VS-25F(R) Series

Vishay Semiconductors



Standard Recovery Diodes, (Stud Version), 25 A



PRIMARY CHARACTERISTICS				
I _{F(AV)} 25 A				
Package DO-4 (DO-203AA)				
Circuit configuration Single				

FEATURES

- High surge current capability
- · Stud cathode and stud anode version
- Wide current range
- Types up to 1200 V V_{RRM}
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

- Battery charges
- Converters
- Power supplies
- Machine tool controls

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	VALUES	UNITS	
I _{F(AV)}		25	А	
	T _C	120	°C	
I _{F(RMS)}		40	А	
I _{FSM}	50 Hz	356	٨	
	60 Hz	373	A	
l ² t	50 Hz	636	A ² s	
	60 Hz	580	A-S	
V _{RRM}	Range	100 to 1200	V	
TJ		-65 to +175	°C	

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS					
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK VOLTAGE V	I _{RRM} MAXIMUM AT T _J = 175 °C mA	
	10	100	150		
	20	200	275		
	40	400	500		
VS-25F(R)	60	600	725	12	
	80	800	950		
	100	1000	1200		
	120	1200	1400		

Revision: 11-Jan-18

Document Number: 93506

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

1





www.vishay.com

Vishay Semiconductors

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current	I _{F(AV)}	180° conduction, half sine wave		25	А	
at case temperature	·r(AV)				120	°C
Maximum RMS forward current	I _{F(RMS)}				40	А
		t = 10 ms	No voltage		356	
Maximum peak, one-cycle forward,	I	t = 8.3 ms	reapplied	Sinusoidal half wave, initial T _J = T _J maximum	373	A
non-repetitive surge current	I _{FSM}	t = 10 ms	100 % V _{RRM}		300	A
		t = 8.3 ms	reapplied		314	
	l ² t	t = 10 ms	No voltage reapplied		636	A ² s
Maximum I ² t for fusing		t = 8.3 ms			580	
		t = 10 ms	100 % V _{RRM} reapplied		450	
		t = 8.3 ms			410	
Maximum I ² √t for fusing	l²√t	t = 0.1 to 10 ms, no voltage reapplied		6360	A²√s	
Low level value of threshold voltage	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		
High level value of threshold voltage	V _{F(TO)2}	$(I > \pi \times I_{F(AV)}), T_J = T_J$ maximum			0.90	V
Low level value of forward slope resistance	r _{f1}	(16.7 % x π x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$), $T_J = T_J$ maximum			6.80	m 0
High level value of forward slope resistance	r _{f2}	$(I > \pi \times I_{F(AV)}), T_J = T_J maximum$			5.70	mΩ
Maximum forward voltage drop	V _{FM}	I_{pk} = 78 A, T_J = 25 °C, t_p = 400 µs rectangular wave			1.30	V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction operating temperature range	TJ		-65 to +175	°C	
Maximum storage temperature range	T _{Stg}		-65 to +200	U	
Maximum thermal resistance, junction to case	R _{thJC}	DC operation	1.5		
Maximum thermal resistance, case to heat sink	R _{thCS}	Mounting surface, smooth, flat and greased	0.5	K/W	
		Not lubricated threads	1.5 + 0 - 10 % (13)	N · m (lbf · in)	
Allowable mounting torque		Lubricated threads	1.2 + 0 - 10 % (10)	N · m (lbf · in)	
Approximate weight			7	g	
			0.25	oz.	
Case style		See dimensions - link at the end of datasheet	DO-4 (DO-	-203AA)	

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS	
180°	0.28	0.24			
120°	0.39	0.41			
90°	0.50	0.54	$T_J = T_J maximum$	K/W	
60°	0.73	0.75			
30°	1.20	1.21			

Note

• The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

Revision: 11-Jan-18

Document Number: 93506

Vishay Semiconductors

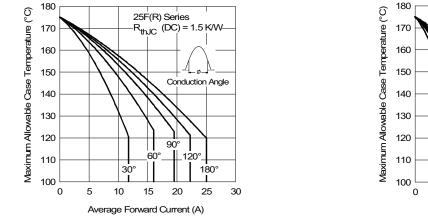


Fig. 1 - Current Ratings Characteristics

www.vishay.com

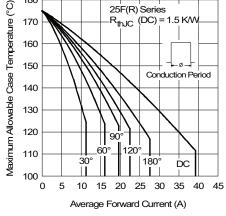


Fig. 2 - Current Ratings Characteristics

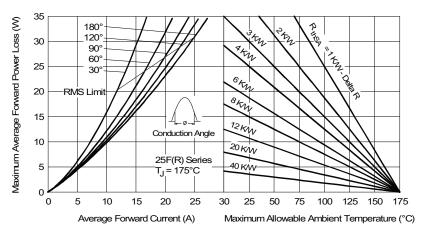
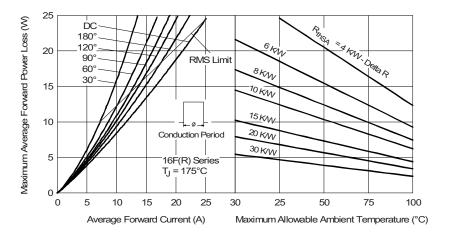
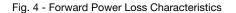


Fig. 3 - Forward Power Loss Characteristics







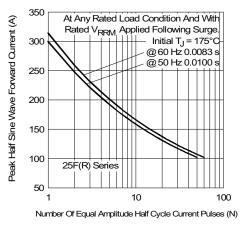


Fig. 5 - Maximum Non-Repetitive Surge Current

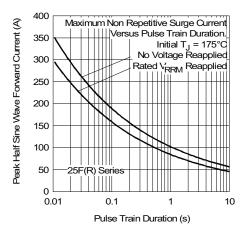


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE



VS-25F(R) Series

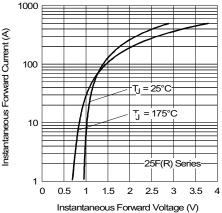


Fig. 7 - Forward Voltage Drop Characteristics

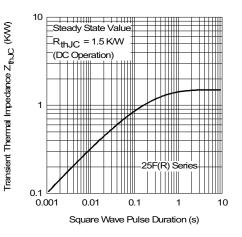
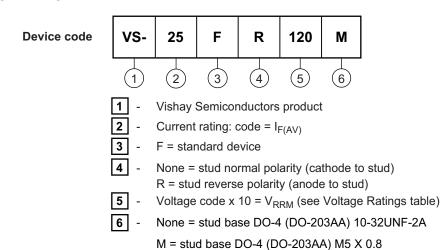


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



LINKS TO RELATED DOCUMENTS				
Dimensions www.vishay.com/doc?95311				
Revision: 11-Jan-18	4	Document Number: 93506		
For technical questions within your	region: DiodesAmericas@vishay.com, DiodesAsia@vishay	v.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



Vishay Semiconductors

R 0.40 R (0.02)

Ø 6.8 (0.27)

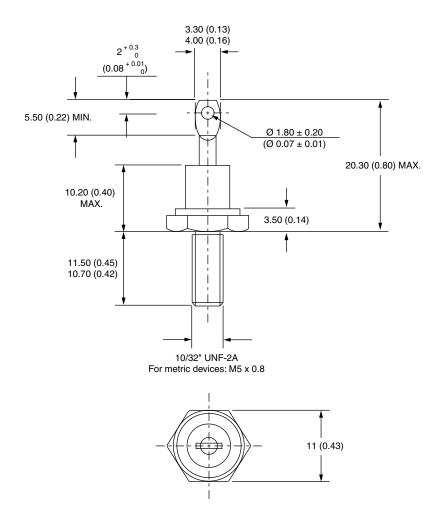
 0.8 ± 0.1

 (0.03 ± 0.004)



DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)







Vishay

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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.