

Ultrafast Soft Recovery Diode, 2 x 15 A FRED Pt® Gen 4

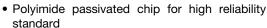




PRIMARY CHARACTERISTICS					
I _{F(AV)} per leg 15 A					
V_R	600 V				
V _F at I _F	1.08 V				
t _{rr} typ.	37 ns				
T _J max.	175 °C				
Package	TO-3PF				
Circuit configuration	Common cathode				

FEATURES

- Gen 4 FRED Pt technology
- Low I_{RRM} and reverse recovery charge
- Very low forward voltage drop





- Fully isolated package (V_{INS} = 2500 V_{RMS})
- 175 °C operating junction temperature
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION

Gen 4 Fred Pt technology, state of the art, ultralow V_F , soft switching optimized for Discontinuous (Critical) Mode (DCM) and IGBT F/W diode.

The minimized conduction loss, optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS	MAX.	UNITS	
Peak repetitive reverse voltage	V_{RRM}		600	V	
Average rectified forward current, per leg	I _{F(AV)}	T _C = 120 °C	15	^	
Non-repetitive peak surge current, per leg	I _{FSM}	$T_C = 25$ °C, $t_p = 8.3$ ms half sine wave	180	A	
Operating junction and storage temperature	T _J , T _{Stg}		-55 to +175	°C	

ELECTRICAL SPECIFICATIONS (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS	
Breakdown voltage, blocking voltage	V_{BR} , V_{R}	I _R = 100 μA	600	-	-		
Forward voltage		I _F = 15 A	-	1.3	1.6	V	
	V _F	I _F = 30 A	-	1.46	1.87		
	V _F	I _F = 15 A, T _J = 150 °C	-	1.08	1.3		
		I _F = 30 A, T _J = 150 °C	-	1.32	-		
Reverse leakage current		V _R = V _R rated	-	-	15		
	IR	T _J = 125 °C, V _R = V _R rated	-	-	500	μA	
Junction capacitance	C _T	V _R = 600 V	-	15	-	pF	



DYNAMIC RECOVERY CHARACTERISTICS (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
		$I_F = 1 A, dI_F/d^2$	$I_F = 1 \text{ A}, dI_F/dt = 100 \text{ A/}\mu\text{s}, V_R = 30 \text{ V}$		37	1	
Reverse recovery time, per leg	t _{rr}	T _J = 25 °C	$I_F = 15 \text{ A}$ $dI_F/dt = 1000 \text{ A/}\mu\text{s}$ $V_R = 400 \text{ V}$	-	73	-	ns
		T _J = 125 °C		-	83	-	
Peak recovery current, per leg	I _{RRM}	T _J = 25 °C		-	13	-	Α
		T _J = 125 °C		-	21	-	A
Daverse received above per les	Q _{rr}	T _J = 25 °C		-	500	-	nC
Reverse recovery charge, per leg		T _J = 125 °C		-	1100	-	IIC

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal resistance, junction to case	R_{thJC}		-	-	3	°C/W
Thermal resistance, case to heatsink	R _{thCS}		-	0.5	-	
Weight			-	6.2	-	g
			-	0.21	-	oz.
Mounting torque			4.0 (3.5)	-	6.0 (5.3)	kgf · cm (lbf · in)
Marking device		Case style TO-3PF	C4ZU3006FP			

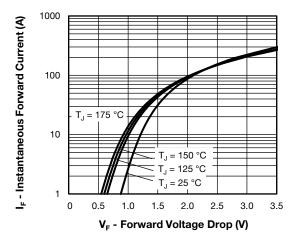


Fig. 1 - Typical Forward Voltage Drop Characteristics

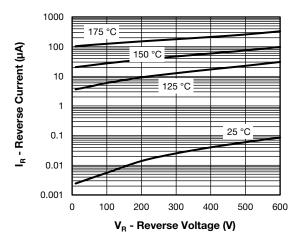


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

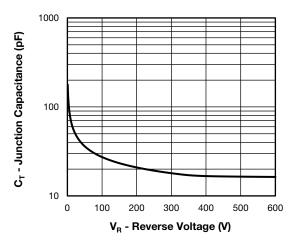


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

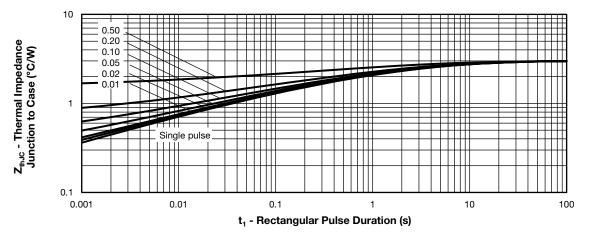


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

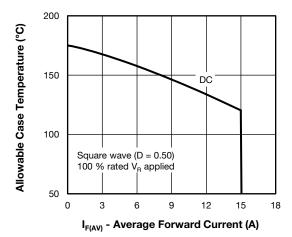


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

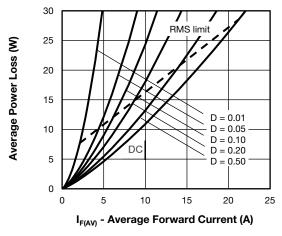


Fig. 6 - Forward Power Loss Characteristics



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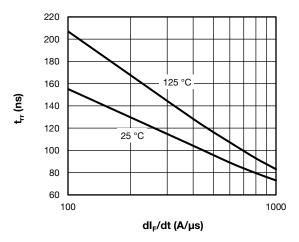


Fig. 7 - Typical Reverse Recovery Time vs. dl_F/dt

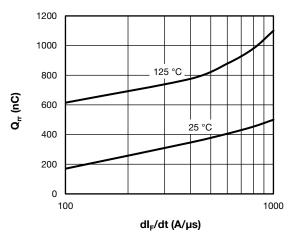
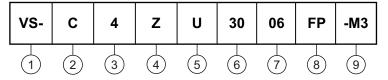


Fig. 8 - Typical Stored Charge vs. dl_F/dt

ORDERING INFORMATION TABLE

Device code



1 - Vishay Semiconductors product

2 - Circuit configuration:

C = common cathode

3 - FRED Pt Gen 4

4 - Z = TO-3PF package

5 - Process type:

U = ultrafast recovery

6 - Current rating (30 = 2 x 15 A)

7 - Voltage rating (06 = 600 V)

8 - FULL-PAK

9 - Environmental digit:

-M3 = halogen-free, RoHS-compliant, terminations lead (Pb)-free

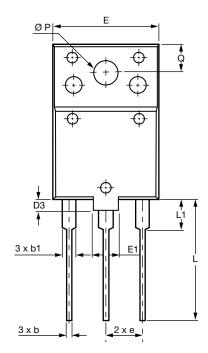
ORDERING INFORMATION (Example)						
PREFERRED P/N QUANTITY PER TUBE MINIMUM ORDER QUANTITY PACKAGING DESCRIPTION						
VS-C4ZU3006FP-M3	25	300	Antistatic plastic tube			

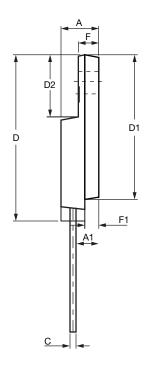
LINKS TO RELATED DOCUMENTS					
Dimensions TO-3PF <u>www.vishay.com/doc?96691</u>					
Part marking information TO-3PF <u>www.vishay.com/doc?96690</u>					



TO-3PF

DIMENSIONS in millimeters





SYMBOL	MIN.	NOM.	MAX.			
A	5.30	5.50	5.70			
A1	3.10	3.30	3.50			
b	0.65	0.85	0.95			
b1	1.80	2.00	2.20			
С	0.80	0.90	1.10			
D	26.30	26.50	26.70			
D1	22.80	23.00	23.20			
D2	9.80	10.00	10.20			
D3	1.80	2.00	2.20			
E	15.30	15.50	15.70			
E1	3.80	4.00	4.20			
е		5.45 BSC				
F	2.80	3.00	3.20			
F1	1.80	2.00	2.20			
L	19.10	19.30	19.50			
L1	4.20	4.50	5.20			
Q	4.30	4.50	4.70			
ØP	3.40	3.60	3.80			



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