

Standard Recovery Diodes (Stud Version), 300 A


DO-205AB (DO-9)

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

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 ² 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 $T_J = 175$ °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			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	Sinusoidal half wave, initial $T_J = T_J$ maximum	214	kA^2s	
		$t = 8.3$ ms			195		
		$t = 10$ ms	100 % V_{RRM} reapplied		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	$kA^2\sqrt{s}$	
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	$m\Omega$	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 942$ A, $T_J = 25$ °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) ⁽¹⁾	

Note

⁽¹⁾ 302U-A uses case style B-26

ΔR_{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

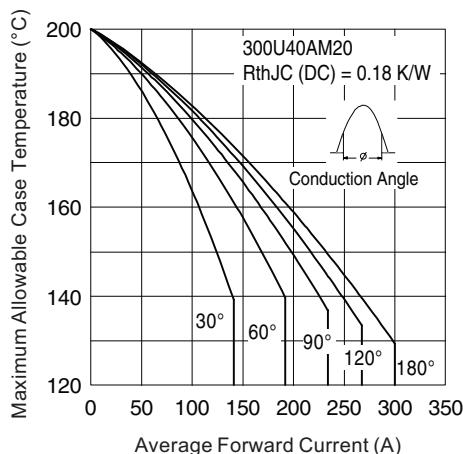


Fig. 1 - Current Ratings Characteristics

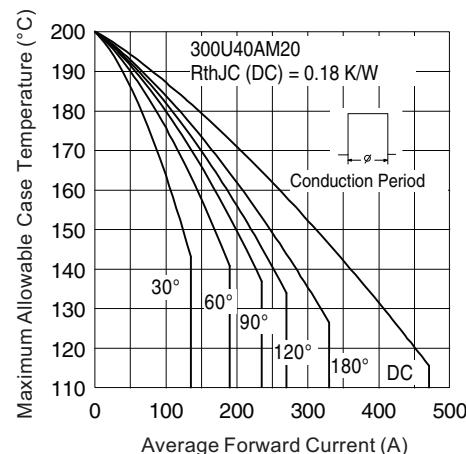


Fig. 2 - Current Ratings Characteristics

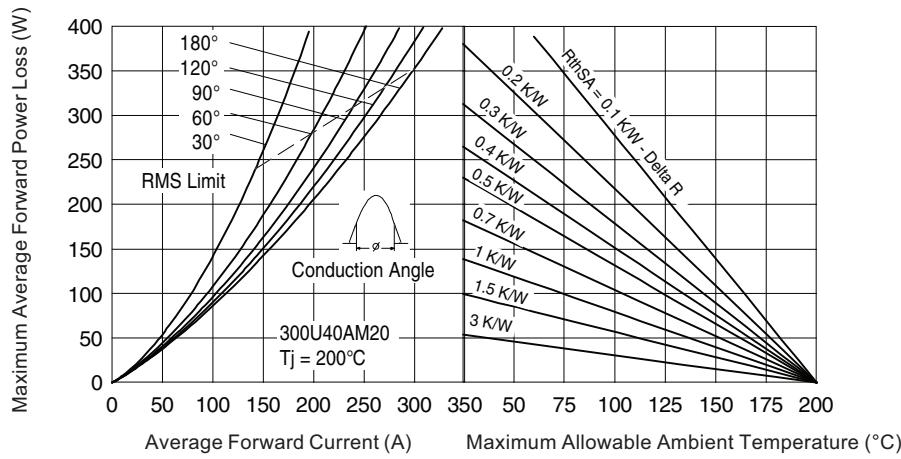


Fig. 3 - Forward Power Loss Characteristics

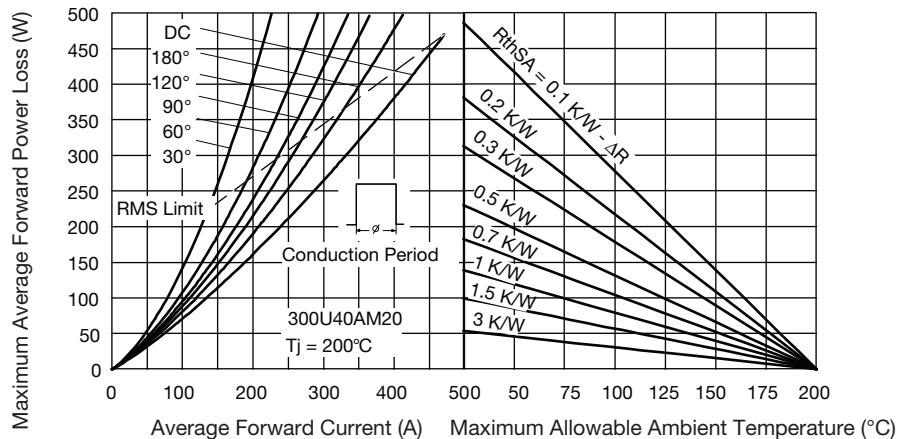


Fig. 4 - Forward Power Loss Characteristics

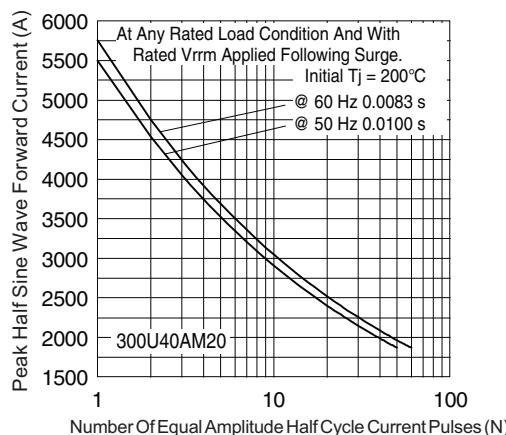


Fig. 5 - Maximum Non-Repetitive Surge Current

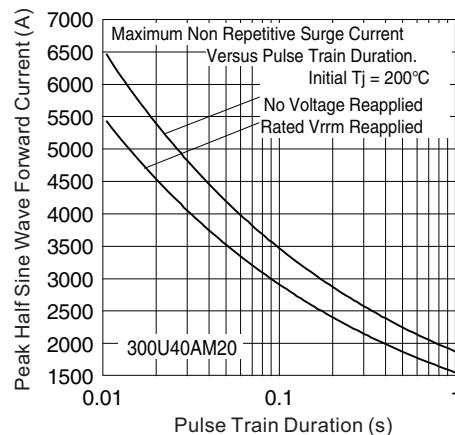


Fig. 6 - Maximum Non-Repetitive Surge Current

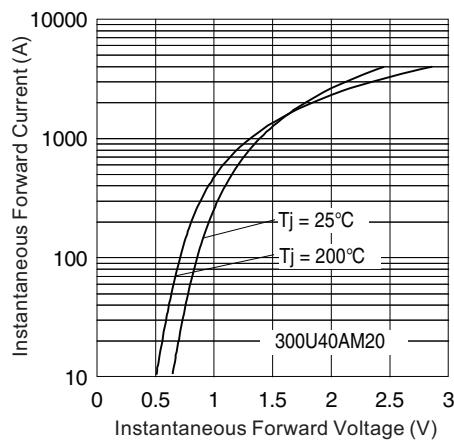


Fig. 7 - Forward Voltage Drop Characteristics

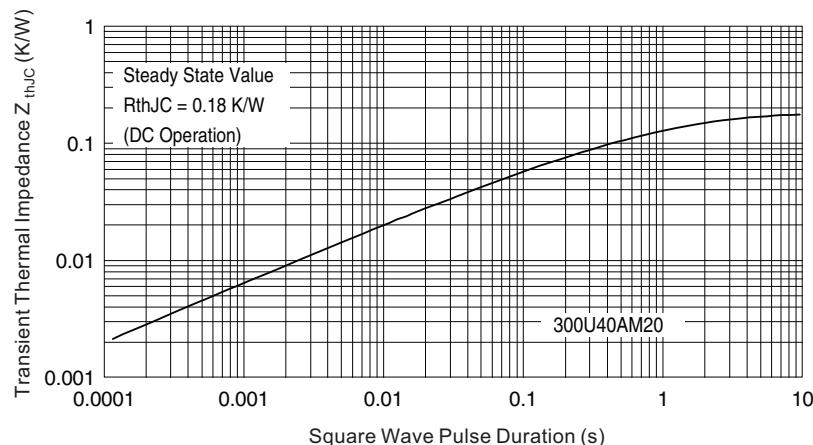
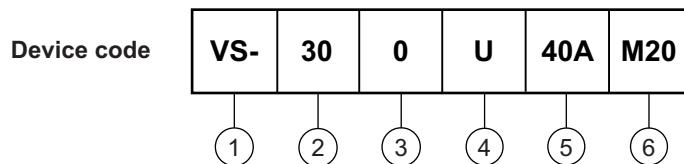


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

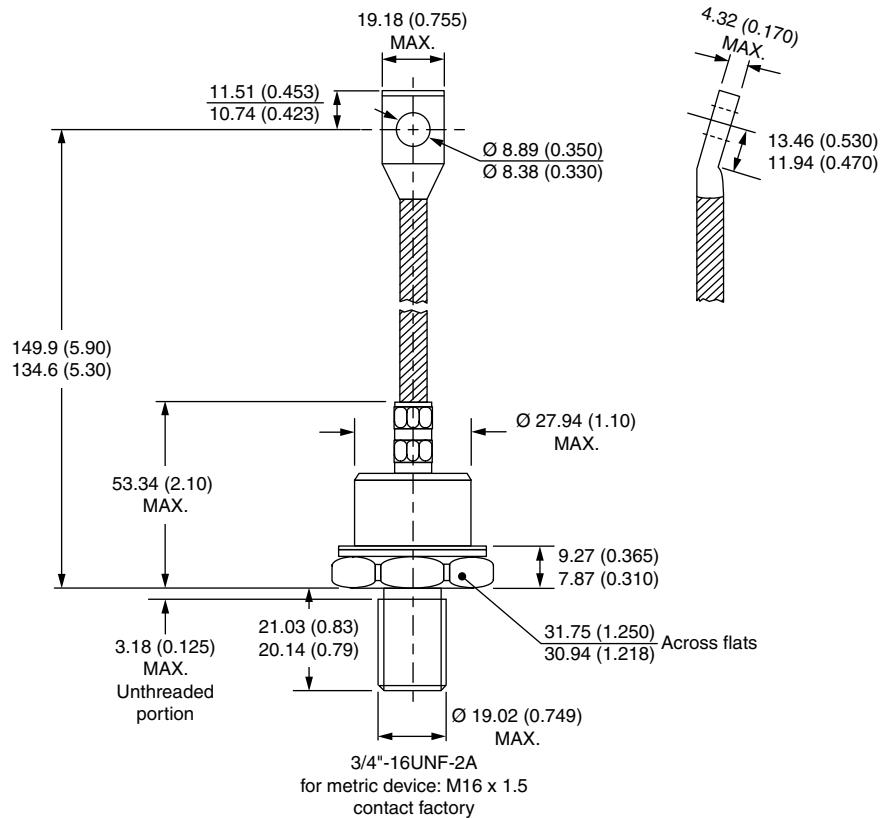
ORDERING INFORMATION TABLE


- 1** - Vishay Semiconductors product
- 2** - 30 = essential part number
- 3** - 0 = standard device
- 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** - Metric device M20 x 1.5

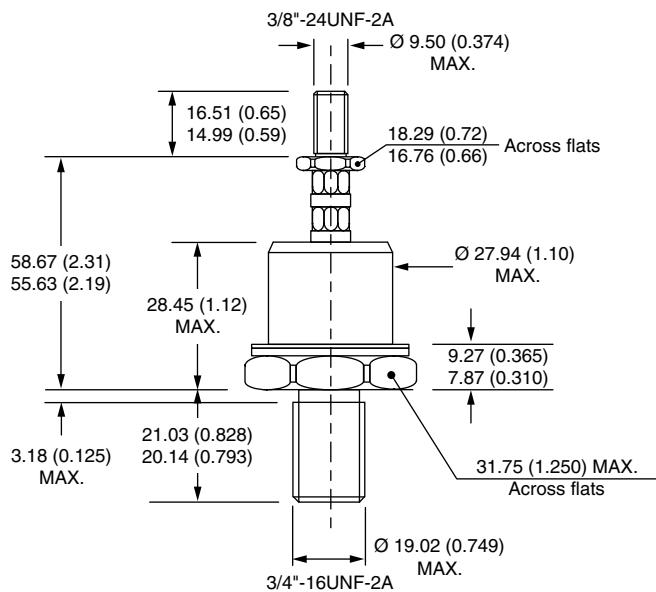
LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95340

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

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



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



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