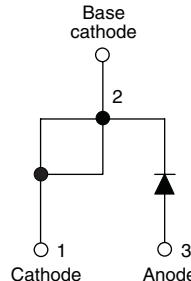


Fast Soft Recovery Rectifier Diode, 10 A



TO-220AC FULL-PAK



PRODUCT SUMMARY

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

FEATURES/DESCRIPTION

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



RoHS*
COMPLIANT

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.

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, $T_J = 25$ °C	1.33	V
t_{rr}	1 A, 100 A/μs	80	ns
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
10ETF10FPPbF	1000	1100	4
10ETF12FPPbF	1200	1300	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 95$ °C, 180° conduction half sine wave	10	
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	160	A
		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

10ETF..FPPbF Soft Recovery Series

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Fast Soft Recovery
Rectifier Diode, 10 A



ELECTRICAL SPECIFICATIONS

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

RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Reverse recovery time	t_{rr}	I_F at 10 Apk 25 A/ μ s $25^\circ C$	310	ns	
Reverse recovery current	I_{rr}		4.7	A	
Reverse recovery charge	Q_{rr}		1.05	μ C	
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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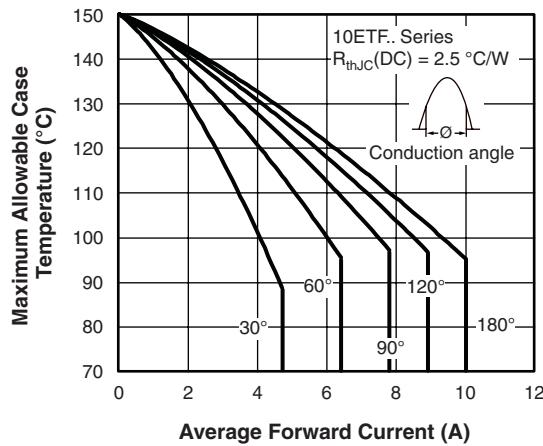


Fig. 1 - Current Rating Characteristics

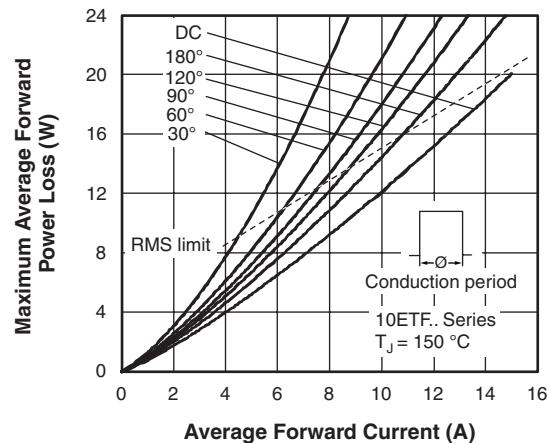


Fig. 4 - Forward Power Loss Characteristics

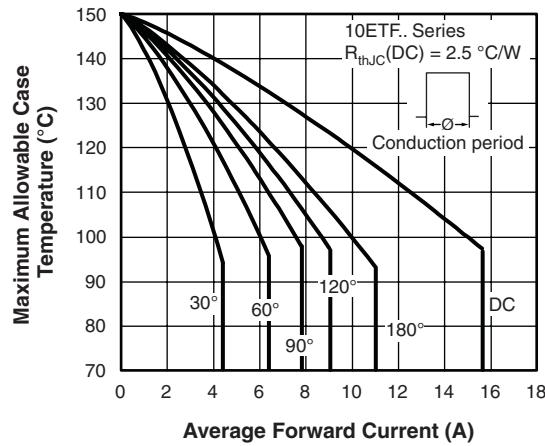


Fig. 2 - Current Rating Characteristics

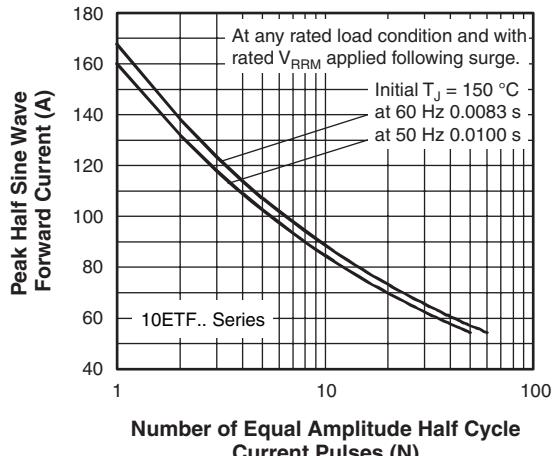


Fig. 5 - Maximum Non-Repetitive Surge Current

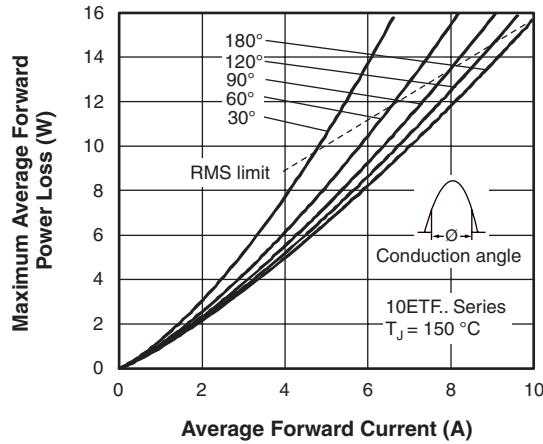


Fig. 3 - Forward Power Loss Characteristics

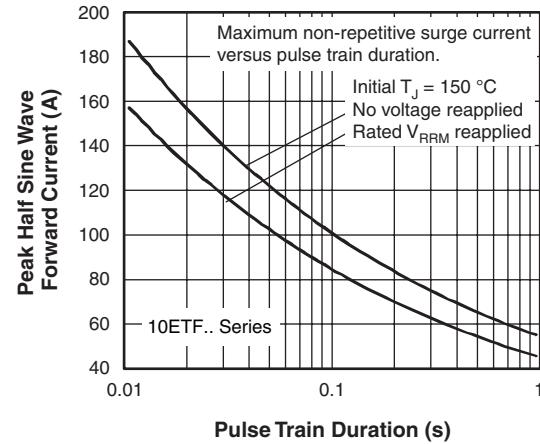


Fig. 6 - Maximum Non-Repetitive Surge Current

10ETF..FPPbF Soft Recovery Series

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Fast Soft Recovery
Rectifier Diode, 10 A

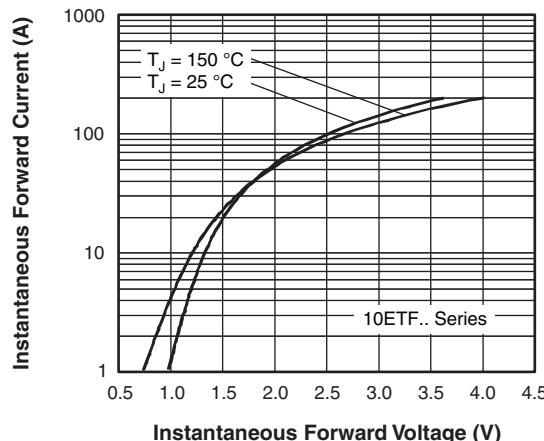


Fig. 7 - Forward Voltage Drop Characteristics

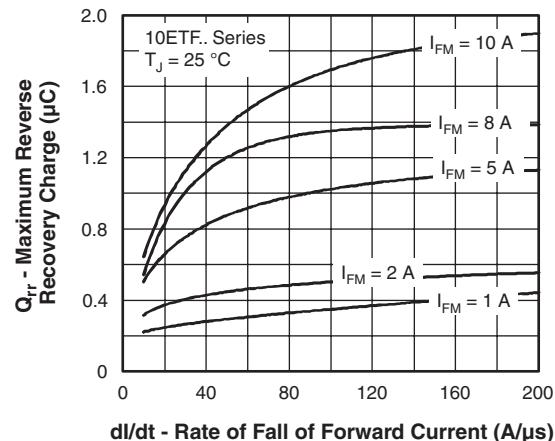


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

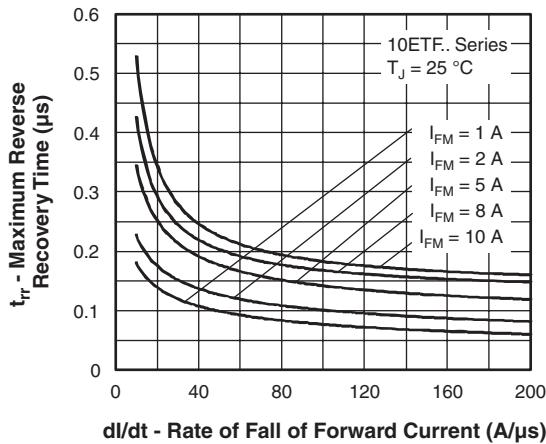


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

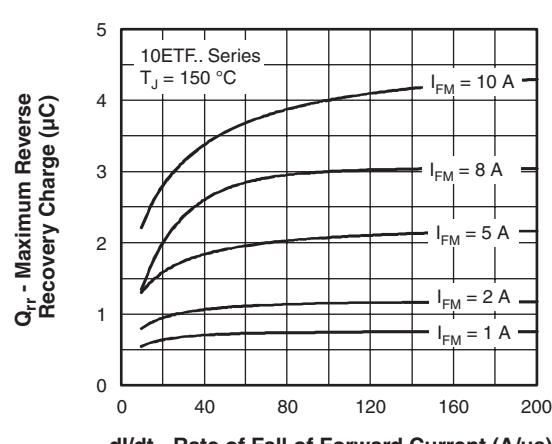


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

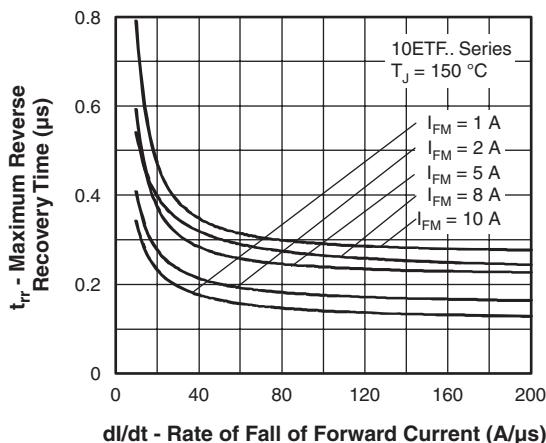


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

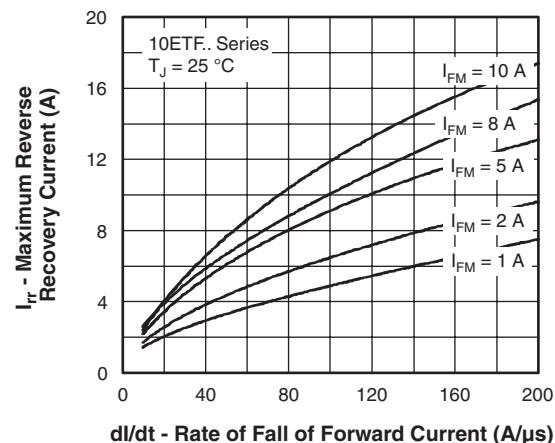


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

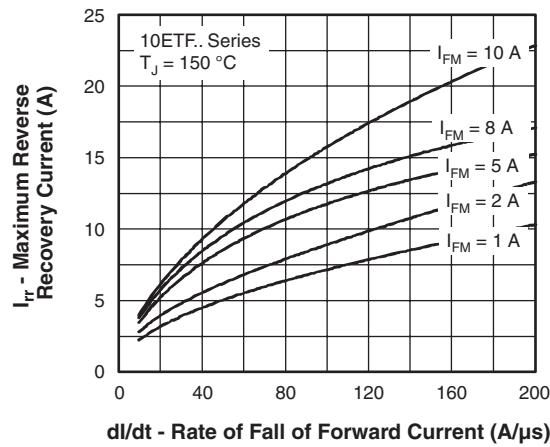


Fig. 13 - Recovery Current Characteristics, $T_J = 150$ °C

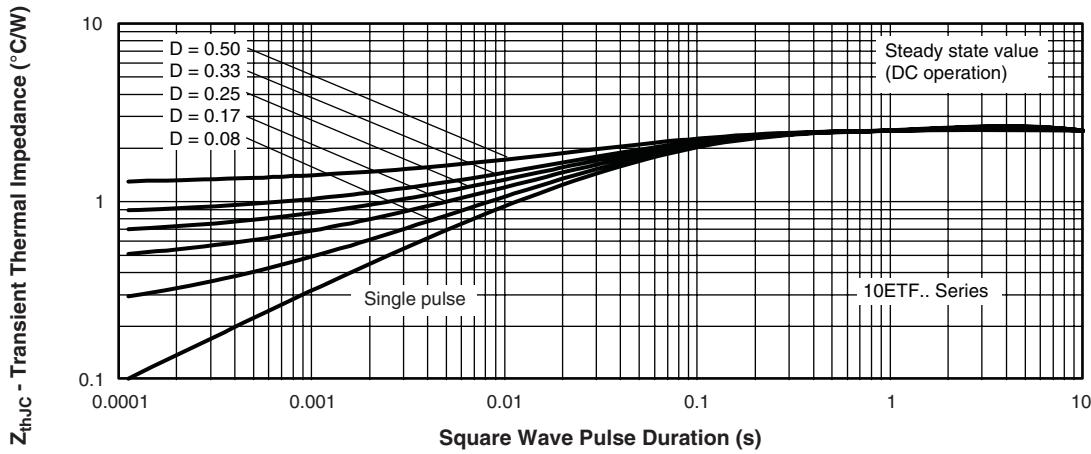


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

10ETF..FPPbF Soft Recovery Series

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Fast Soft Recovery
Rectifier Diode, 10 A



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} 10 = 1000 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

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