SOT-227 Power Module
Insulated Standard Recovery Rectifier, 160 A

SOT-227

FEATURES

- Two fully independent diodes
- Fully insulated package
- High voltage rectifiers optimized for very low forward voltage drop
- Industry standard outline
- UL approved file E78996
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

DESCRIPTION / APPLICATIONS

These devices are intended for use in main rectification. Single or three phase bridge.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$ per module	160 A, T_C = 101 °C
V_{FM} typical at 100 A	1.16 V
Type	Modules - diode, high voltage
Package	SOT-227
Circuit configuration	Two separate diodes, parallel pin-out

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	90 °C	91	A
$I_{F(RMS)}$		138	
I_{FSM}	50 Hz	940	
	60 Hz	985	
I^2t	50 Hz	4420	A^2s
	60 Hz	4015	
$I^2\sqrt{t}$		44 180	$A^2\sqrt{s}$
V_{RRM}		1200	V
T_J		-55 to +150	°C
T_{Stg}		-40 to +150	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM}, MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM}, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} TYPICAL AT 150 °C mA
VS-RA160FA120	120	1200	1300	1.0

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at case temperature per leg	$I_{F(AV)}$	180° conduction, half sine wave, 90 °C			91	A
Maximum RMS forward current per leg	$I_{F(RMS)}$	DC at 101 °C case temperature			138	A
Maximum peak, one-cycle forward, non-repetitive surge current per leg	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	940	
		t = 8.3 ms			985	
		t = 10 ms	100 % V_{RRM} reapplied		790	
		t = 8.3 ms			825	
Maximum I^2t for fusing per leg	I^2t	t = 10 ms	No voltage reapplied		4420	A^2s
		t = 8.3 ms			4015	
		t = 10 ms	100 % V_{RRM} reapplied		3125	
		t = 8.3 ms			2840	
Maximum $I^2\sqrt{t}$ for fusing per leg	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied			44 180	$A^2\sqrt{s}$
Low level of threshold voltage per leg	$V_{F(TO)1}$	(16.7 % x π x $I_{F(AV)}$) < I < π x $I_{F(AV)}$, $T_J = T_J$ maximum			0.80	V
Low level value of forward slope resistance	r_{f1}				4.32	mΩ
High level of threshold voltage per leg	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.93	V
High level value of forward slope resistance	r_{f2}				4.14	mΩ
Maximum forward voltage drop per leg	V_{FM}	I_{FM} = 100 A, T_J = 25 °C			1.27	V
		I_{FM} = 100 A, T_J = 150 °C			1.22	

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse leakage current per leg	I_{RRM}	T_J = 25 °C	150	µA
		T_J = 150 °C	1.5	mA
RMS insulation voltage	V_{INS}	T_J = 25 °C, any terminal to case, t = 1 minute	2500	V

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal resistance, junction to case	per leg	R_{thJC}	-	-	0.26	°C/W
	per module		-	-	0.13	
Thermal resistance, case to heatsink	per module	R_{thCS}	-	0.1	-	
Weight			-	30	-	g
Mounting torque to terminal			-	-	1.1 (9.7)	Nm (lbf. in)
Mounting torque to heatsink			-	-	1.8 (15.9)	Nm (lbf. in)
Case style			SOT-227			

ΔR CONDUCTION PER JUNCTION											
DEVICE	SINE HALF WAVE CONDUCTION					RECTANGULAR WAVE CONDUCTION					UNITS
	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	
VS-RA160FA120	0.109	0.122	0.149	0.213	0.355	0.069	0.119	0.159	0.223	0.358	°C/W

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

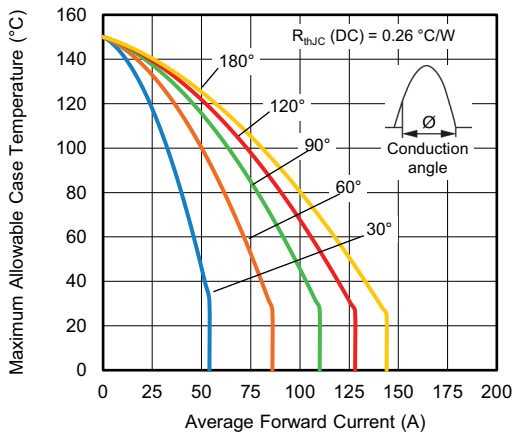


Fig. 1 - Current Ratings Characteristics (A)

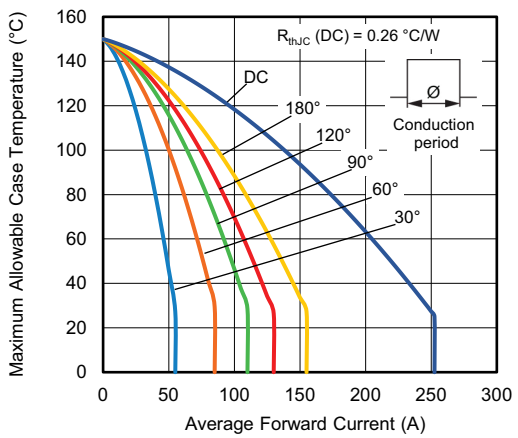


Fig. 2 - Current Ratings Characteristics (A)

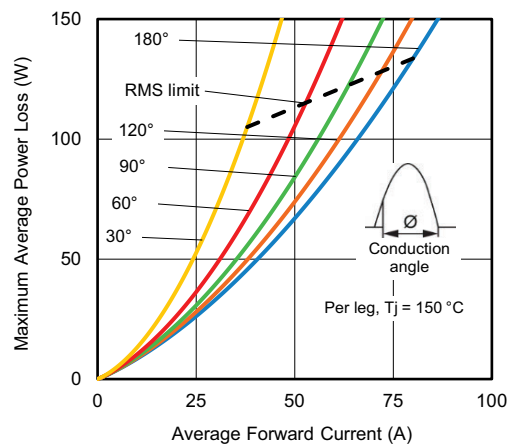


Fig. 3 - Current Ratings Characteristics (A)

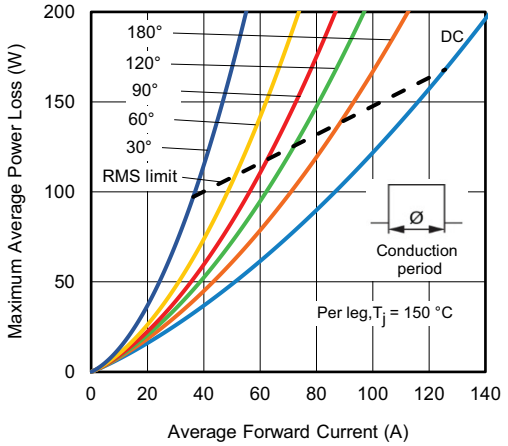


Fig. 4 - Forward Power Loss Characteristics

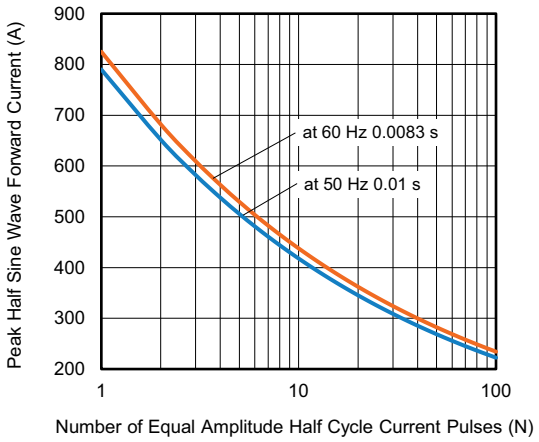


Fig. 5 - Forward Power Loss Characteristics

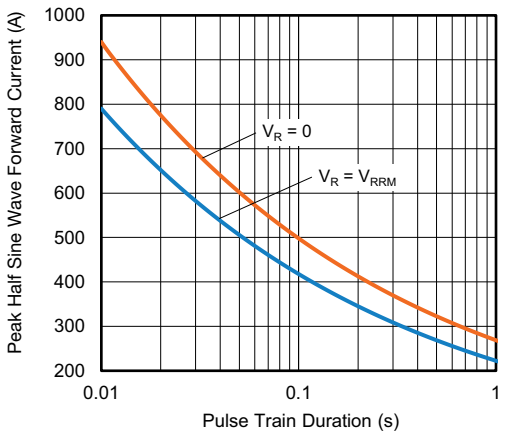


Fig. 6 - Maximum Non-Repetitive Surge Current

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

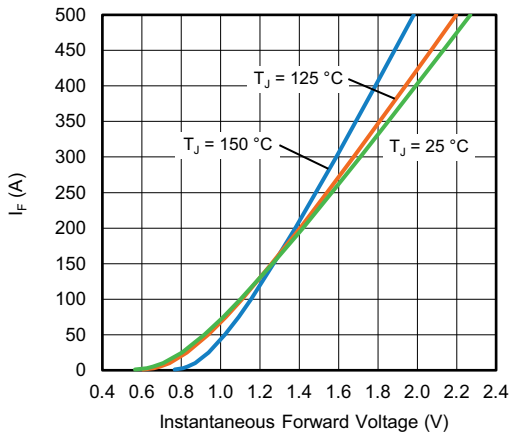


Fig. 7 - Typical Forward Voltage Characteristics

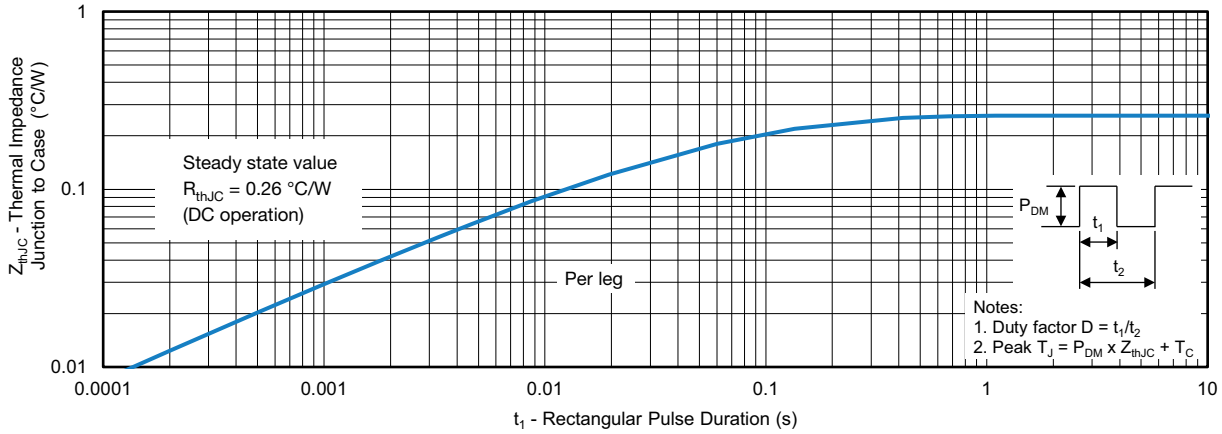


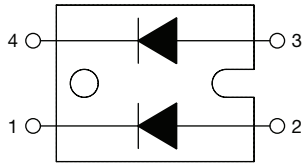
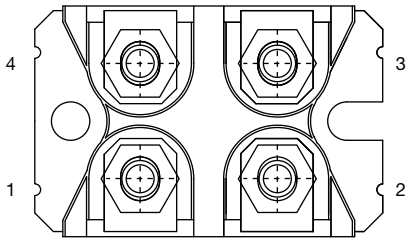
Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	R	A	160	F	A	120
	1	2	3	4	5	6	7

1 - Vishay Semiconductors product
2 - Standard recovery diode
3 - Present silicon generation
4 - Current rating (160 = 160 A)
5 - Circuit configuration (2 separate diodes, parallel pin-out)
6 - Package indicator (SOT-227 standard insulated base)
7 - Voltage rating (120 = 1200 V)

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

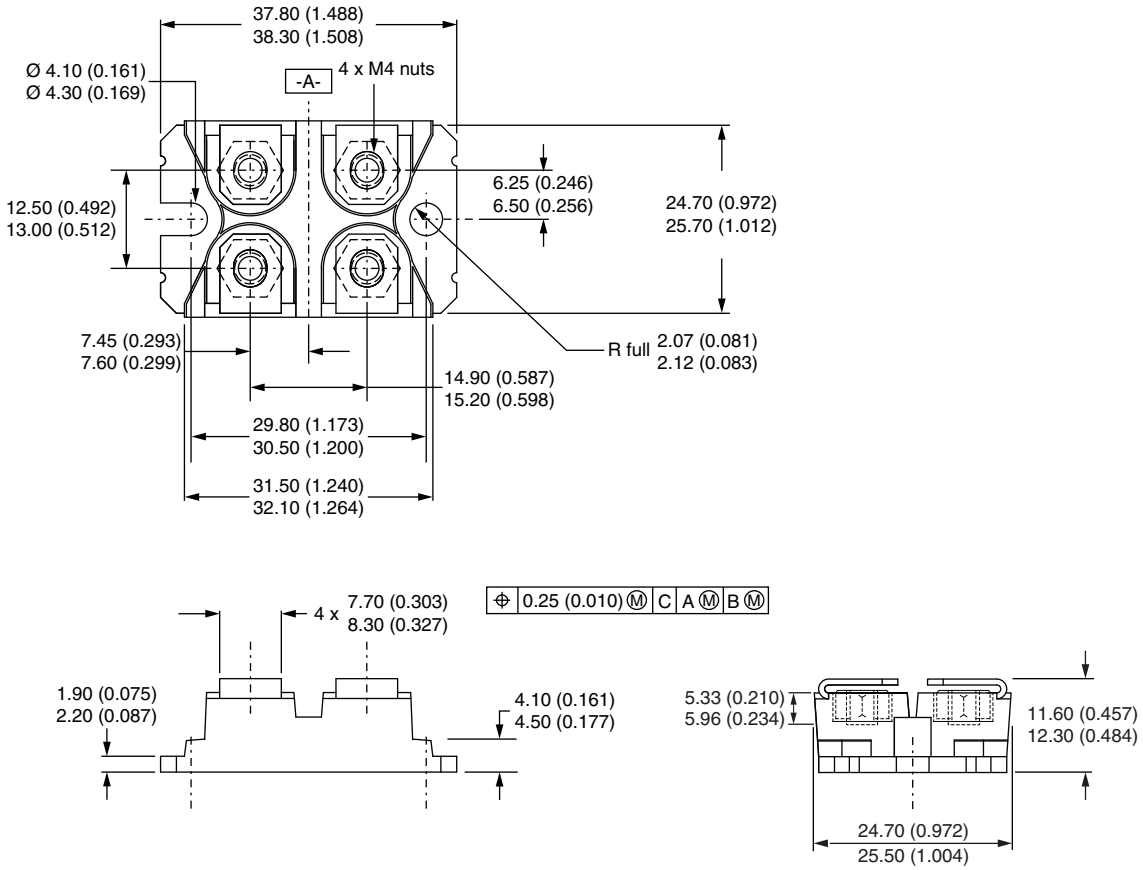
CIRCUIT CONFIGURATION		
CIRCUIT DESCRIPTION	**CIRCUIT CONFIGURATION CODE**	**CIRCUIT DRAWING**
Two separate diodes, parallel pin-out	F	 Lead Assignment 

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

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

SOT-227 Generation 2

DIMENSIONS in millimeters (inches)



Note

- Controlling dimension: millimeter

For technical questions, contact: DiodesAmericas@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

© 2025 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000