

Standard Recovery Diodes (Stud Version), 25 A



DO-203AA (DO-4)


RoHS
COMPLIANT

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 www.vishay.com/doc?99912

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	25 A
Package	DO-203AA (DO-4)
Circuit configuration	Single diode

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		25	A
	T_C	120	°C
$I_{F(RMS)}$		40	A
I_{FSM}	50 Hz	356	A
	60 Hz	373	
I^2t	50 Hz	636	A^2s
	60 Hz	580	
V_{RRM}	Range	100 to 1200	V
T_J		-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
VS-25F(R)	10	100	150	12
	20	200	275	
	40	400	500	
	60	600	725	
	80	800	950	
	100	1000	1200	
	120	1200	1400	

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave			25	A	
					120	°C	
Maximum RMS forward current	I _{F(RMS)}				40	A	
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	356	A	
		t = 8.3 ms	373				
		t = 10 ms	100 % V _{RRM} reapplied		300		
		t = 8.3 ms	314				
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied	A ² s	636	A ² s	
		t = 8.3 ms	580				
		t = 10 ms	100 % V _{RRM} reapplied		450		
		t = 8.3 ms	410				
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			6360	A ² √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	V	
High level value of threshold voltage	V _{F(TO)2}	(I > π x I _{F(AV)} , T _J = T _J maximum)			0.90		
Low level value of forward slope resistance	r _{f1}	(16.7 % x π x I _{F(AV)} < I < π x I _{F(AV)} , T _J = T _J maximum)			6.80	mΩ	
High level value of forward slope resistance	r _{f2}	(I > π x I _{F(AV)} , T _J = T _J maximum)			5.70		
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	T _J			-65 to +175	°C
Maximum storage temperature range	T _{Stg}			-65 to +200	
Maximum thermal resistance, junction to case	R _{thJC}	DC operation		1.5	K/W
Maximum thermal resistance, case to heat sink	R _{thCS}	Mounting surface, smooth, flat and greased		0.5	
Allowable mounting torque		Not lubricated threads		1.5 + 0 - 10 % (13)	N · m (lbf · in)
		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-203AA (DO-4)	

ΔR _{thJC} CONDUCTION					
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS	
180°	0.28	0.24	T _J = T _J maximum	K/W	
120°	0.39	0.41			
90°	0.50	0.54			
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

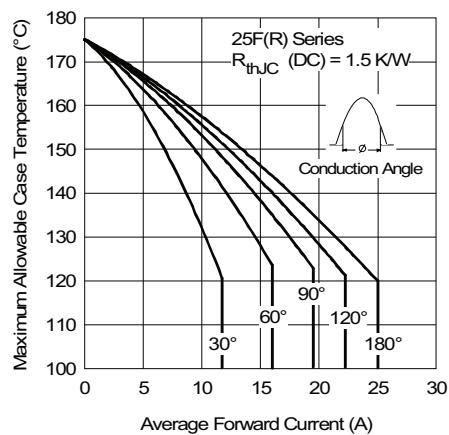


Fig. 1 - Current Ratings Characteristics

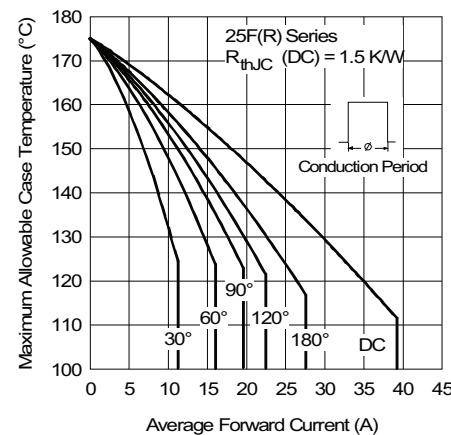


Fig. 2 - Current Ratings Characteristics

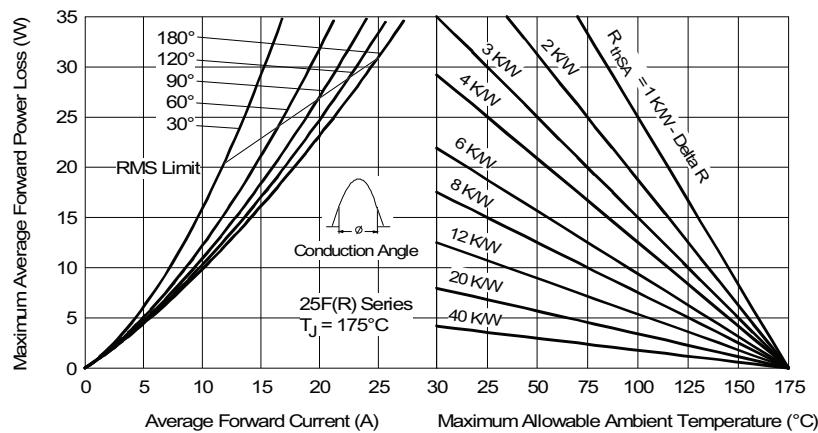


Fig. 3 - Forward Power Loss Characteristics

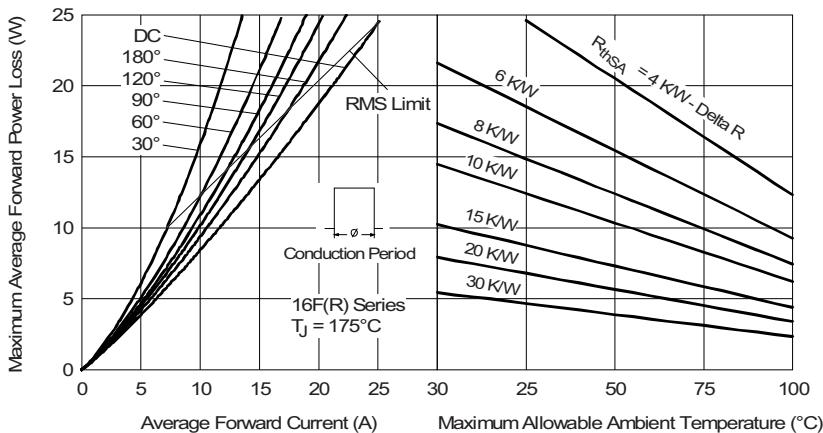


Fig. 4 - Forward Power Loss Characteristics

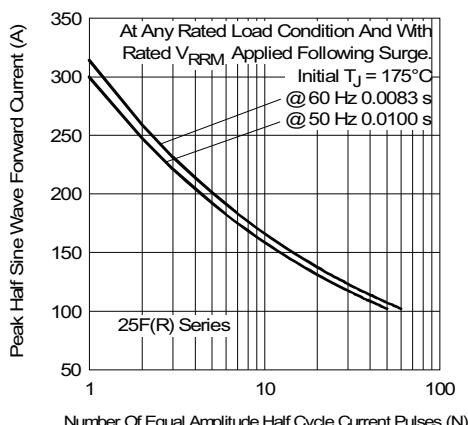


Fig. 5 - Maximum Non-Repetitive Surge Current

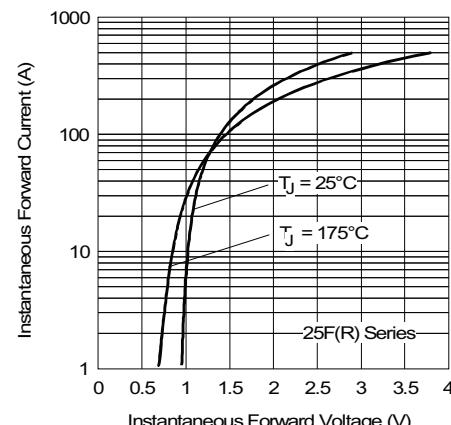


Fig. 7 - Forward Voltage Drop Characteristics

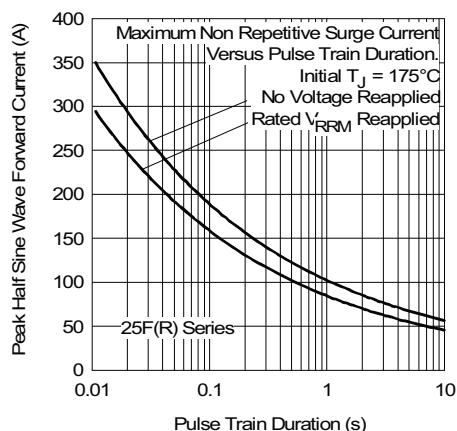


Fig. 6 - Maximum Non-Repetitive Surge Current

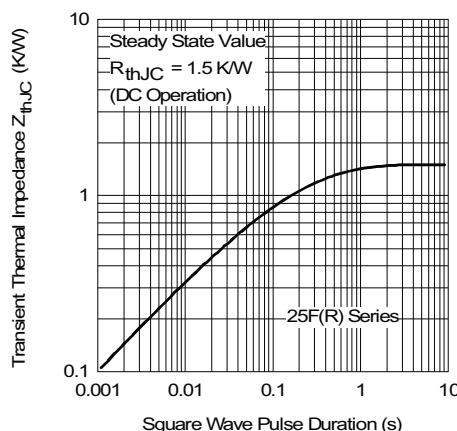


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

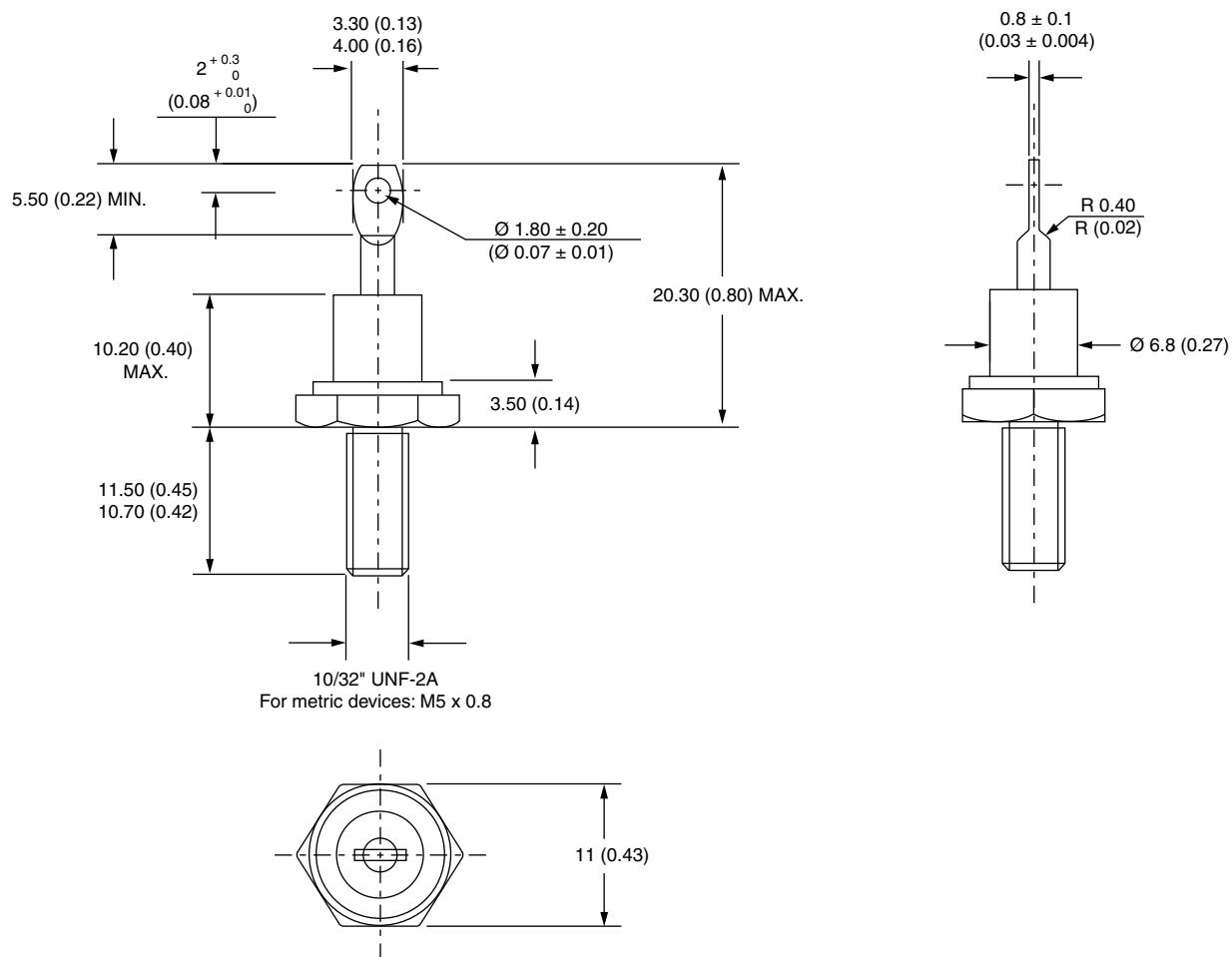
Device code	VS-	25	F	R	120	M
	(1)	(2)	(3)	(4)	(5)	(6)

- (1)** - Vishay Semiconductors product
- (2)** - Current rating: code = $I_{F(AV)}$
- (3)** - F = standard device
- (4)** - None = stud normal polarity (cathode to stud)
R = stud reverse polarity (anode to stud)
- (5)** - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- (6)** - None = stud base DO-203AA (DO-4) 10-32UNF-2A
M = stud base DO-203AA (DO-4) M5 X 0.8

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95311

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)



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