

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



DO-205AB (DO-9)

### 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)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### PRODUCT SUMMARY

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

### 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)..	40	400	500	40



FORWARD CONDUCTION						
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	Sinusoidal half wave, initial $T_J = T_J$ maximum	6550	A
		t = 8.3 ms	100 % $V_{RRM}$ reapplied		6850	
		t = 10 ms			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	$V_{F(TO)}$	$T_J = 200\text{ °C}$			0.610	V
Maximum value of forward slope resistance	$r_f$				0.751	mΩ
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 942\text{ A}$ , $T_J = 25\text{ °C}$			1.40	V

THERMAL AND MECHANICAL SPECIFICATIONS				
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-205AB (DO-9) <sup>(1)</sup>	

**Note**

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

$\Delta R_{thJC}$ CONDUCTION				
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

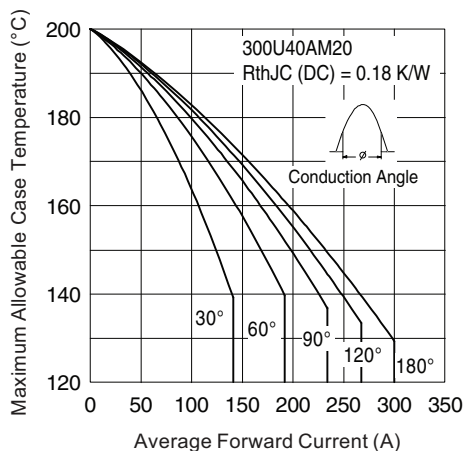


Fig. 1 - Current Ratings Characteristics

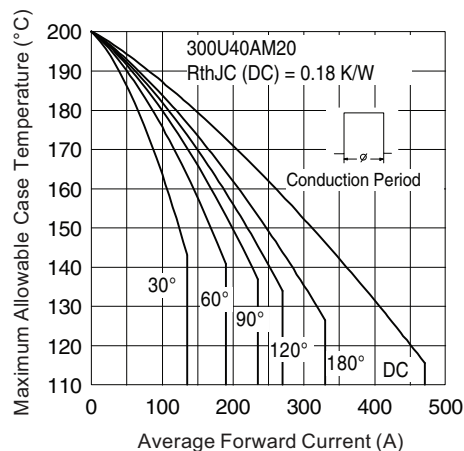


Fig. 2 - Current Ratings Characteristics

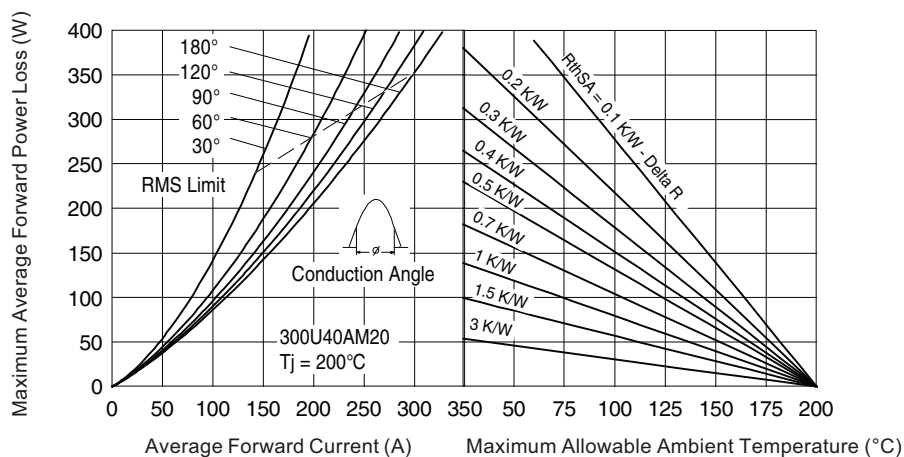


Fig. 3 - Forward Power Loss Characteristics

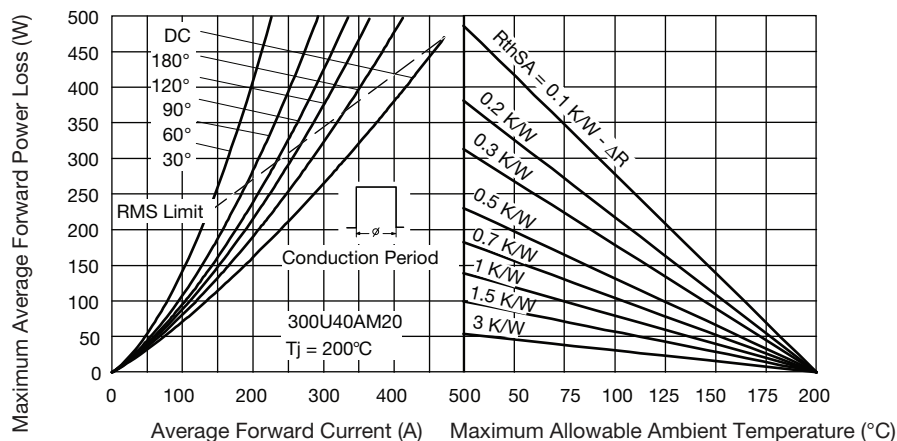


Fig. 4 - Forward Power Loss Characteristics

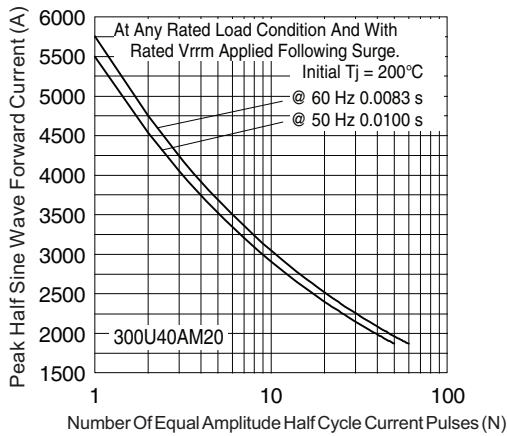


Fig. 5 - Maximum Non-Repetitive Surge Current

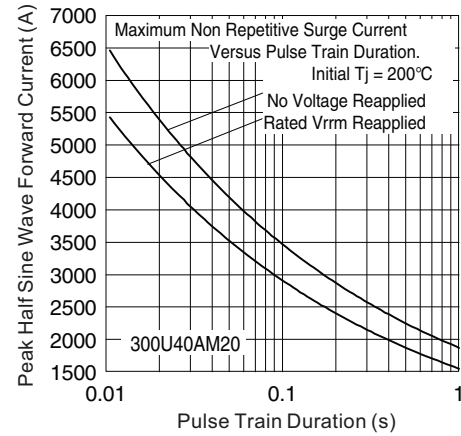


Fig. 6 - Maximum Non-Repetitive Surge Current

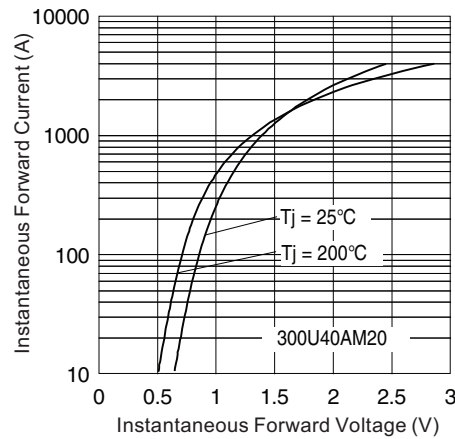
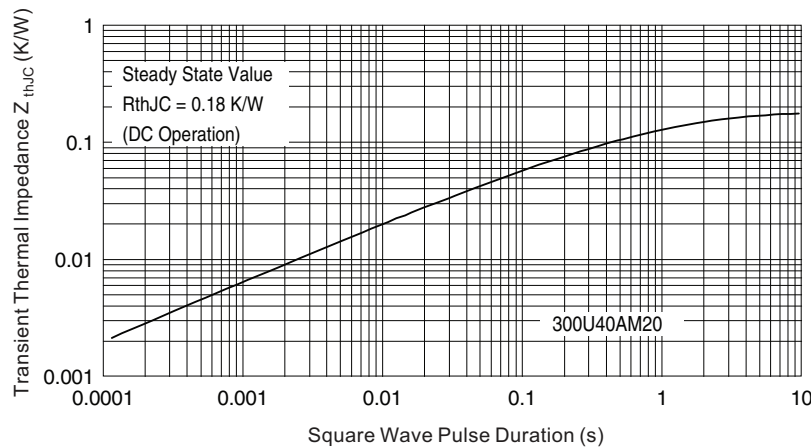


Fig. 7 - Forward Voltage Drop Characteristics


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



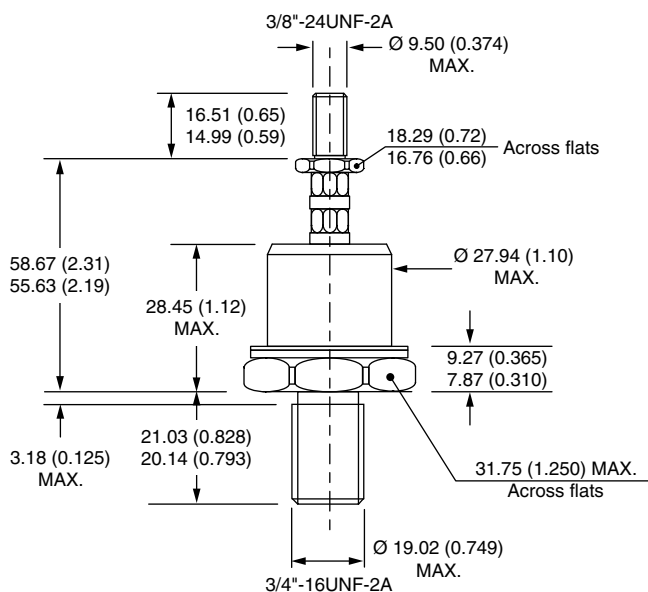
## ORDERING INFORMATION TABLE

Device code	VS-	300	U	-	40A	M20
	1	2	3	4	5	6

- |   |   |
|---|---|
| 1 | - Vishay Semiconductors product                             |
| 2 | - • 300 = Standard 300U device                              |
| 3 | - U = Essential part number                                 |
| 4 | - • None = Stud normal polarity (cathode to stud)           |
| 5 | - Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table) |
| 6 | - Metric device M20 x 1.5                                   |

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

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





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