

## Standard Recovery Diodes, (Stud Version), 300 A



DO-9 (DO-205AB)


**RoHS**  
COMPLIANT

**FEATURES**

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version
- 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)

**TYPICAL APPLICATIONS**

- Welders
- Power supplies
- Motor controls
- Battery chargers
- General industrial current rectification

**PRIMARY CHARACTERISTICS**

$I_{F(AV)}$	300 A
Package	DO-9 (DO-205AB)
Circuit configuration	Single

**MAJOR RATINGS AND CHARACTERISTICS**

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		300	A
	$T_C$	150	°C
$I_{FSM}$	50 Hz	6550	A
	60 Hz	6850	
$I^2t$	50 Hz	214	kA <sup>2</sup> s
	60 Hz	195	
$V_{RRM}$	Range	400	V
$T_J$		-65 to +200	°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 $T_J = 175\text{ °C}$ mA
VS-300U(R)..	10	100	200	40
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	700	



<b>FORWARD CONDUCTION</b>						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		300	A	
				130	°C	
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	6550	A	
		t = 8.3 ms		Sinusoidal half wave, initial $T_J = T_J$ maximum		6850
		t = 10 ms	100 % $V_{RRM}$ reapplied			5500
		t = 8.3 ms				5750
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied		214	kA <sup>2</sup> s
		t = 8.3 ms		100 % $V_{RRM}$ reapplied	195	
		t = 10 ms	151			
		t = 8.3 ms	138			
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			2140	kA <sup>2</sup> √s
Maximum value of threshold voltage	$V_{F(TO)}$	$T_J = 200$ °C		0.610	V	
Maximum value of forward slope resistance	$r_f$			0.751	mΩ	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 942$ A, $T_J = 25$ °C		1.40	V	

<b>THERMAL AND MECHANICAL SPECIFICATIONS</b>				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	$T_J, T_{Stg}$		-65 to +200	°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 allowed mounting torque +0 -20 %		Not lubricated threads	37	Nm
		Lubricated threads	28	
Approximate weight			250	g
Case style		(JEDEC®) see dimensions - link at the end of datasheet	DO-9 (DO-205AB) <sup>(1)</sup>	

**Note**

<sup>(1)</sup> 302U-A uses case style B-26

<b><math>\Delta R_{thJC}</math> CONDUCTION</b>				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.020	0.015	$T_J = T_J$ maximum	K/W
120°	0.024	0.025		
90°	0.031	0.034		
60°	0.045	0.047		
30°	0.077	0.077		

**Note**

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

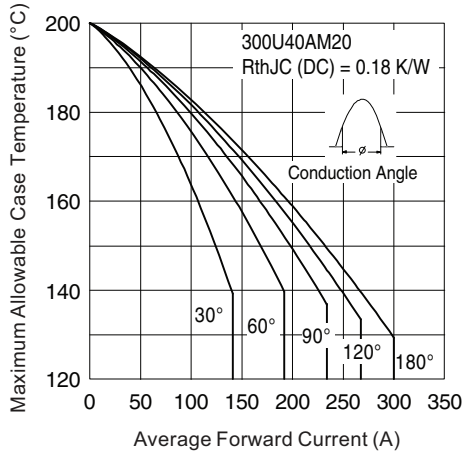


Fig. 1 - Current Ratings Characteristics

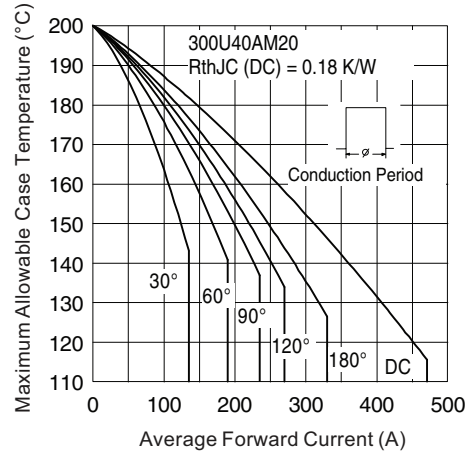


Fig. 2 - Current Ratings Characteristics

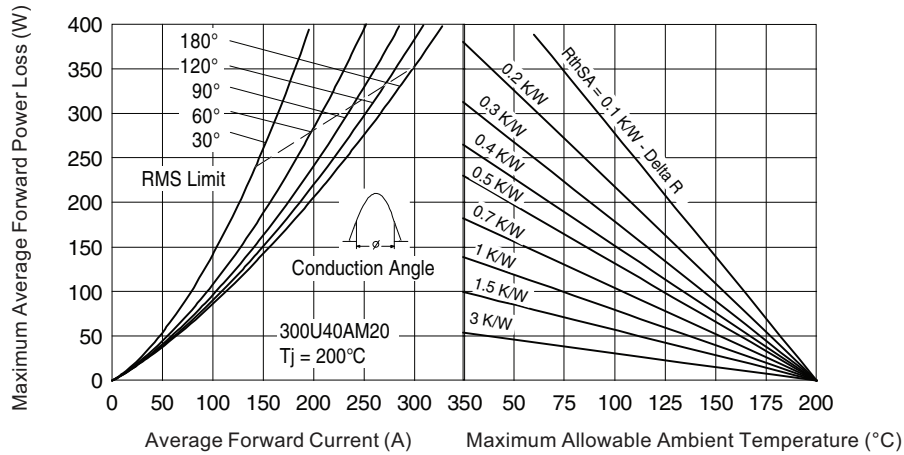


Fig. 3 - Forward Power Loss Characteristics

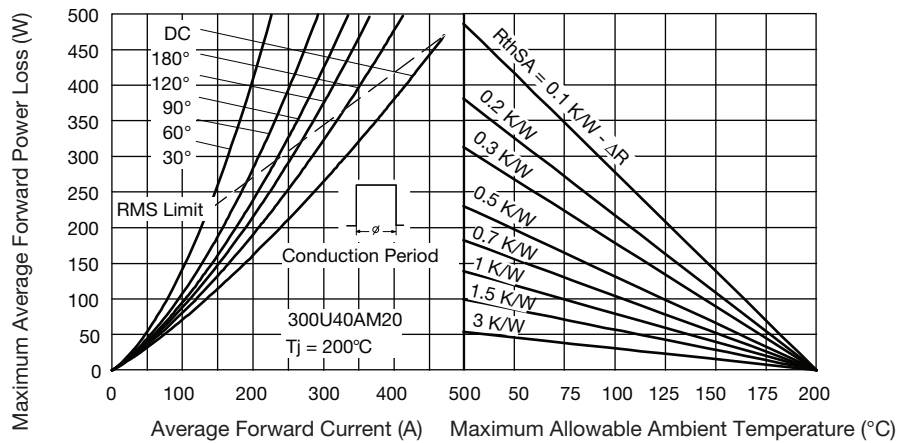


Fig. 4 - Forward Power Loss Characteristics

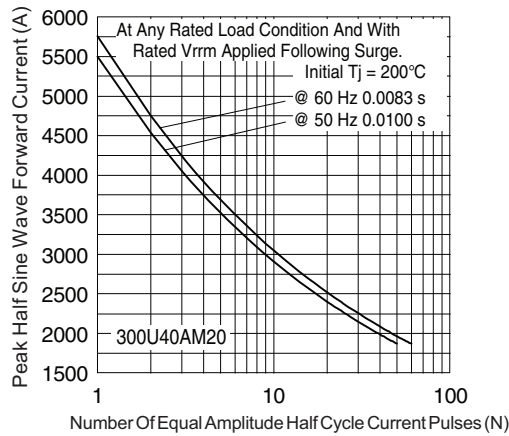


Fig. 5 - Maximum Non-Repetitive Surge Current

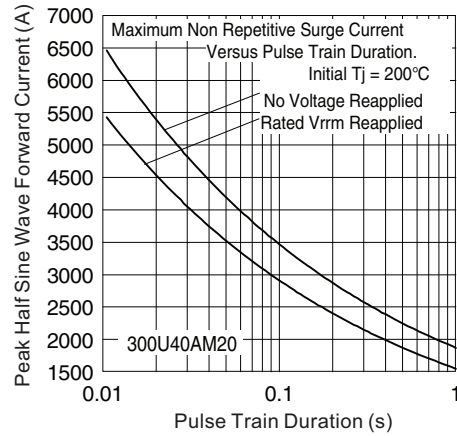


Fig. 6 - Maximum Non-Repetitive Surge Current

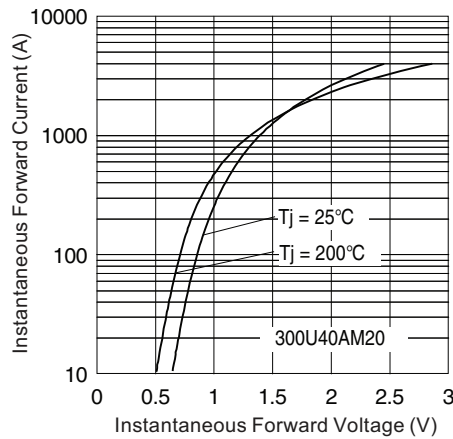


Fig. 7 - Forward Voltage Drop Characteristics

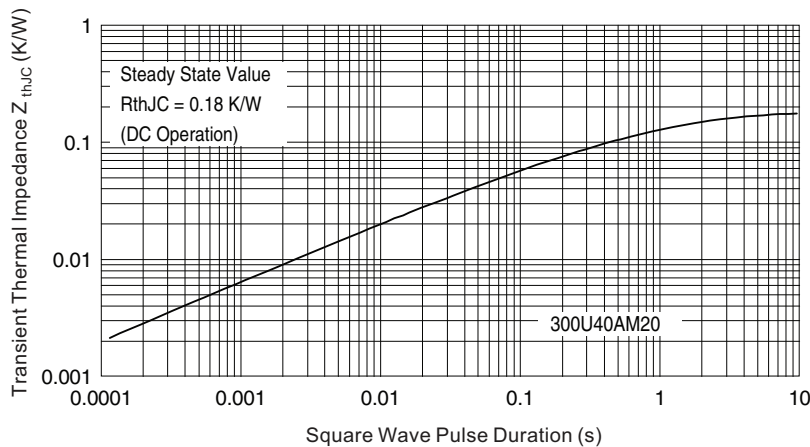


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



**ORDERING INFORMATION TABLE**

Device code	<b>VS-</b>	<b>30</b>	<b>0</b>	<b>U</b>	<b>40</b>	<b>A</b>	<b>M20</b>
	①	②	③	④	⑤	⑥	⑦

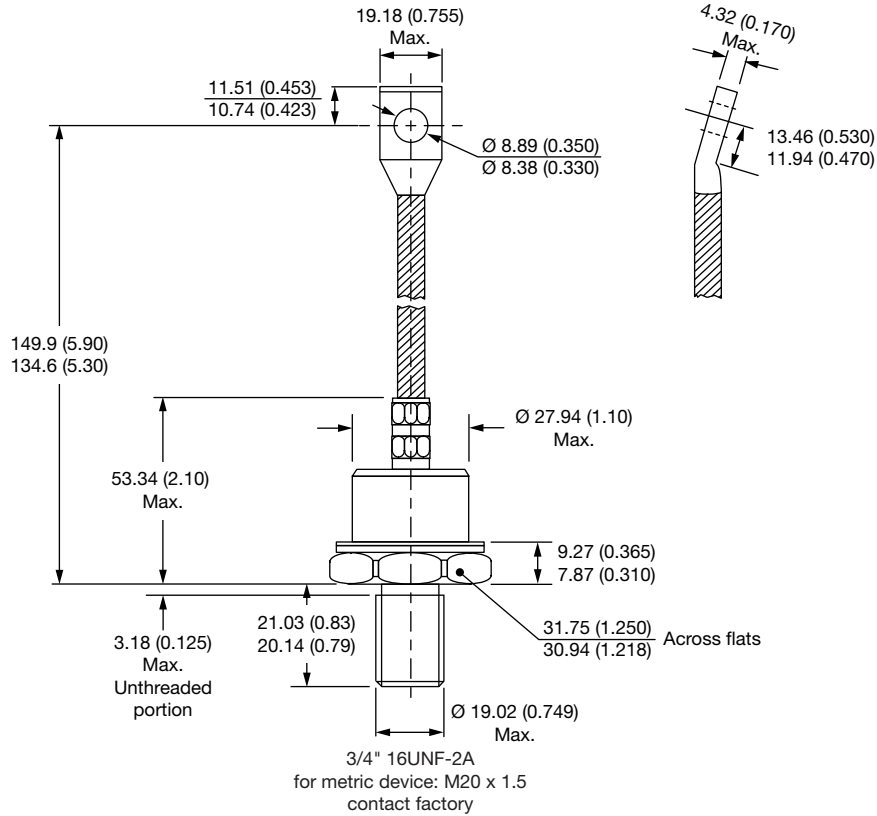
- 1** - Vishay Semiconductors product
- 2** - 30 = essential part number
- 3** - 0 = standard device  
2 = 300U top threaded version
- 4** - • U = stud normal polarity (cathode to stud)  
• UR = stud reverse polarity (anode to stud)
- 5** - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)
- 6** - A = essential part number
- 7** - None = stud base DO-9 (DO-205AB) 3/4" 16UNF-2A  
M20 = Metric device M20 x 1.5 (available with standard device only)

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95340">www.vishay.com/doc?95340</a>

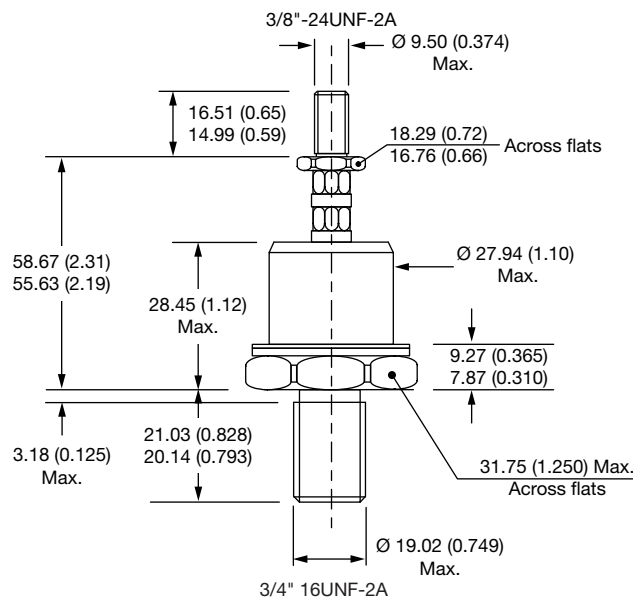


## DO-9 (DO-205AB) and B-26 for 300U(R) Series

### DIMENSIONS FOR 300U(R)-A SERIES - DO-9 (DO-205AB) in millimeters (inches)



### DIMENSIONS FOR 302U(R)-A SERIES - B-26 in millimeters (inches)





## **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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

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.