Standard Recovery Diodes (Stud Version), 320 A

DO-205AB (DO-9)

FEATURES

- Diffused diode
- Wide current range
- 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

PRODUCT SUMMARY	
$I_{F(AV)}$	320 A
Package	DO-205AB (DO-9)
Circuit configuration	Single diode

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		320	A
	T_C	100	°C
$I_{F(RMS)}$		500	A
I_{FSM}	50 Hz	4500	A
	60 Hz	4700	
I^2t	50 Hz	101	kA^2s
	60 Hz	92	
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-240U(R)..	60	600	700	15
	80	800	900	
	100	1000	1100	
	120	1200	1300	

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FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			320	A
					100	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 80 °C case temperature			500	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	4500	
		t = 8.3 ms			4700	
		t = 10 ms	100 % V_{RRM} reapplied		3800	
		t = 8.3 ms			4000	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		101	kA^2s
		t = 8.3 ms			92	
		t = 10 ms	100 % V_{RRM} reapplied		72	
		t = 8.3 ms			66	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			1010	$kA^2\sqrt{s}$
Slope resistance	r_f	$T_J = T_J$ maximum			0.6	mΩ
Threshold voltage	$V_{F(T0)}$				0.83	V
Maximum forward voltage drop	V_{FM}	I_{pk} = 750 A, T_J = 25 °C, t_p = 10 ms sinusoidal wave			1.33	

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	0.18	K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.08	
Maximum allowable mounting torque +0 -20 %		Not lubricated threads	37 (330)	N · m (lbf · in)
		Lubricated threads	28 (250)	
Approximate weight			250	g
Case style		See dimensions - link at the end of datasheet	DO-205AB (DO-9	

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.019	0.015	$T_J = T_J$ maximum	K/W
120°	0.023	0.025		
90°	0.030	0.034		
60°	0.045	0.047		
30°	0.076	0.076		

Note

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

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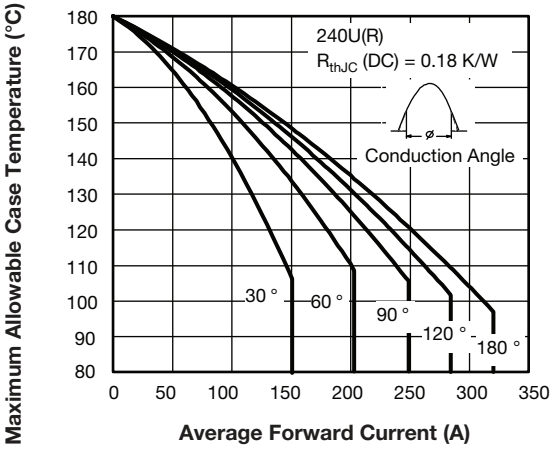

Fig. 1 - Current Ratings Characteristics

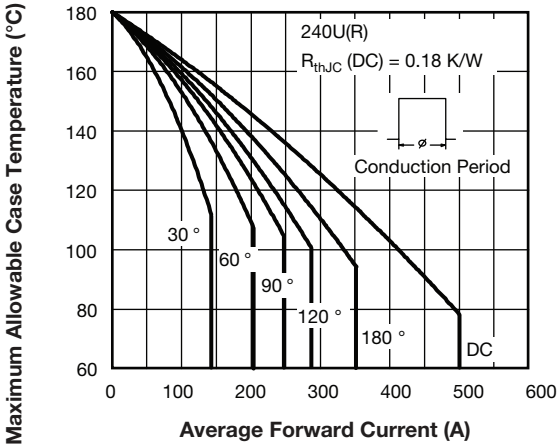

Fig. 2 - Current Ratings Characteristics

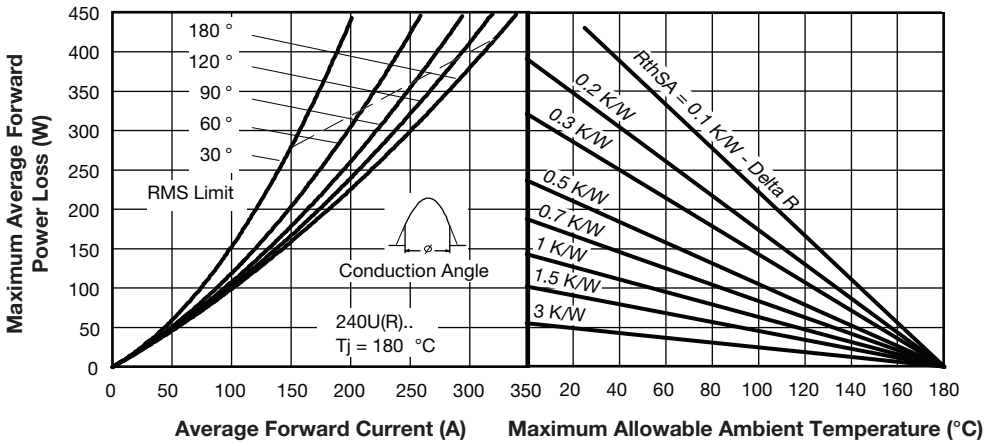

Fig. 3 - Forward Power Loss Characteristics

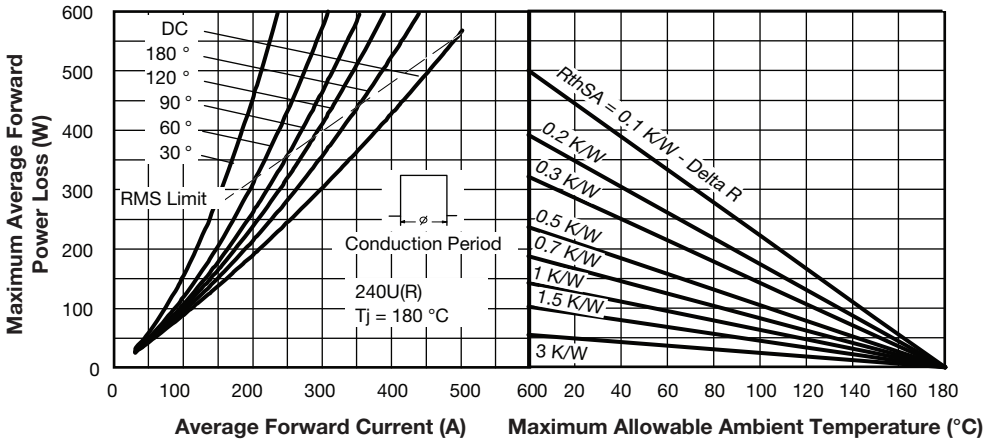

Fig. 4 - Forward Power Loss Characteristics

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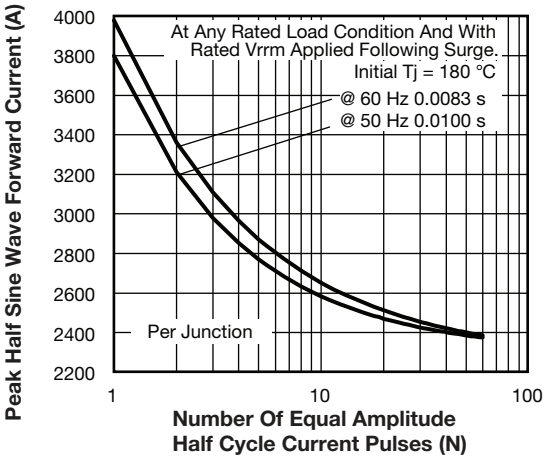

Fig. 5 - Maximum Non-Repetitive Surge Current

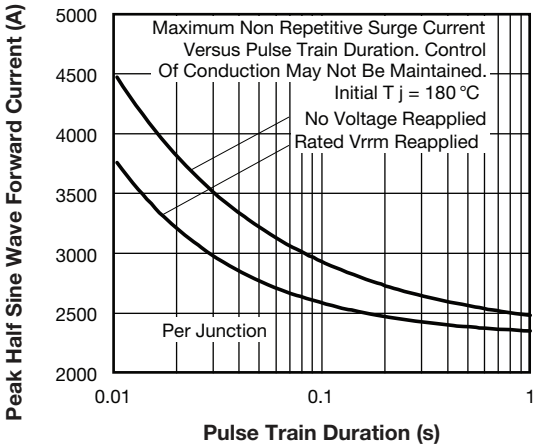

Fig. 6 - Maximum Non-Repetitive Surge Current

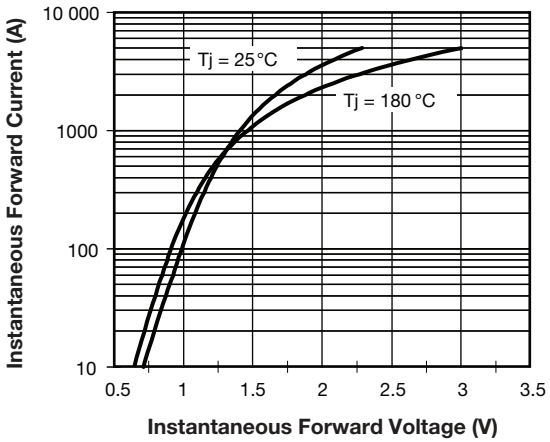

Fig. 7 - Forward Voltage Drop Characteristics

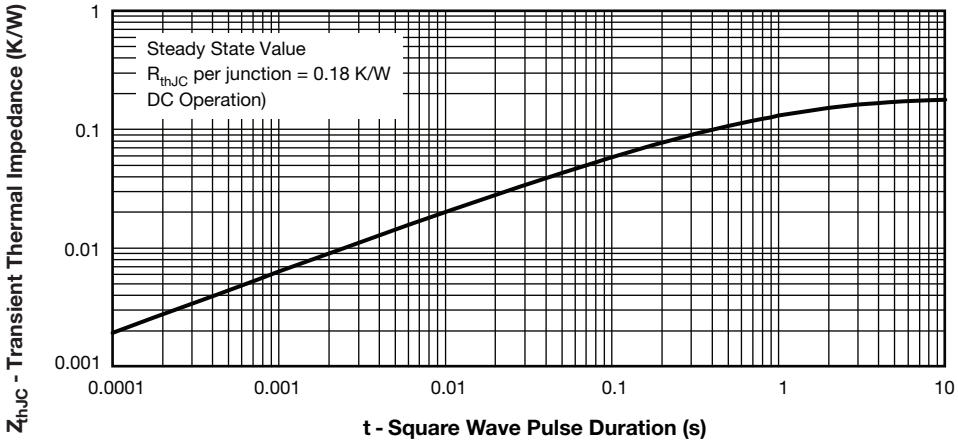

Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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ORDERING INFORMATION TABLE

Device code

VS-	24	0	U	R	60	D
1	2	3	4	5	6	7

1 - Vishay Semiconductors product

2 - 24 = 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

Note = For metric device M16 x 1.5 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95317

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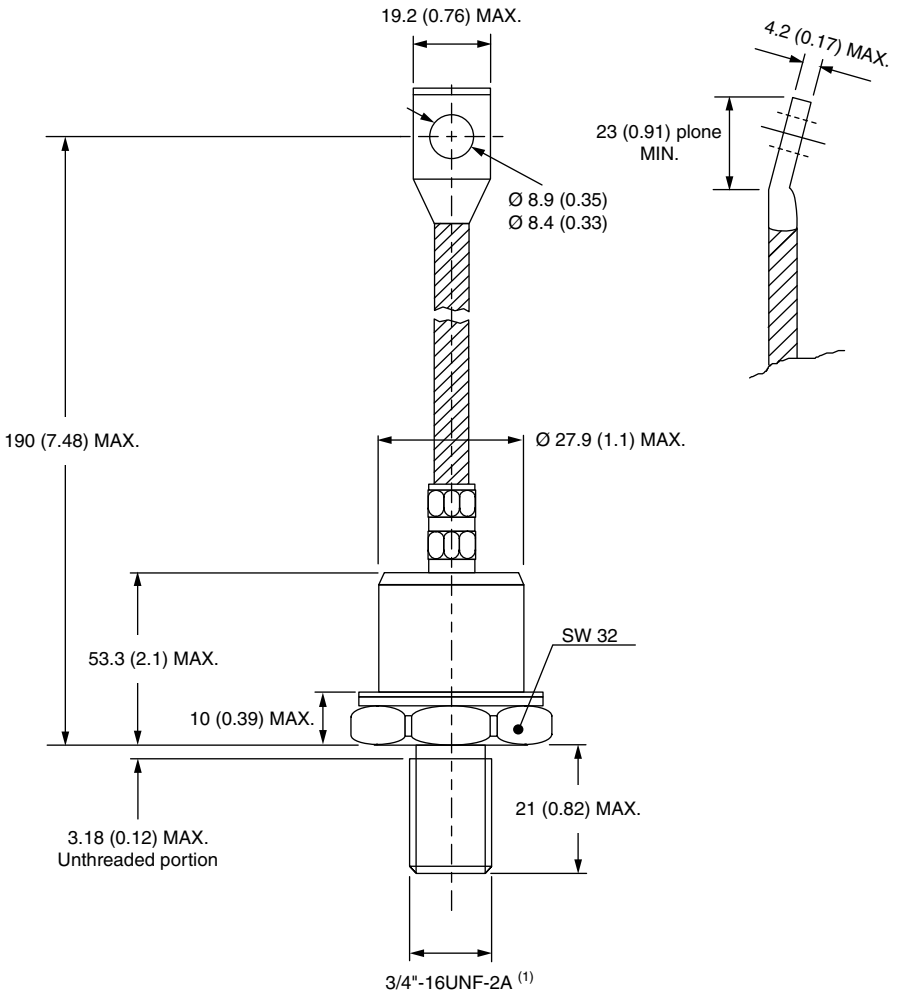
DO-205AB (DO-9) for 240U(R) Series

DIMENSIONS in millimeters (inches)



Note

(1) For metric device M16 x 1.5 contact factory

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