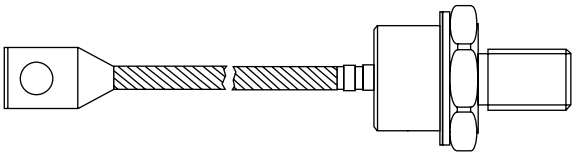
Standard Recovery Diodes (Stud Version), 300 A



DO-205AB (DO-9)

FEATURES

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version
- RoHS compliant
- Designed and qualified for industrial level

RoHS COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	300 A

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^2s
	60 Hz	195	
V_{RRM}	Range	100 to 600	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
300U(R)	10	100	200	40
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	700	

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		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	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

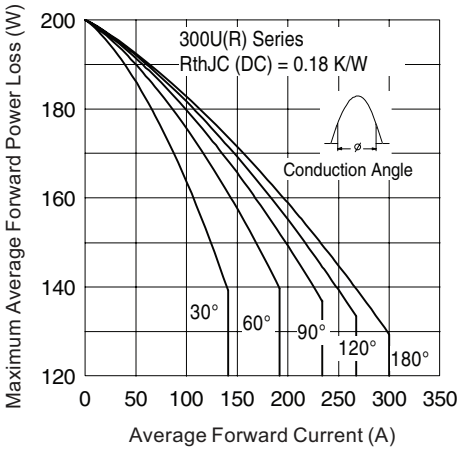


Fig. 1 - Current Ratings Characteristics

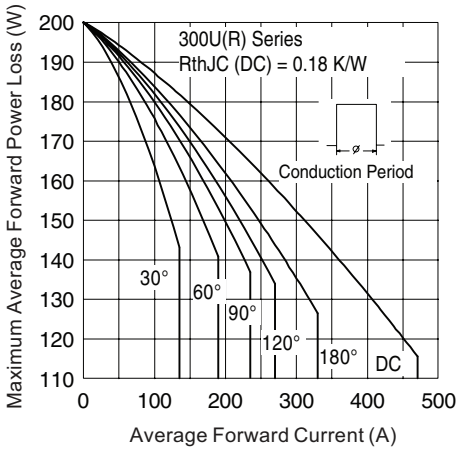


Fig. 2 - Current Ratings Characteristics

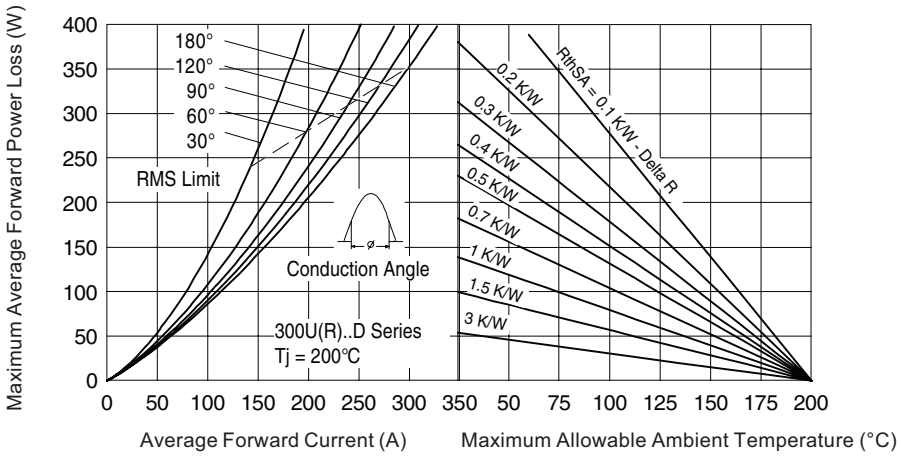


Fig. 3 - Forward Power Loss Characteristics

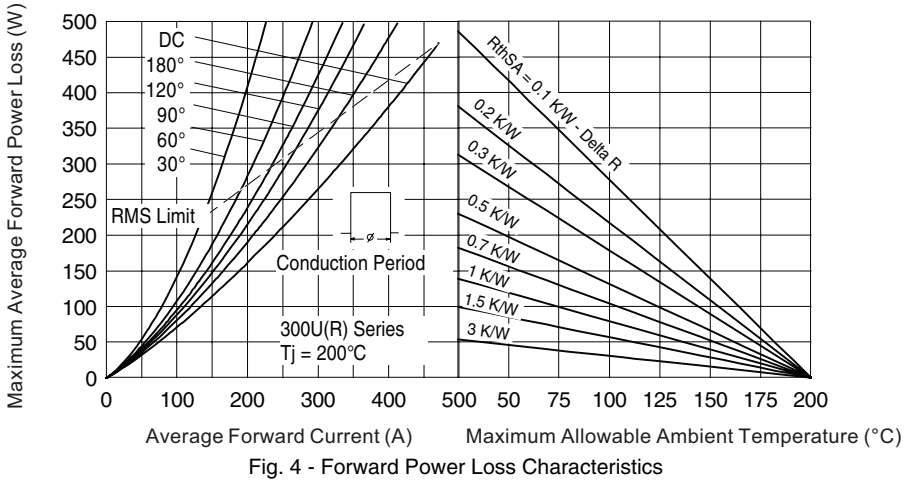


Fig. 4 - Forward Power Loss Characteristics

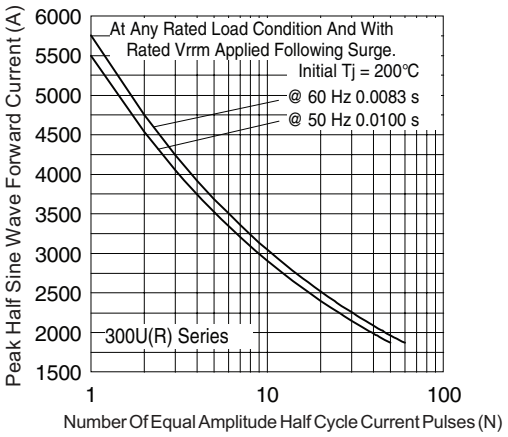


Fig. 5 - Maximum Non-Repetitive Surge Current

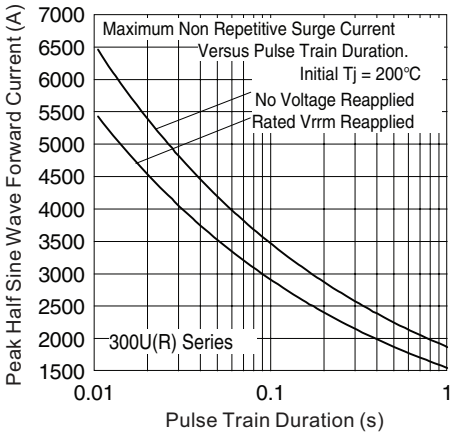


Fig. 6 - Maximum Non-Repetitive Surge Current

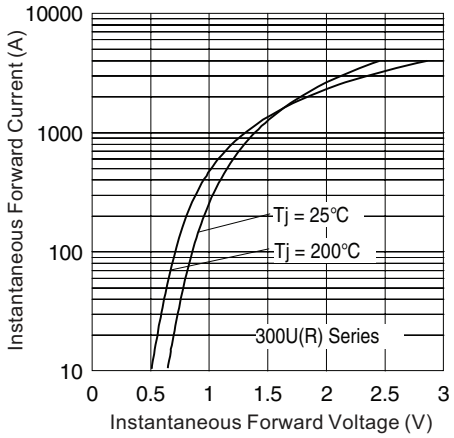


Fig. 7 - Forward Voltage Drop Characteristics

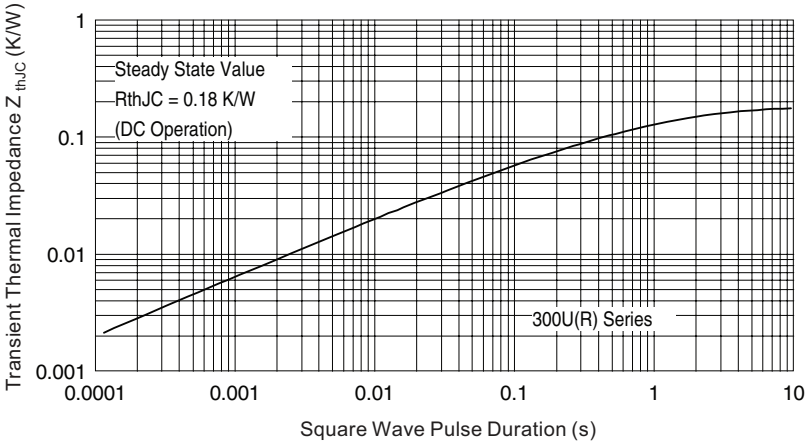


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

ORDERING INFORMATION TABLE

Device code

300	U	R	60	A
1	2	3	4	5

1 - • 300 = Standard 300U device
• 302 = 300U top threaded version

2 - U = Essential part number

3 - • R = Stud reverse polarity (anode to stud)
• None = Stud normal polarity (cathode to stud)

4 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)

5 - A = Essential part number

Note: For metric device M16 x 1.5 contact factory

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

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