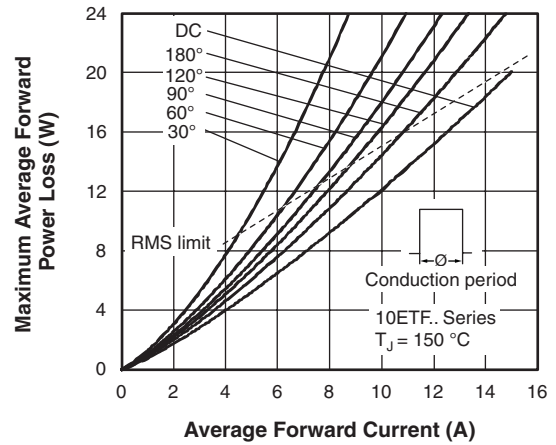


Fig. 4 - Forward Power Loss Characteristics

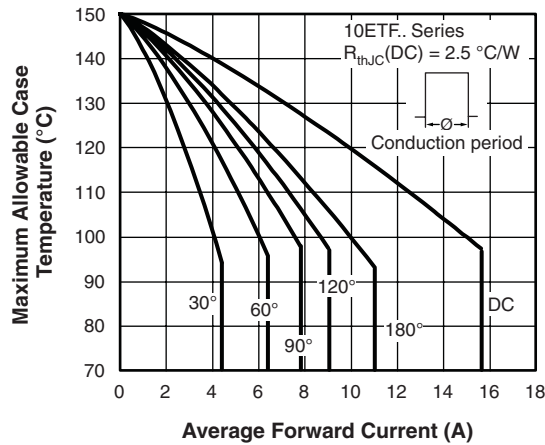


Fig. 2 - Current Rating Characteristics

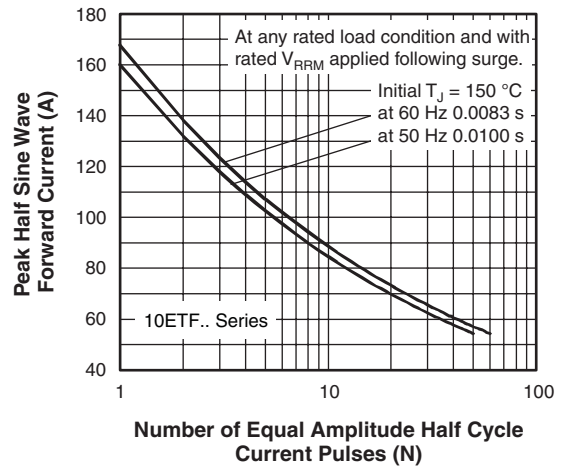


Fig. 5 - Maximum Non-Repetitive Surge Current

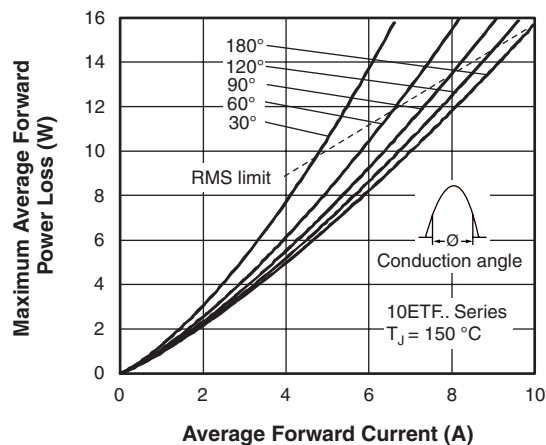


Fig. 3 - Forward Power Loss Characteristics

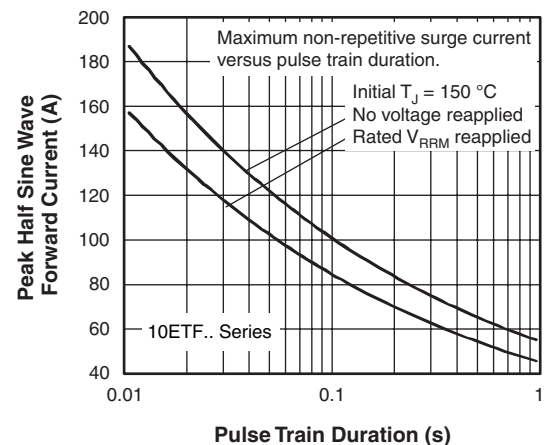


Fig. 6 - Maximum Non-Repetitive Surge Current

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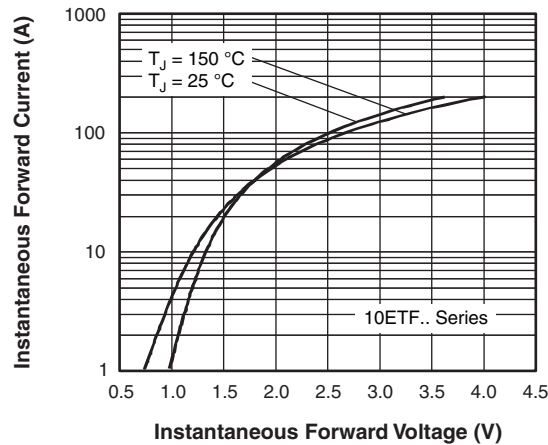


Fig. 7 - Forward Voltage Drop Characteristics

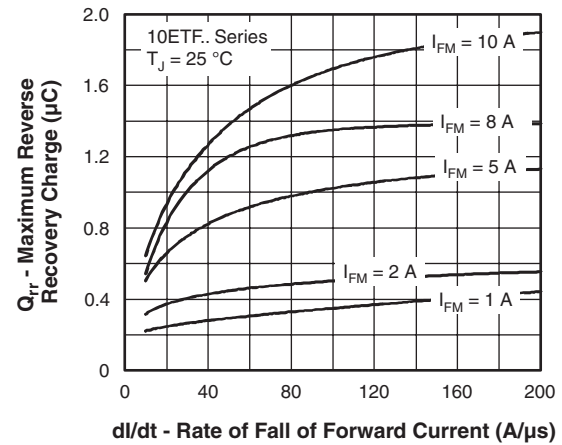


Fig. 10 - Recovery Charge Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

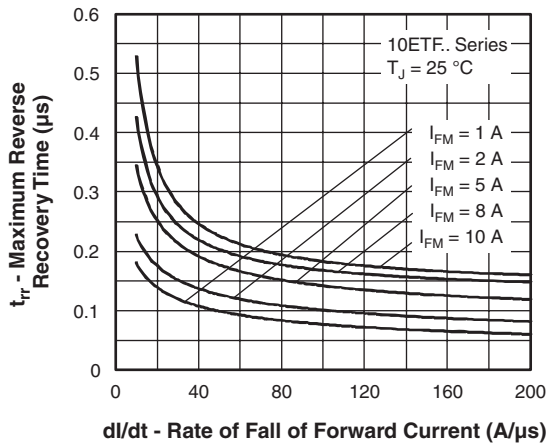


Fig. 8 - Recovery Time Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

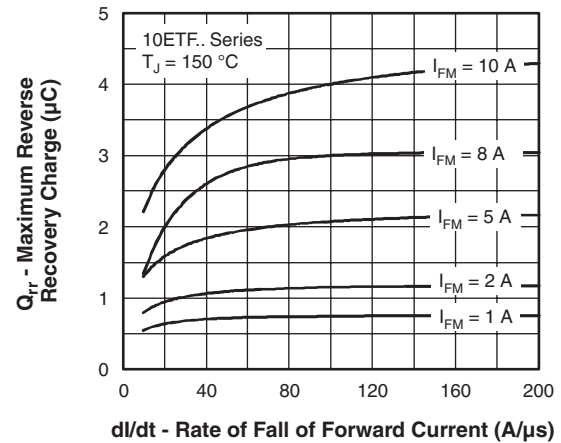


Fig. 11 - Recovery Charge Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$

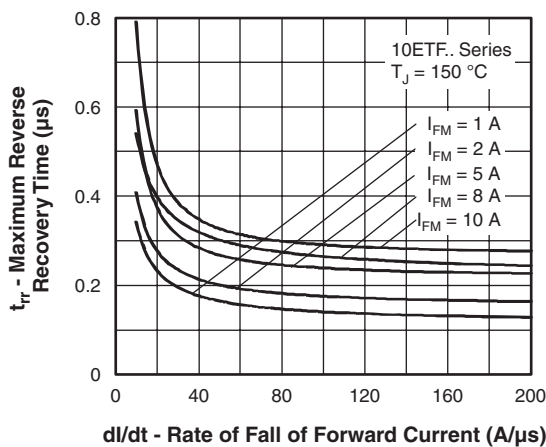


Fig. 9 - Recovery Time Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$

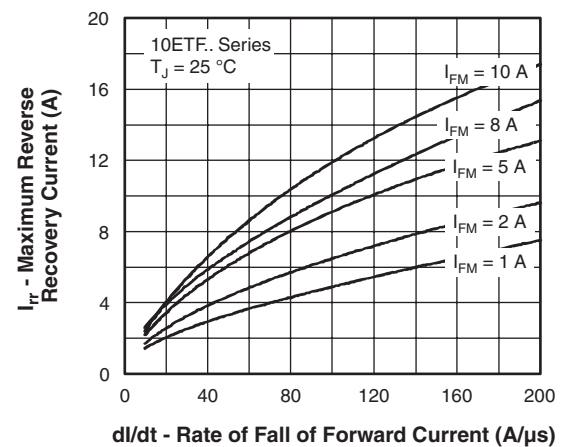


Fig. 12 - Recovery Current Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$



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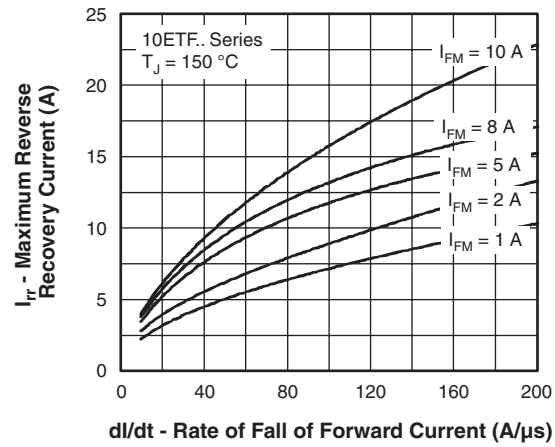


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

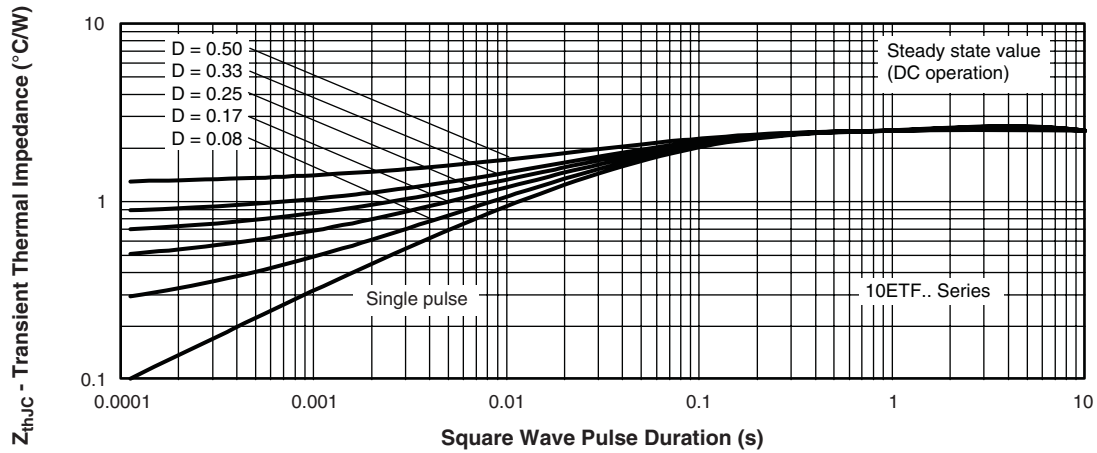


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

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ORDERING INFORMATION TABLE

Device code	10	E	T	F	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:
F = Fast soft recovery rectifier

5 - Voltage code x 100 = V_{RRM}

6 - FULL-PAK

7 -
• None = Standard production
• PbF = Lead (Pb)-free

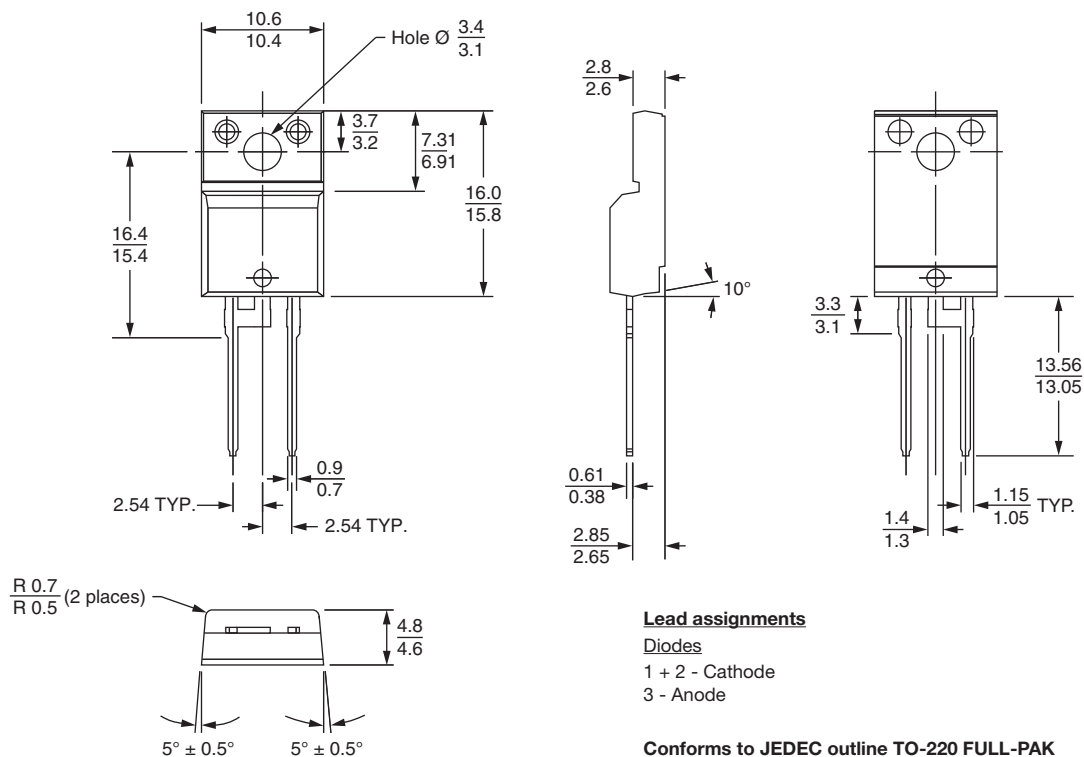
10 = 1000 V
12 = 1200 V

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



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