

Standard Recovery Diodes, (Stud Version), 320 A



DO-9 (DO-205AB)

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

PRIMARY CHARACTERISTICS

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

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 ² s
	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	

**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
Maximum RMS forward current	$I_{F(RMS)}$	DC at 80 °C case temperature		500	°C
Maximum peak, one cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	4500	A
		t = 8.3 ms	No voltage reapplied	4700	
		t = 10 ms	100 % V_{RRM} reapplied	3800	
		t = 8.3 ms	100 % V_{RRM} reapplied	4000	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied	101	kA ² s
		t = 8.3 ms	No voltage reapplied	92	
		t = 10 ms	100 % V_{RRM} reapplied	72	
		t = 8.3 ms	100 % V_{RRM} reapplied	66	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		1010	kA ² √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-9 (DO-205AB)	

 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

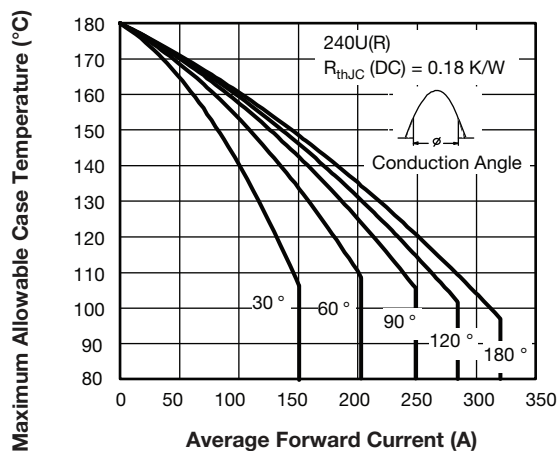


Fig. 1 - Current Ratings Characteristics

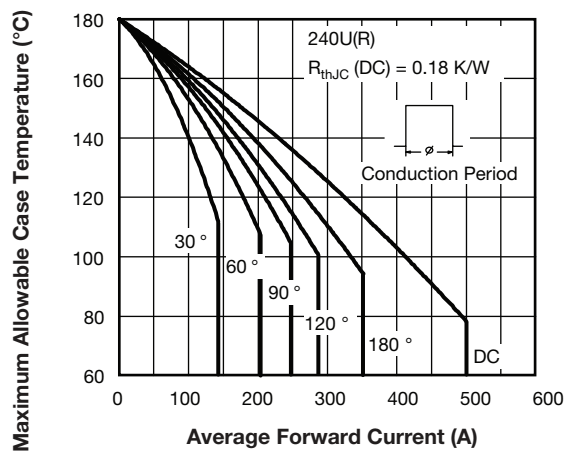


Fig. 2 - Current Ratings Characteristics

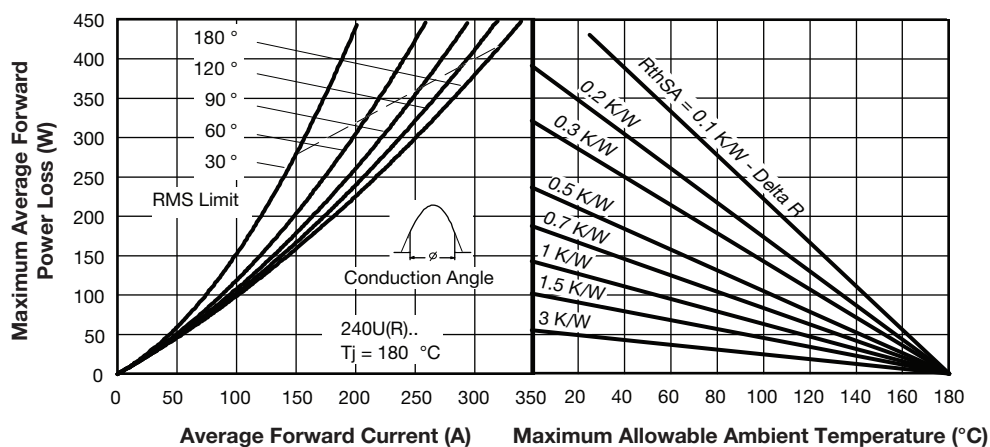


Fig. 3 - Forward Power Loss Characteristics

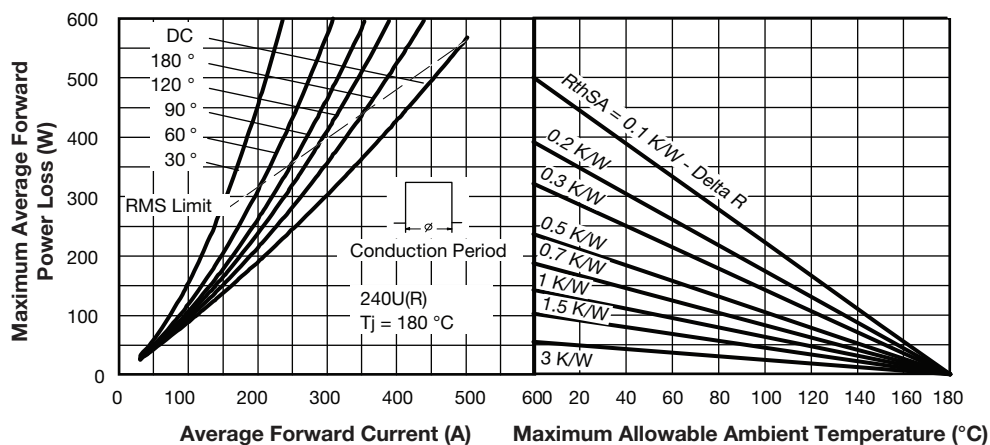


Fig. 4 - Forward Power Loss Characteristics

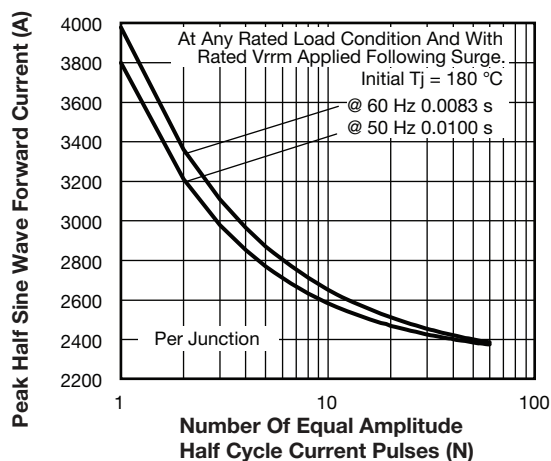


Fig. 5 - Maximum Non-Repetitive Surge Current

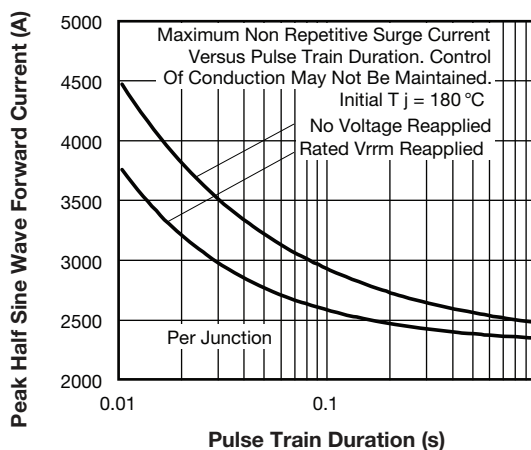


Fig. 6 - Maximum Non-Repetitive Surge Current

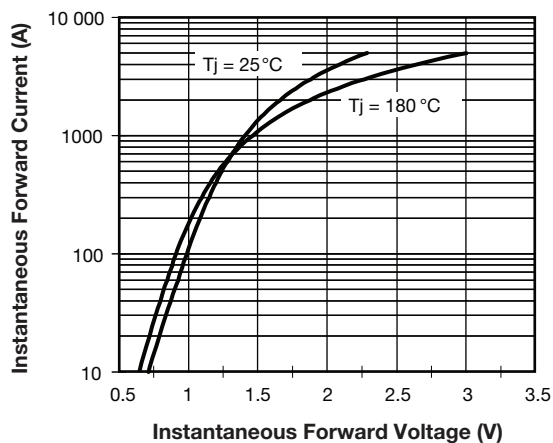
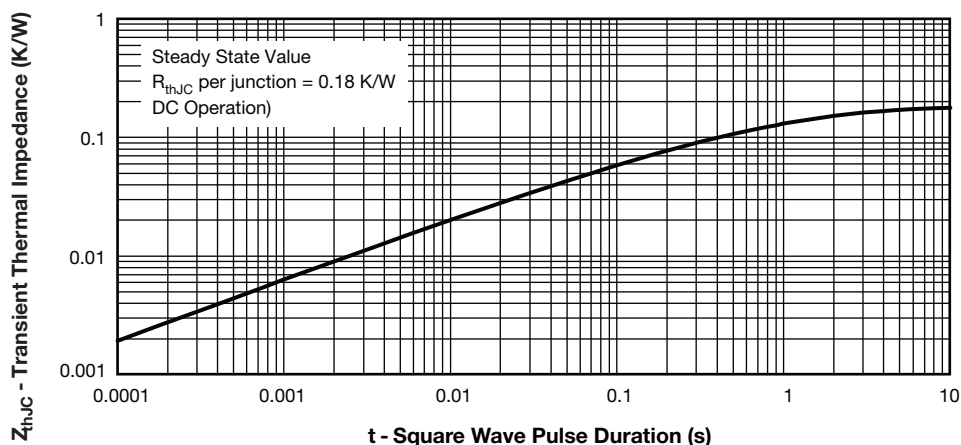


Fig. 7 - Forward Voltage Drop Characteristics


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic



ORDERING INFORMATION TABLE

Device code	VS-	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						

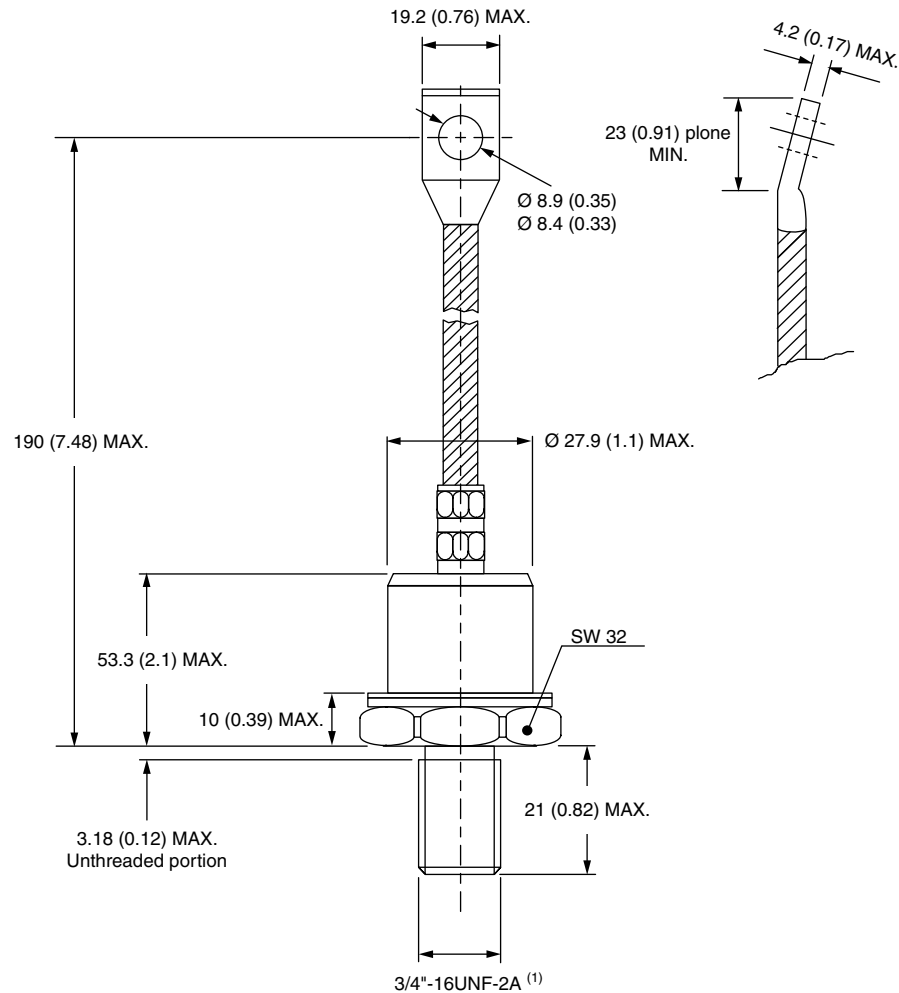
Note

- For metric device M16 x 1.5 contact factory

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

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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