

## 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](http://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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> √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)	

 **$\Delta R_{thJC}$  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

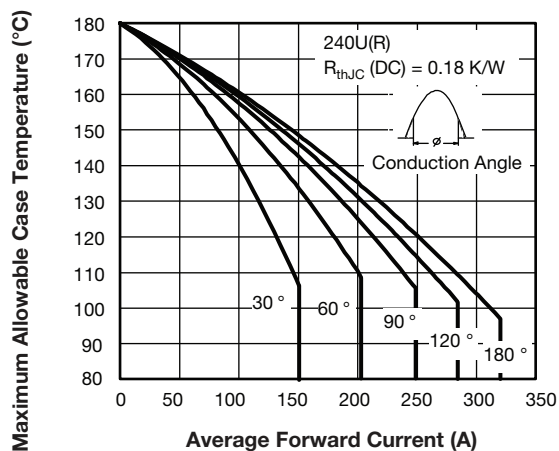


Fig. 1 - Current Ratings Characteristics

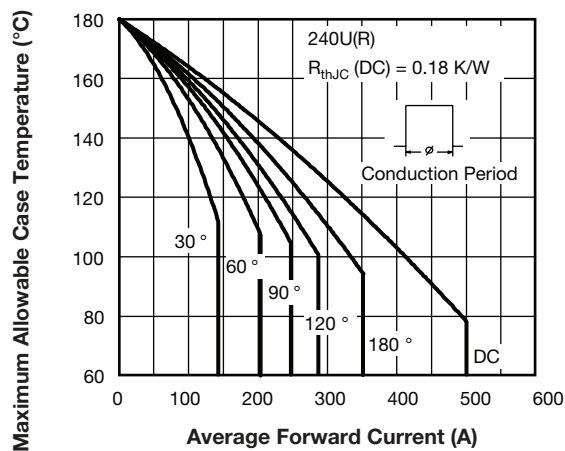


Fig. 2 - Current Ratings Characteristics

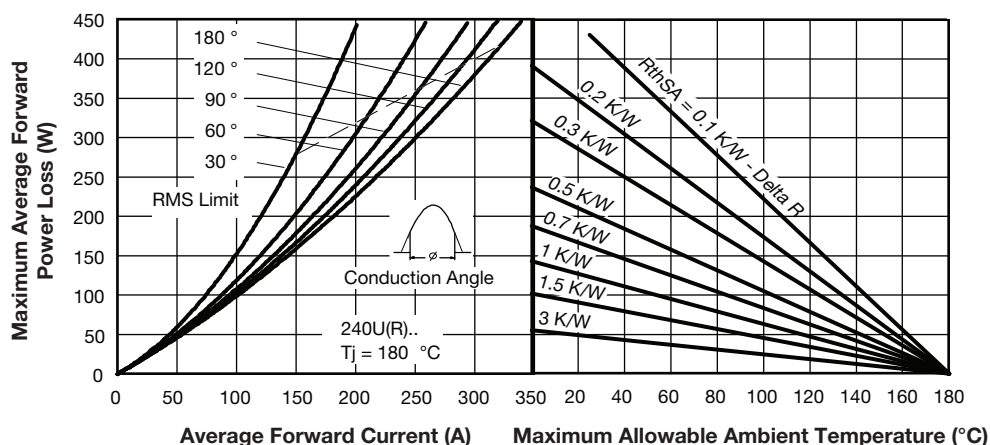


Fig. 3 - Forward Power Loss Characteristics

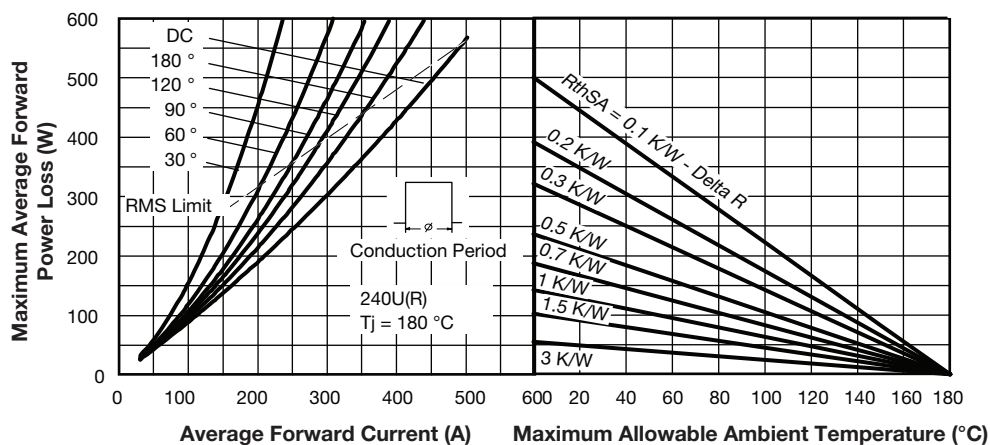


Fig. 4 - Forward Power Loss Characteristics

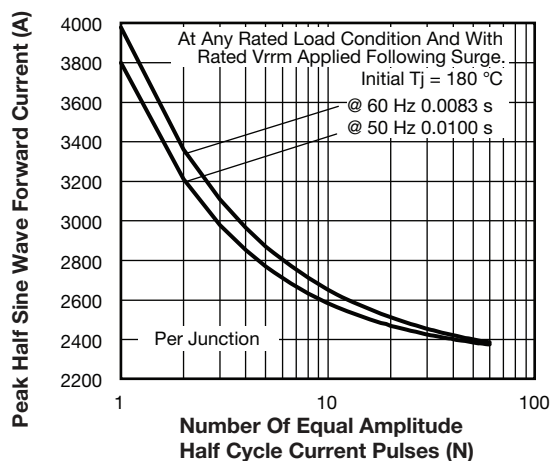


Fig. 5 - Maximum Non-Repetitive Surge Current

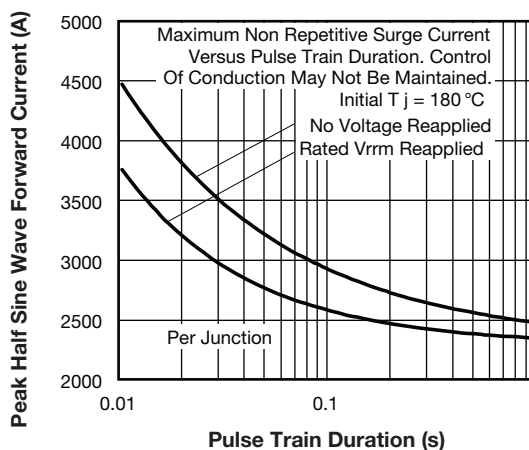


Fig. 6 - Maximum Non-Repetitive Surge Current

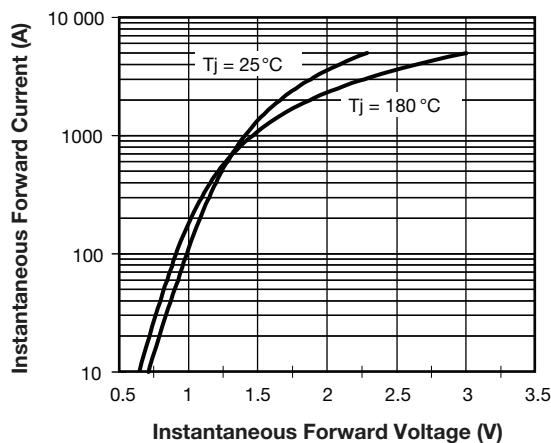
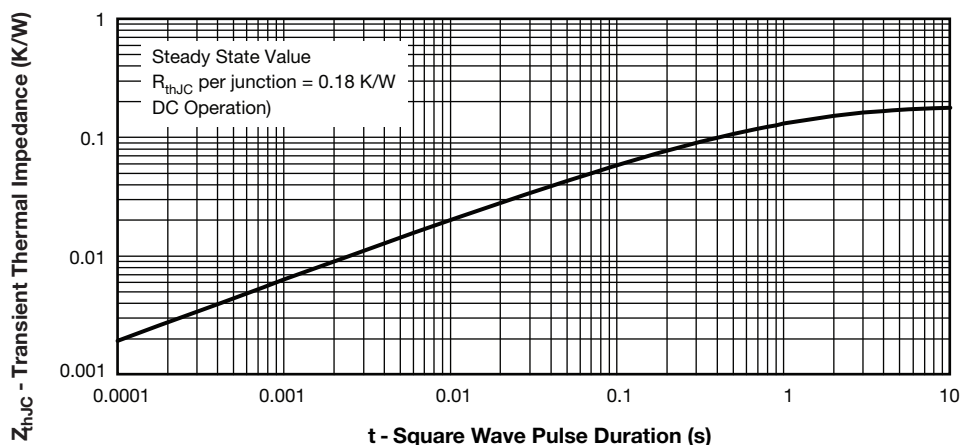


Fig. 7 - Forward Voltage Drop Characteristics


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	<ul style="list-style-type: none"><li>None = stud normal polarity (cathode to stud)</li><li>R = stud reverse polarity (anode to stud)</li></ul>						
6	Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)						
7	Diffused diode						

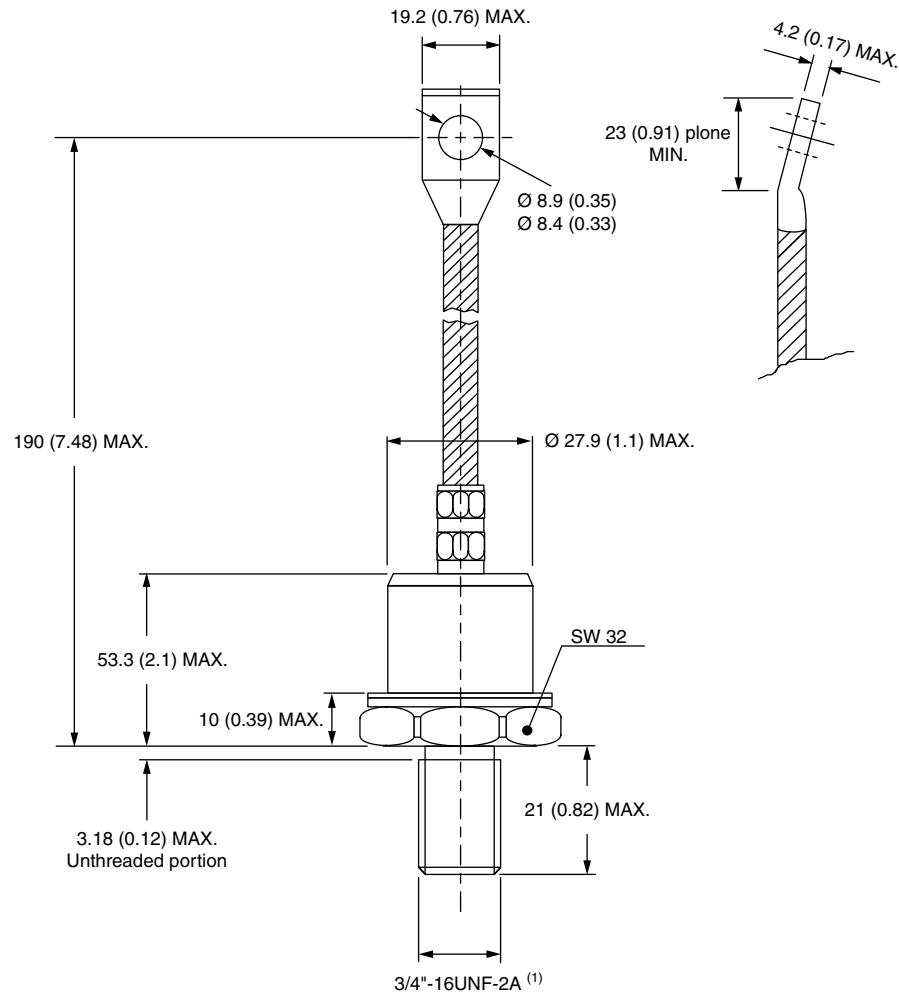
### Note

- For metric device M16 x 1.5 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95317">www.vishay.com/doc?95317</a>

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

**DIMENSIONS** in millimeters (inches)



**Note**

<sup>(1)</sup> For metric device M16 x 1.5 contact factory



## 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.

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.