RoHS

COMPLIANT



Vishay Semiconductors

Insulated Ultra Fast Rectifier Module, 330 A



$\begin{array}{c|c} \textbf{PRIMARY CHARACTERISTICS} \\ \hline V_R & 600 \text{ V} \\ \hline I_{F(AV)} \text{ per module at } T_C = 107 \text{ °C} & 330 \text{ A} \\ \hline t_{rr} & 98 \text{ ns} \\ \hline Type & Modules - Diode FRED Pt® \\ \hline Package & SOT-227 \\ \hline Circuit configuration & Two separate diodes, parallel pin-out \\ \hline \end{array}$

FEATURES

- Gen 4 FRED Pt® dices technology
- Two fully independent diodes
- · Fully insulated package
- Ultrafast, soft reverse recovery, with high operation junction temperature (T_J max. = 175 °C)
- Low forward voltage drop
- Optimized for power conversion: welding and industrial SMPS applications
- Easy to use and parallel
- · Industry standard outline
- UL approved file E78996



- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION / APPLICATIONS

The VS-UFL330FA60 insulated modules integrate two state of the art ultrafast recovery rectifiers in the compact, industry standard SOT-227 package.

Gen 4 FRED technology, state of the art, ultra low V_F , soft switching optimized for IGBT F/W diode.

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

ABSOLUTE MAXIMUM RATINGS (T _J = 25 °C unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MAX.	UNITS		
Cathode to anode voltage	V_{R}		600	V		
Continuous forward current per diode	I _F	T _C = 90 °C	243	۸		
Single pulse forward current per diode	I _{FSM}	T _C = 25 °C, 10 ms sine or 6 ms rectangular pulse	1130	А		
Maximum power dissipation per module	P_D	T _C = 90 °C	773	W		
RMS isolation voltage	V _{ISOL}	Any terminal to case, t = 1 minute	2500	V		
Operating junction and storage temperatures	T _J , T _{Stg}		-55 to +175	°C		



ELECTRICAL SPECIFICATIONS PER DIODE (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	L TEST CONDITIONS		TYP.	MAX.	UNITS	
Cathode to anode breakdown voltage	V_{BR}	I _R = 500 μA	600	-	-		
Forward voltage	V _{FM}	I _F = 200 A	-	1.43	1.65	V	
		I _F = 200 A, T _J = 125 °C	-	1.29	-		
		I _F = 200 A, T _J = 175 °C	-	1.22	-		
	I _{RM}	V _R = 600 V	-	0.3	150		
Reverse leakage current		T _J = 125 °C, V _R = 600 V	-	222	-	- μΑ	
		T _J = 175 °C, V _R = 600 V	=	4.2	-	mA	
Junction capacitance	C _T	V _R = 600 V, f = 1 MHz	-	160	-	pF	

DYNAMIC RECOVERY CHARACTERISTICS (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t _{rr}	T _J = 25 °C	$I_F = 50 \text{ A}$ $dI_F/dt = 500 \text{ A/}\mu\text{s}$ $V_R = 200 \text{ V}$	-	98	-	ns
		T _J = 125 °C		-	163	-	
Peak recovery current	I _{RRM}	T _J = 25 °C		-	17	=	А
		T _J = 125 °C		-	34	-	
Reverse recovery charge	Q _{rr}	T _J = 25 °C		-	825	=	nC
		T _J = 125 °C		-	2788	=	

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Junction to case, single leg conducting	В		-	-	0.22	
Junction to case, both leg conducting	R_{thJC}		=	-	0.11	°C/W
Case to heatsink	R _{thCS}	Flat, greased surface	-	0.1	-	
Weight			-	30	-	g
Mounting torque		Torque to terminal	-	-	1.1 (9.7)	Nm (lbf.in)
iviounting torque		Torque to heatsink	=	=	1.8 (15.9)	Nm (lbf.in)
Case style				S	OT-227	



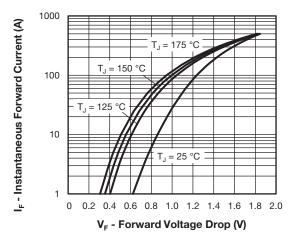


Fig. 1 - Typical Forward Voltage Drop vs. Instantaneous Forward Current (Per Diode)

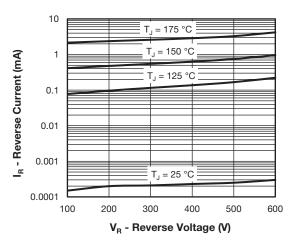


Fig. 2 - Typical Reverse Current vs. Reverse Voltage (Per Diode)

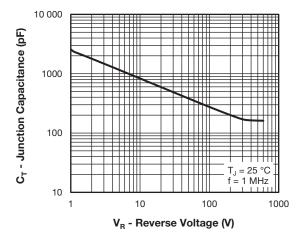


Fig. 3 - Typical Junction Capacitance vs Reverse Voltage (Per Diode)

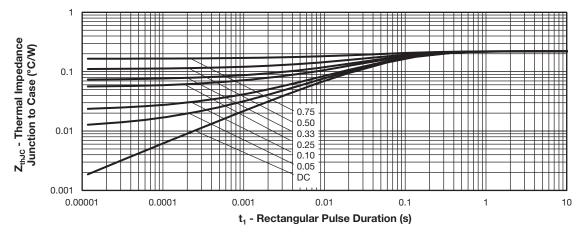


Fig. 4 - Maximum Thermal Impedance Junction-to-Case Characteristics (Per Diode)

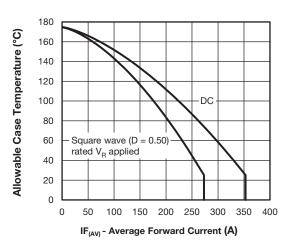


Fig. 5 - Maximum Current Rating Capability (Per Diode)

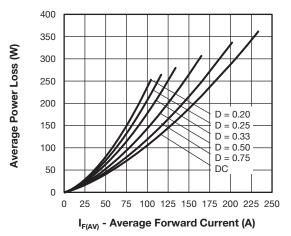


Fig. 6 - Forward Power Loss Characteristics (Per Diode)

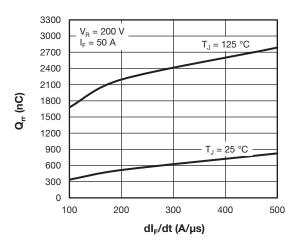


Fig. 7 - Typical Reverse Recovery Charge vs. dI_F/dt (Per Diode)

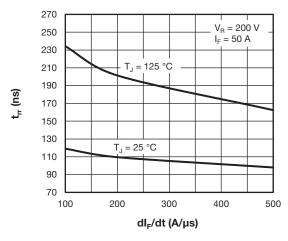


Fig. 8 - Typical Reverse Recovery Time vs. dl_F/dt (Per Diode)

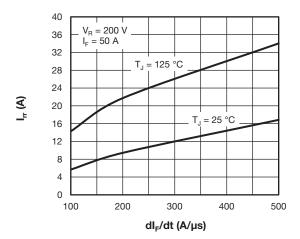
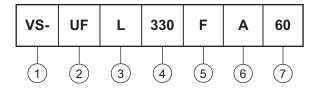


Fig. 9 - Typical Reverse Recovery Current vs. dl_F/dt (Per Diode)

ORDERING INFORMATION TABLE

Device code



1 - Vishay Semiconductors product

2 - Ultrafast rectifier

Ultrafast Pt diffused, low V_F

Current rating (300 = 300 A)

5 - Circuit configuration (2 separate diodes, parallel pin-out)

6 - Package indicator (SOT-227 standard insulated base)

7 - Voltage rating (60 = 600 V)

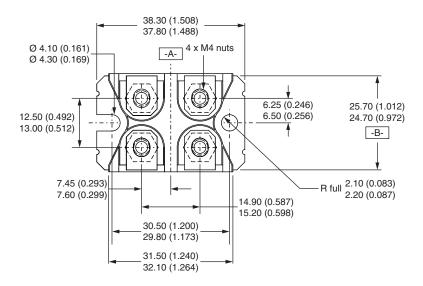
Quantity per tube is 10 pcs, M4 screw and washer included

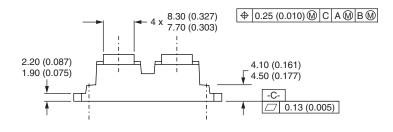
CIRCUIT CONFIGURATION					
CIRCUIT	CIRCUIT CONFIGURATION CODE	CIRCUIT DRAWING			
Two separate diodes, parallel pin-out	F	Lead Assignment 4 0 0 3 4 1 0 0 2 1			

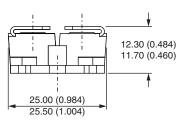
LINKS TO RELATED DOCUMENTS						
Dimensions	www.vishay.com/doc?95423					
Packaging information	www.vishay.com/doc?95425					



DIMENSIONS in millimeters (inches)





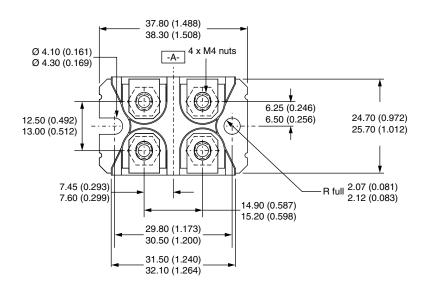


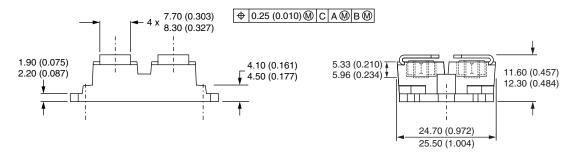
Note

Controlling dimension: millimeter

SOT-227 Generation 2

DIMENSIONS in millimeters (inches)





Note

· Controlling dimension: millimeter



Legal Disclaimer Notice

Vishay

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