

Standard Recovery Diodes Stud Version, 300A

FEATURES

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

TYPICAL APPLICATIONS

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



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

DO-205AB(DO-9)

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	300D(R)		UNIT
		04 TO 12	16 TO 20	
$I_{F(AV)}$	T_C	300		A
		130	110	°C
I_{FSM}	50 HZ	6050		A
	60 HZ	6330		
I^2t	50 HZ	183		kA ² s
	60 HZ	166		
V_{RRM}	Range	400 to 1200	1600 to 2000	V
T_J		-40 to 175	-40 to 150	°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
300D(R)	04	400	500	40
	06	600	700	
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		300D(R)	UNIT
Maximum average forward current at maximum case temperature	$I_{F(AV)}$	180° conduction, half sine wave		300	A
				130/110	°C
Maximum peak, one cycle forward, non-repetitive surge current	I_{FSM}	t = 10ms	No voltage reappplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	6050
		t = 8.3ms			6330
		t = 10ms	100% V_{RRM} reappplied		5080
		t = 8.3ms			5311
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reappplied		183
		t = 8.3ms			166
		t = 10ms	100% V_{RRM} reappplied		129
		t = 8.3ms			117
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reappplied		1830	$kA^2\sqrt{s}$
Maximum value of threshold voltage	$V_{F(TO)}$	$T_J = T_J$ Maximum		0.610	V
Maximum value of forward slope resistance	r_F			0.751	mΩ
Maximum forward voltage drop	V_{FM}	$I_{pk} = 942A, T_J = 25^\circ C$		1.40	V

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS	300D(R)		UNIT
			04 TO 12	16 TO 20	
Maximum junction operating and storage temperature range	T_J, T_{stg}		- 40 to175	- 40 to150	°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 allowable mounting torque (+0% , -20%)		Not lubricated threads	37		Nm
		Lubricated threads	28		
Approximate weight		Ceramic housing	228		g
		Glass-metal seal	203		
Case style		(JEDEC) see dimensions - link at the end of datasheet	DO-205AB (DO-9)		

△ R_{thJC} CONDUCTION				
CONDUCTION ANGEL	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDUCTIONS	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

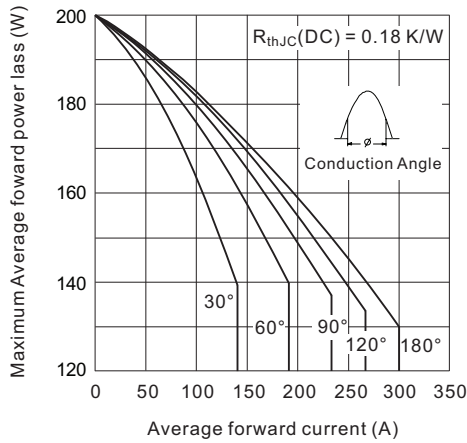


Fig.2 Current ratings characteristics

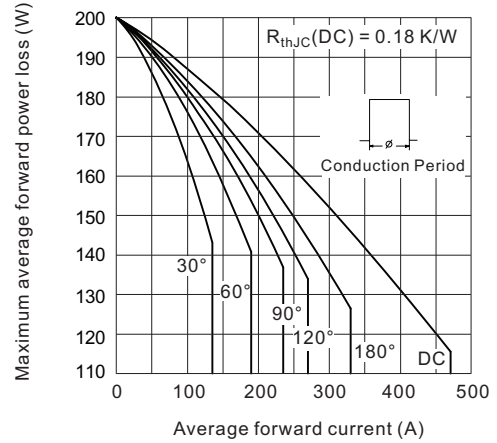


Fig.3 Forward power loss characteristics

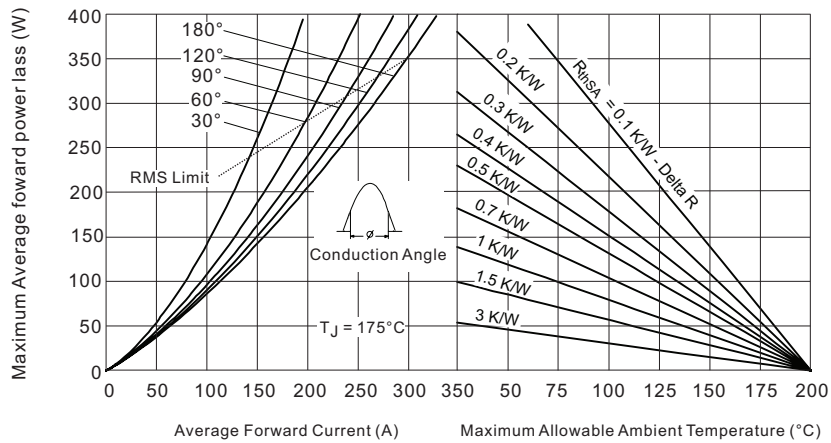


Fig.4 Forward power loss characteristics

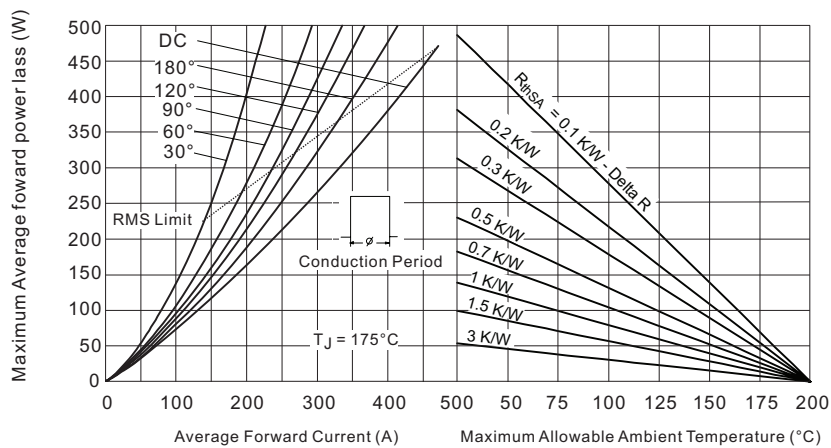


Fig.5 Maximum non-repetitive surge current

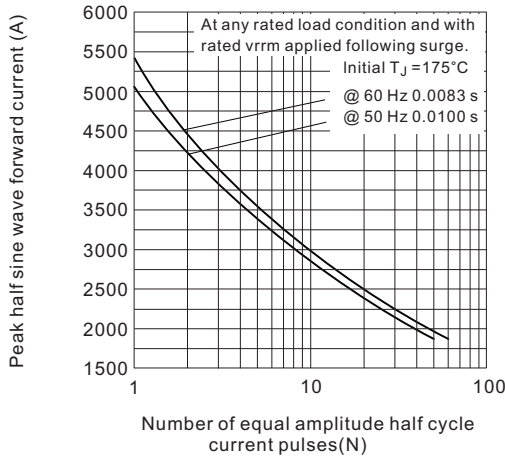


Fig.6 Maximum non-repetitive surge current

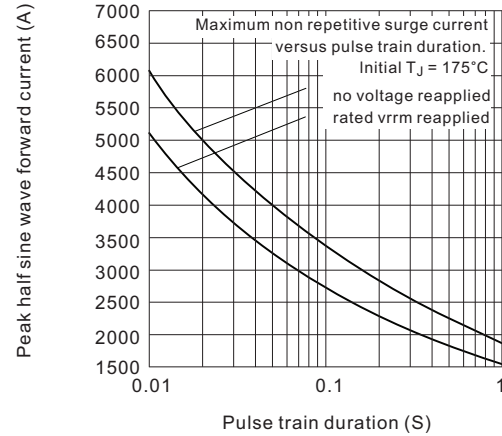


Fig.7 Forward voltage drop characteristics

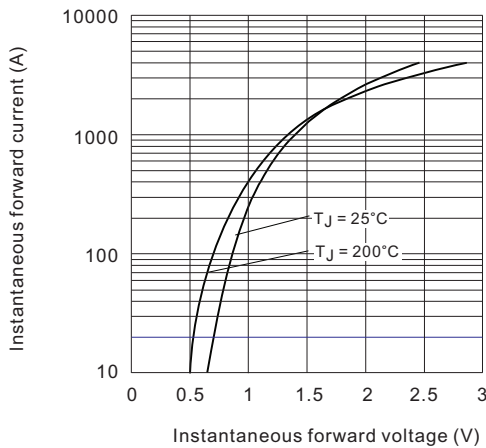
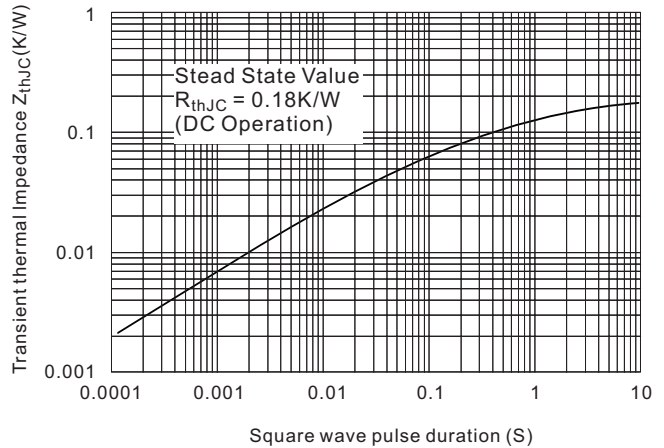


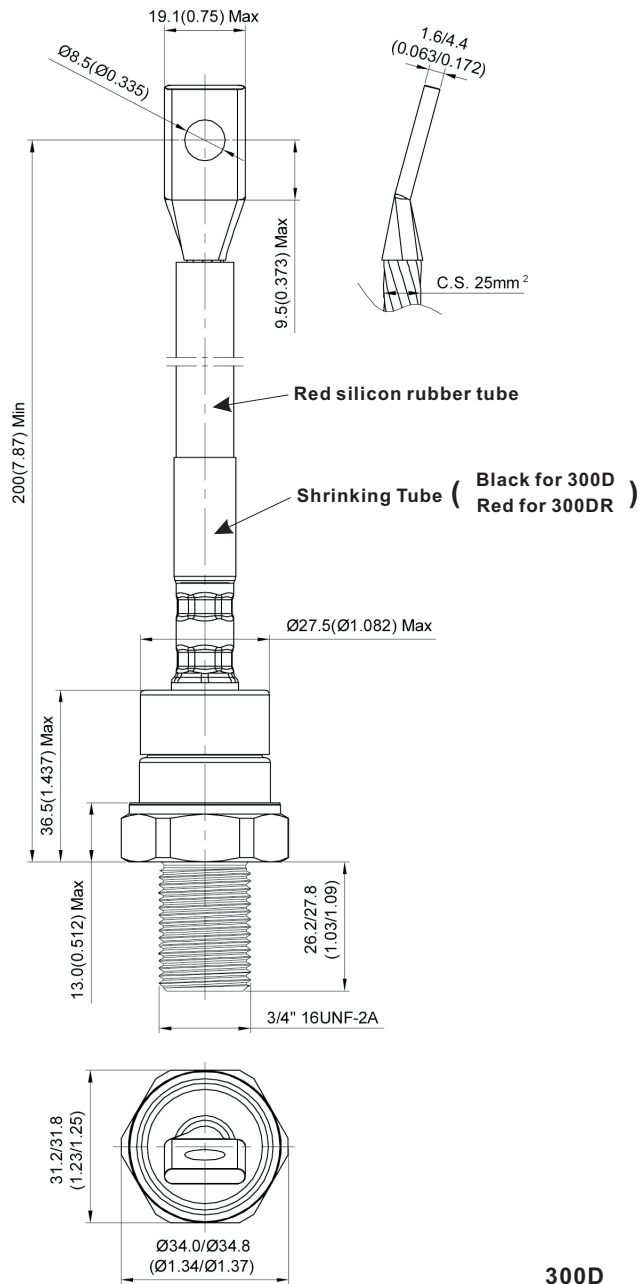
Fig.8 Thermal Impedance Z_{thJC} characteristic



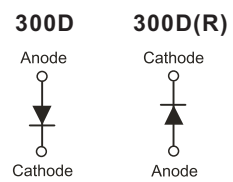
ORDERING INFORMATION TABLE

Device code	300	D	R	04	B	M
	①	②	③	④	⑤	⑤
①	-	Current rating, 300 = 300A				
②	-	D = Standard Recovery Diode				
③	-	None = Stud normal polarity (cathode to stud) R = Stud reverse polarity (anode to stud)				
④	-	Voltage code $\times 100 = V_{RRM}$ (see Voltage Ratings table)				
⑤	-	None = DO-9, Ceramic housing type with insulated tube B = DO-9, Glass-Metal Seal Type				
⑥	-	None = standard device, 3/4"-16UNF-2A M = Metric device, M20 x 1.5 , with insulated tube				

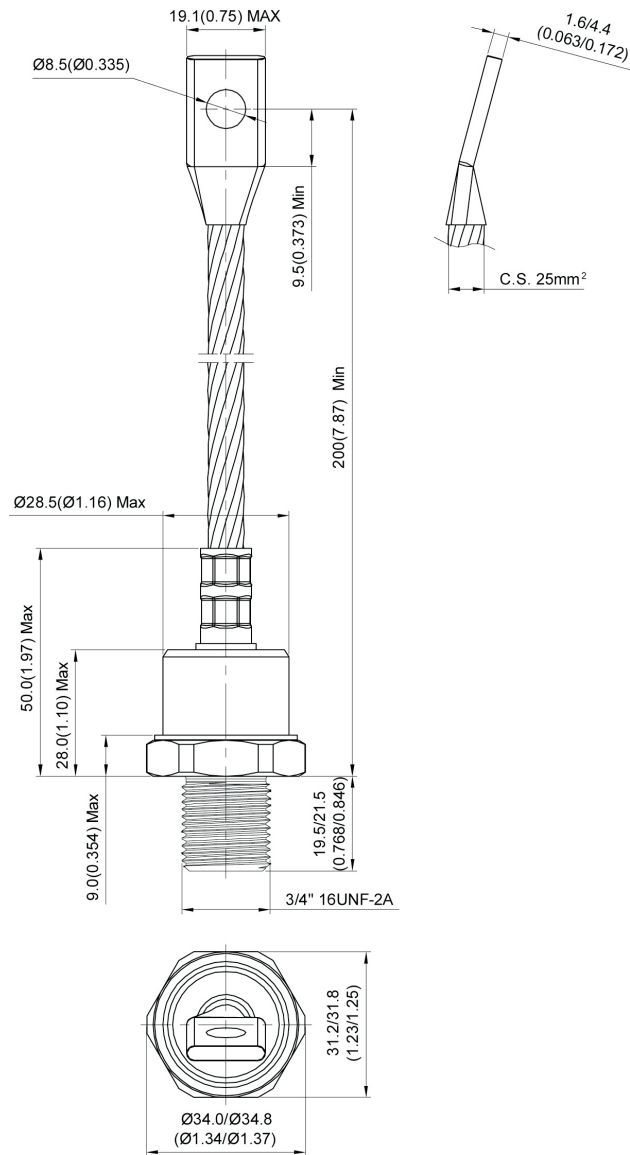
DO-205AB (DO-9), Ceramic housing



All dimensions in millimeters (inches)



DO-205AB (DO-9), GLASS - METAL SEAL



300D

Anode



Cathode

300D(R)

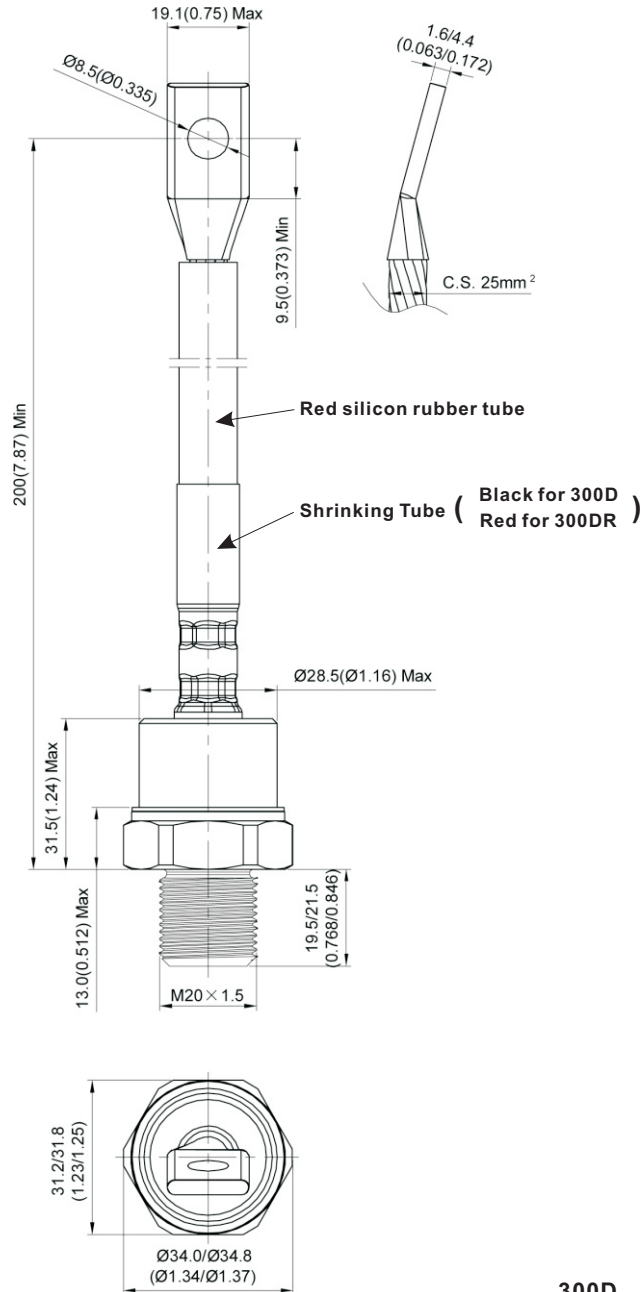
Cathode



Anode

All dimensions in millimeters (inches)

DO-205AB (DO-9), GLASS - METAL SEAL (Metric stud)



All dimensions in millimeters (inches)

