Standard Recovery Diodes, (Stud Version), 150 A

DO-8 (DO-205AA)

FEATURES

- Diffused diode
- High voltage ratings up to 1200 V
- High surge current capabilities
- Stud cathode and stud anode version
- Hermetic metal case
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

- Welders
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications
- Battery charges
- Freewheeling diodes

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	150 A
Package	DO-8 (DO-205AA)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		150	A
	T_C	125	°C
$I_{F(RMS)}$		235	A
I_{FSM}	50 Hz	3000	
	60 Hz	3140	
I^2t	50 Hz	45	kA^2s
	60 Hz	41	
V_{RRM}	Range	600 to 1200	V
T_J		-40 to +180	°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} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
VS-150U(R)..	60	600	700	15
	80	800	900	
	100	1000	1100	
	120	1200	1300	

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			150	A
					125	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 110 °C			235	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	3000	
		t = 8.3 ms			3140	
Maximum I^2t for fusing	I^2t	t = 10 ms			45	kA^2s
		t = 8.3 ms			41	
Slope resistance	r_f	$T_J = T_J$ maximum			0.97	mΩ
Threshold voltage	$V_{F(T0)}$				0.80	V
Maximum forward voltage drop	V_{FM}	I_{pk} = 600 A, T_J = 25 °C, t_p = 10 ms sinusoidal wave			1.47	

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	T_J, T_{Stg}		-40 to +180	°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.3	K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.1	
Maximum allowable mounting torque + 0 - 20 %		Not lubricated threads tighting on hexagon	17	N · m
		Lubricated threads tighting on hexagon	14.5	
		Not lubricated threads tighting on nut	14	
		Lubricated threads tighting on nut	12	
Approximate weight			130	g
Case style		See dimensions - link at the end of datasheet	DO-8 (DO-205AA)	

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.031	0.023	$T_J = T_J$ maximum	K/W
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

Note

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

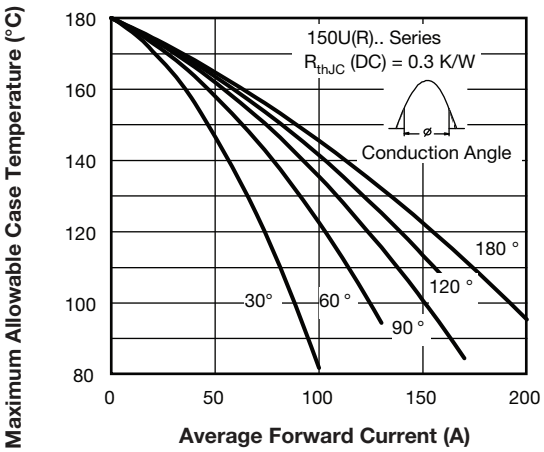


Fig. 1 - Current Ratings Characteristics

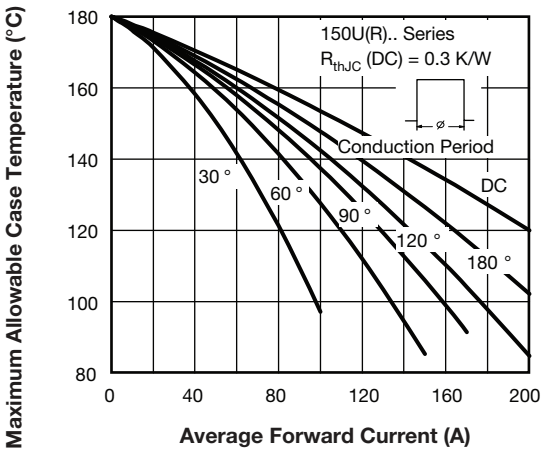


Fig. 2 - Current Ratings Characteristics

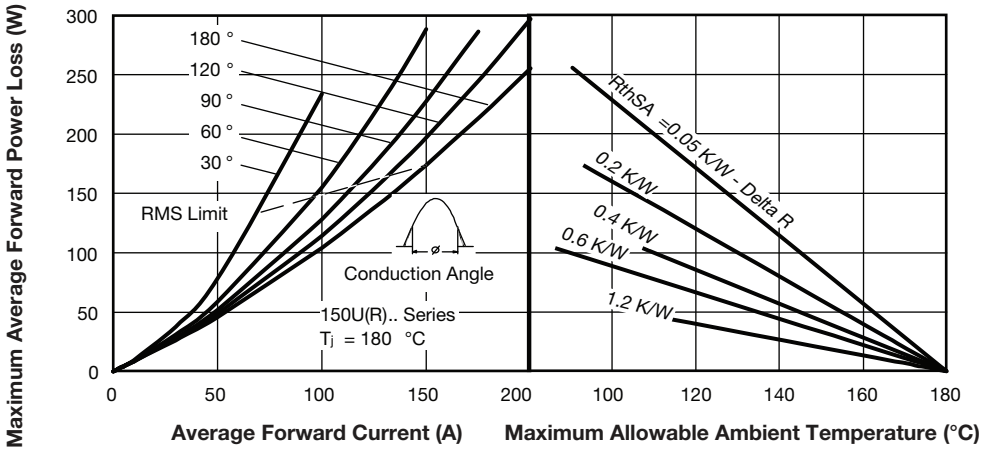


Fig. 3 - Forward Power Loss Characteristics

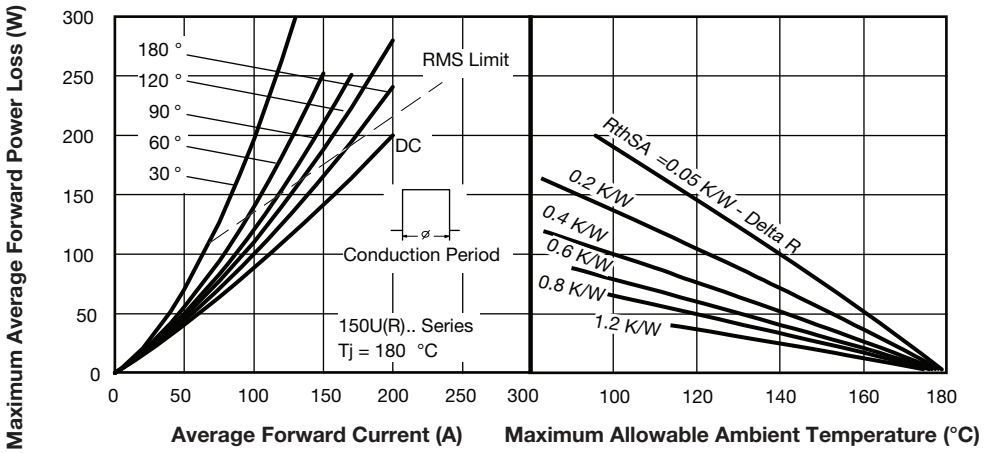


Fig. 4 - Forward Power Loss Characteristics

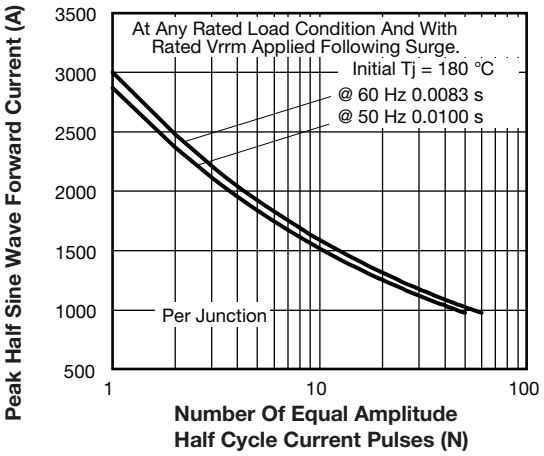


Fig. 5 - Maximum Non-Repetitive Surge Current

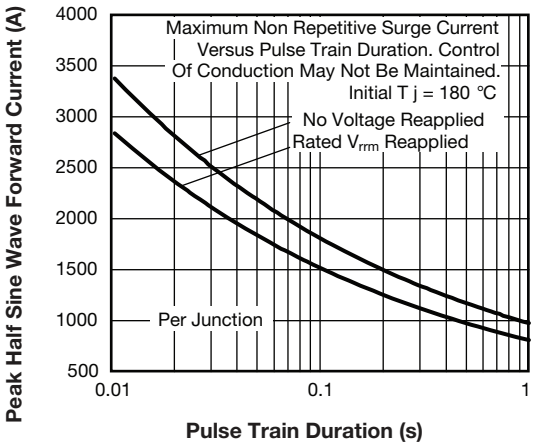


Fig. 6 - Maximum Non-Repetitive Surge Current

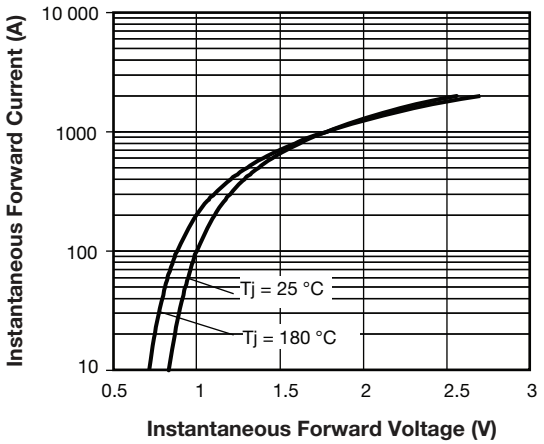


Fig. 7 - Forward Voltage Drop Characteristics

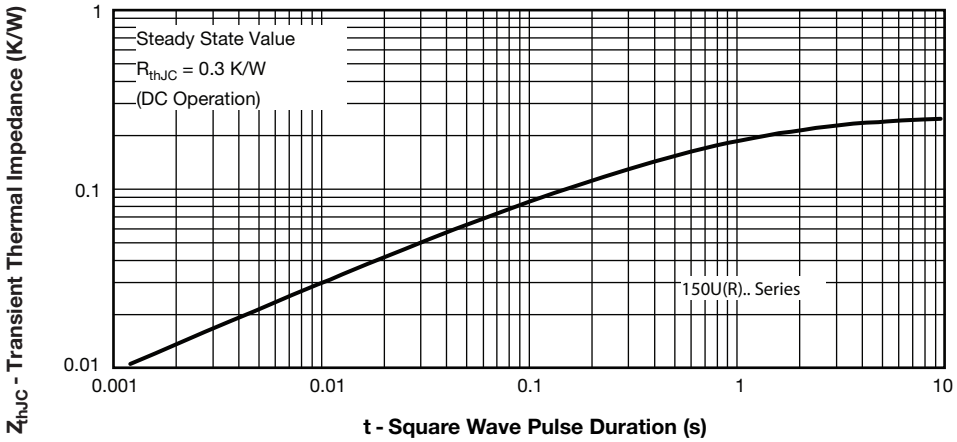


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

ORDERING INFORMATION TABLE

Device code

VS-	15	0	U	R	120	D	L
1	2	3	4	5	6	7	8

1 - Vishay Semiconductors product

2 - 15 = essential part number

3 - 0 = standard device

4 - U = stud normal polarity (cathode to stud)

5 - None = stud normal polarity (cathode to stud)
R = stud reverse polarity (anode to stud)

6 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)

7 - Diffused diode

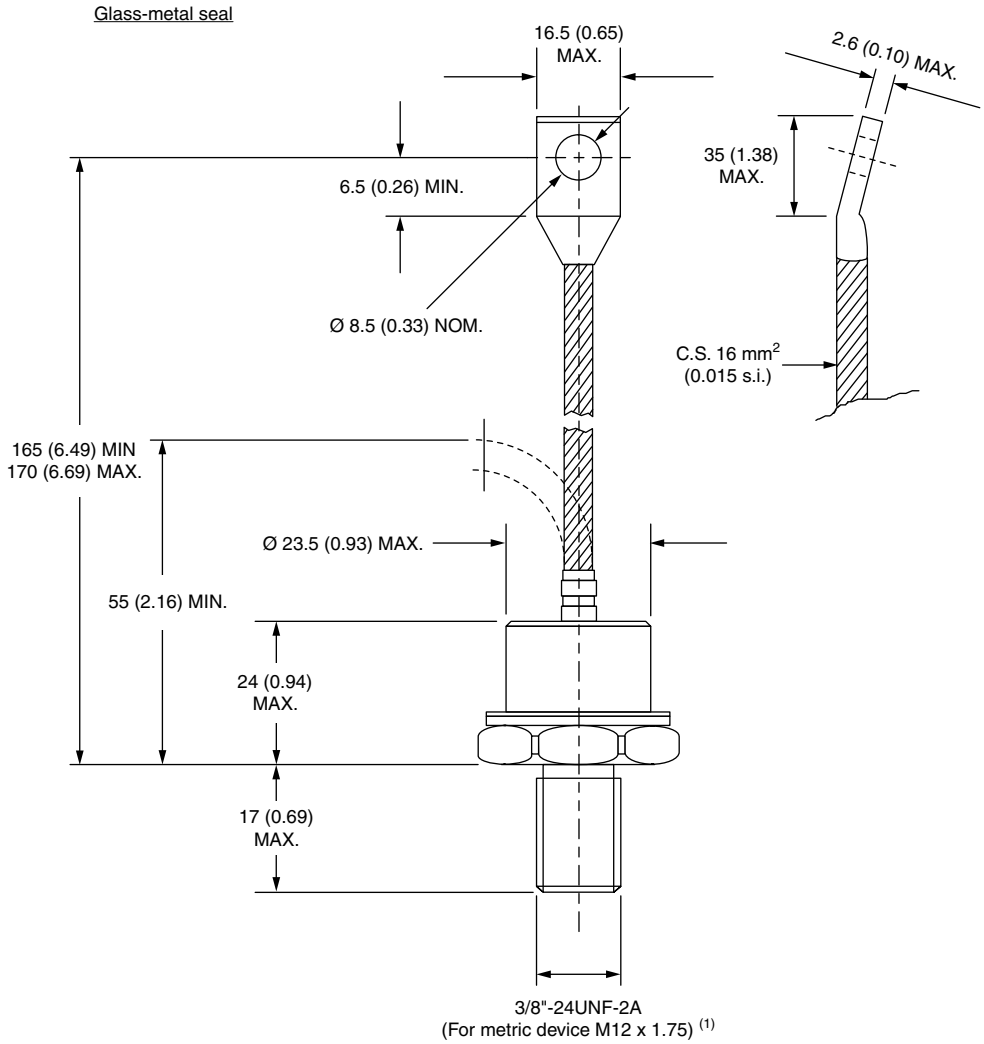
8 - L = stud base 1/2"-24UNF-2A threads
None = stud base 3/8"-24UNF-2A threads

Note
• For metric device M12 x 1.75 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95315

DO-205AA (DO-8) for 150U(R) Series

DIMENSIONS in millimeters (inches)



Note

(1) For stud base 1/2"-20UNF-2A threads; refer to “Ordering Information Table”

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