

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


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 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 $T_J = 175\text{ °C}$ 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 ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		214	kA ² s
		t = 8.3 ms	100 % V _{RRM} reapplied		195	
		t = 10 ms			151	
		t = 8.3 ms			138	
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			2140	kA ² √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

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

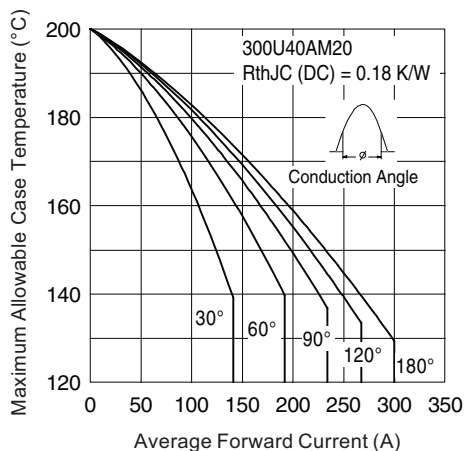


Fig. 1 - Current Ratings Characteristics

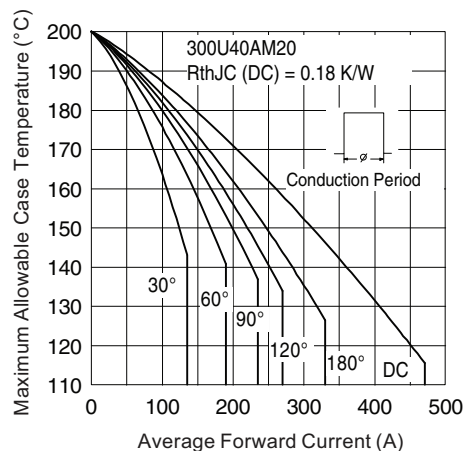


Fig. 2 - Current Ratings Characteristics

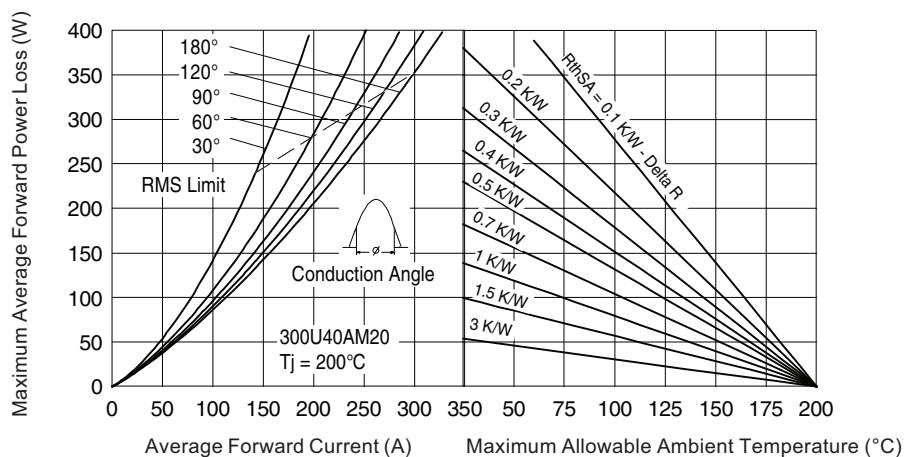


Fig. 3 - Forward Power Loss Characteristics

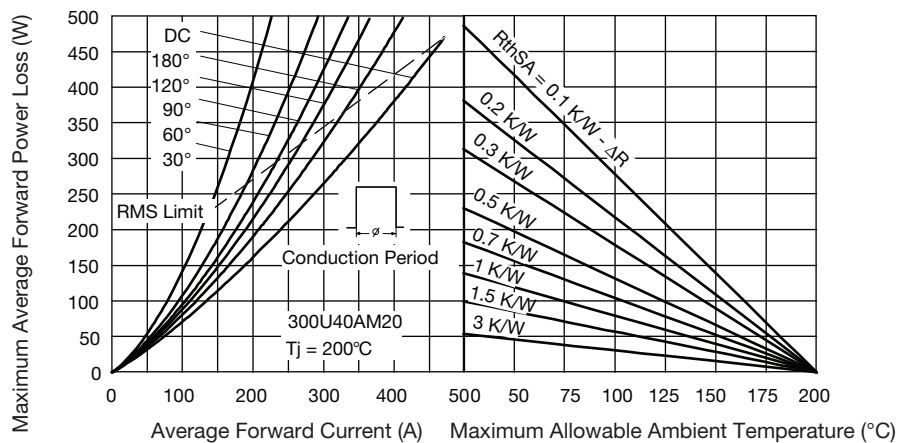


Fig. 4 - Forward Power Loss Characteristics

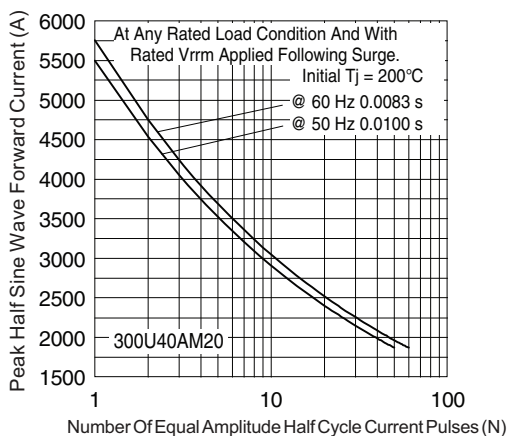


Fig. 5 - Maximum Non-Repetitive Surge Current

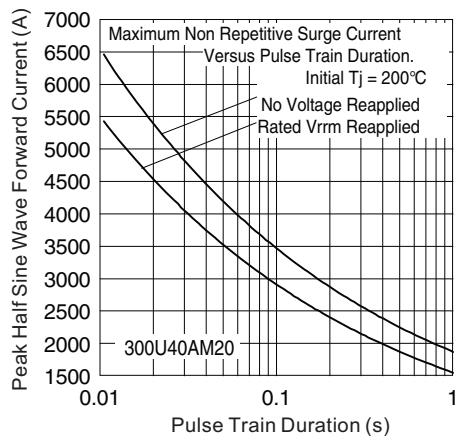


Fig. 6 - Maximum Non-Repetitive Surge Current

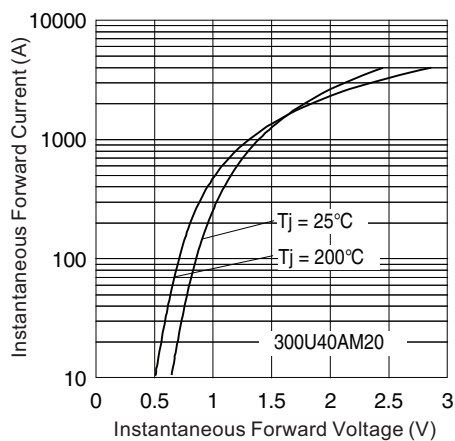
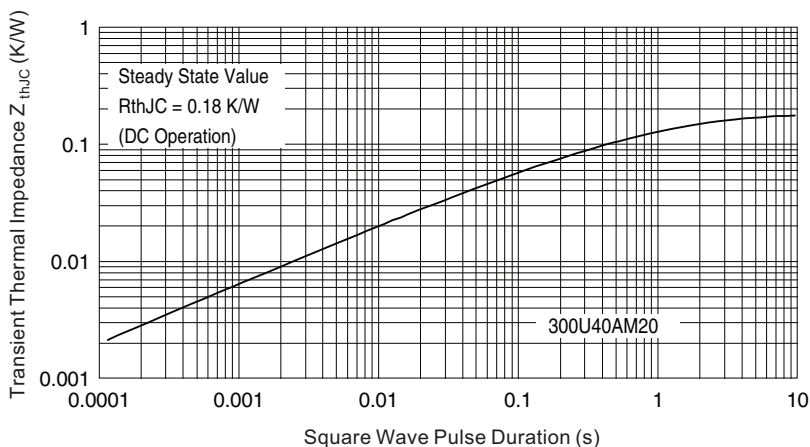


Fig. 7 - Forward Voltage Drop Characteristics


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic



ORDERING INFORMATION TABLE

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	www.vishay.com/doc?95340

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





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