

Insulated Gen 2 Schottky Rectifier Module, 100 A



SOT-227

LINKS TO ADDITIONAL RESOURCES



Application Notes

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$ per module at $T_C = 93\text{ }^\circ\text{C}$	100 A
V_R	100 V
V_{FM} at 50 A, $T_C = 25\text{ }^\circ\text{C}$	0.83 V
Package	SOT-227
Circuit configuration	Two separate diodes, parallel pin-out

FEATURES

- Max. $T_J = 150\text{ }^\circ\text{C}$
- Two fully independent diodes
- Fully insulated package
- Trench MOS Barrier Schottky technology
- Ultra low forward voltage drop
- Optimized for power conversion: welding and industrial SMPS applications
- Easy to use and parallel
- Industry standard outline
- Designed and qualified for industrial level
- UL approved file E78996
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

DESCRIPTION

The VS-QA100FA10 insulated modules integrate two state of the art Trench MOS Schottky technology rectifiers in the compact, industry standard SOT-227 package.

These devices are thus intended for high frequency converters and switching power supplies.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
V_F	$I_F = 50\text{ A}$, $T_J = 150\text{ }^\circ\text{C}$	0.66	V
T_J	Range	-40 to +150	$^\circ\text{C}$

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Cathode to anode voltage	V_R		100	V
Average forward current	$I_{F(AV)}$	$T_C = 93\text{ }^\circ\text{C}$	100	A
per diode		$T_C = 93\text{ }^\circ\text{C}$	50	
Continuous forward current	I_F	$T_C = 90\text{ }^\circ\text{C}$	134	
per diode		$T_C = 90\text{ }^\circ\text{C}$	67	
Single pulse forward current per diode	I_{FSM}	$T_C = 150\text{ }^\circ\text{C}$, $t = 6\text{ ms}$, square	450	
Maximum power dissipation per diode	P_D	$T_C = 90\text{ }^\circ\text{C}$	67	W
Non-repetitive avalanche energy per diode	E_{AS}	$T_J = 25\text{ }^\circ\text{C}$, $L = 1\text{ mH}$	583	mJ
RMS isolation voltage	V_{ISOL}	Any terminal to case, $t = 1\text{ min}$	2500	V
Operating junction and storage temperatures	T_J , T_{Stg}		-40 to +150	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS PER DIODE ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Cathode to anode breakdown voltage	V_{BR}	$I_R = 1\text{ mA}$	100	-	-	V
Forward voltage	V_{FM}	$I_F = 50\text{ A}$	-	0.83	1.03	
		$I_F = 50\text{ A}$, $T_J = 150\text{ }^\circ\text{C}$	-	0.66	-	
Reverse leakage current	I_{RM}	$V_R = 100\text{ V}$	-	0.03	0.8	mA
		$T_J = 125\text{ }^\circ\text{C}$, $V_R = 100\text{ V}$	-	17	-	
Junction capacitance	C_T	$V_R = 100\text{ V}$, $f = 1\text{ MHz}$	-	259	-	pF

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Junction-to-case, single leg conducting	R_{thJC}		-	-	0.89	°C/W
Junction-to-case, both leg conducting			-	-	0.45	
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)
		Torque to heatsink	-	-	1.8 (15.9)	Nm (lbf.in)
Case style			SOT-227			

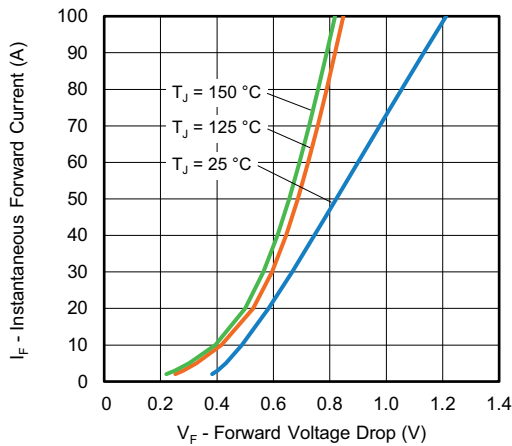


Fig. 1 - Typical Forward Voltage Drop Characteristics

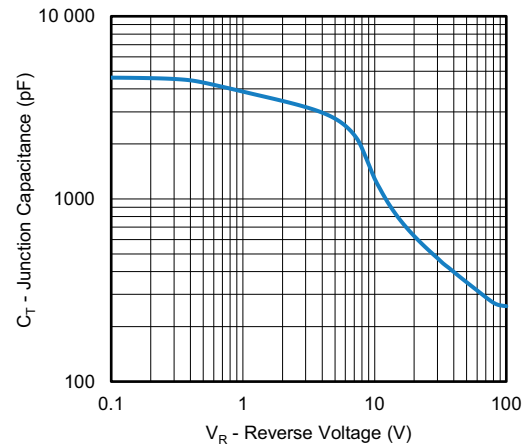


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

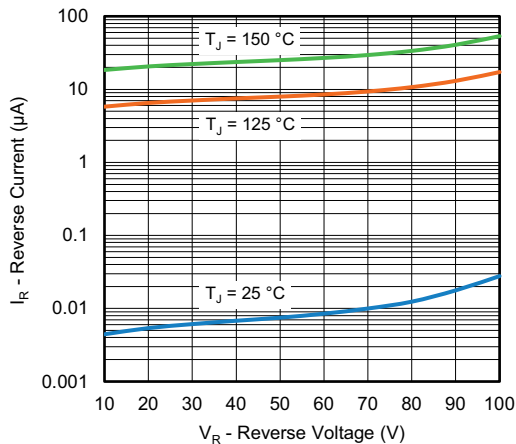


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

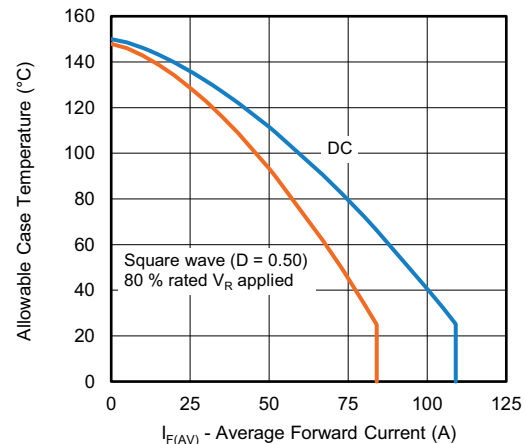


Fig. 4 - Current Rating Characteristics

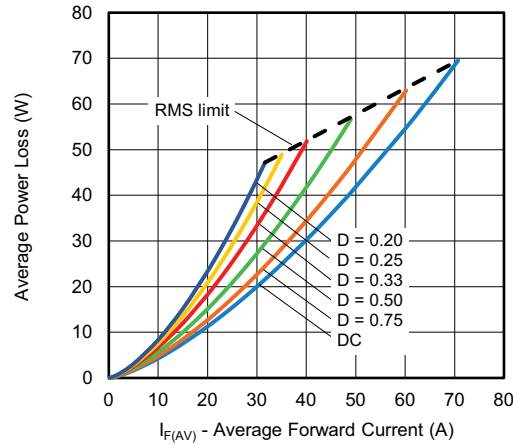


Fig. 5 - Total Power Loss Characteristics

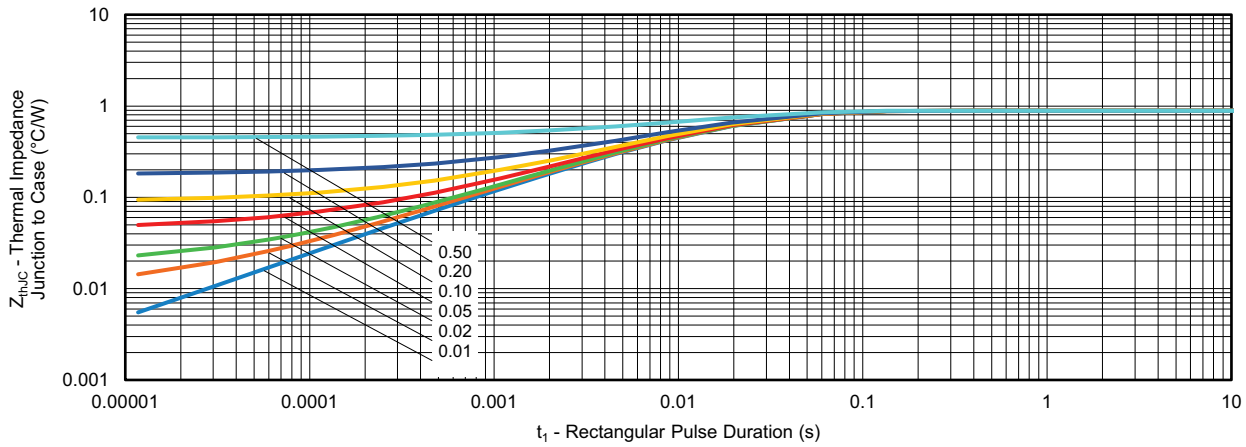


Fig. 6 - Maximum Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	Q	A	100	F	A	10
	①	②	③	④	⑤	⑥	⑦

- 1** - Vishay Semiconductors product
- 2** - Schottky technologies
- 3** - Present silicon generation
- 4** - Current rating (100 = 100 A)
- 5** - Circuit configuration (two separate diodes, parallel pin-out)
- 6** - Package indicator (SOT-227 standard insulated base)
- 7** - Voltage rating (10 = 100 V)

Quantity per tube is 10, M4 screw and washer included



CIRCUIT CONFIGURATION		
CIRCUIT	CIRCUIT CONFIGURATION CODE	CIRCUIT DRAWING
Two separate diodes, parallel pin-out	F	<p>The circuit drawing shows two diodes connected in parallel. The anodes are connected to pins 1 and 3, and the cathodes are connected to pins 2 and 4. The lead assignment diagram shows a four-pin package with pins 1, 2, 3, and 4 arranged in a 2x2 grid.</p>

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



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