

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



Ceramic housing



Glass-metal seal



Glass-metal seal (Metric stud)

PRODUCT SUMMARY

$I_{F(AV)}$	300A
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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 ² t	50 HZ	183		kA ² s
	60 HZ	166		
V _{R_{RM}}	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-reptitive surge current	I _{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	6050	A	
		t = 8.3ms			6330		
		t = 10ms	100%V _{RRM} reapplied		5080		
		t = 8.3ms			5311		
Maximum I ² t for fusing	I ² t	t = 10ms	No voltage reapplied		183	kA ² s	
		t = 8.3ms			166		
		t = 10ms	100%V _{RRM} reapplied		129		
		t = 8.3ms			117		
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			1830	kA ² √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°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

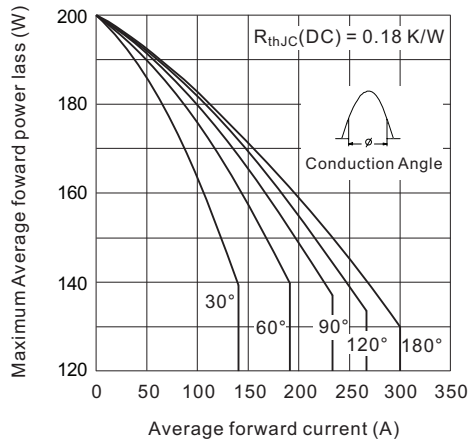


Fig.2 Current ratings characteristics

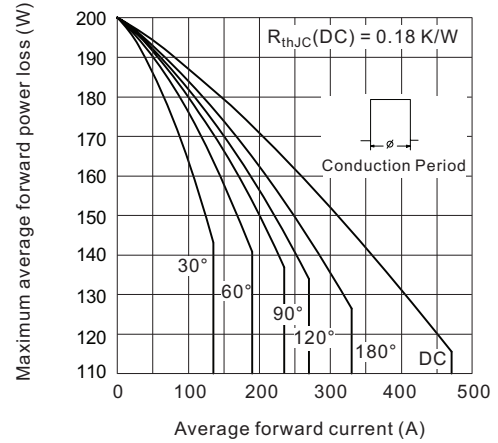


Fig.3 Forward power loss characteristics

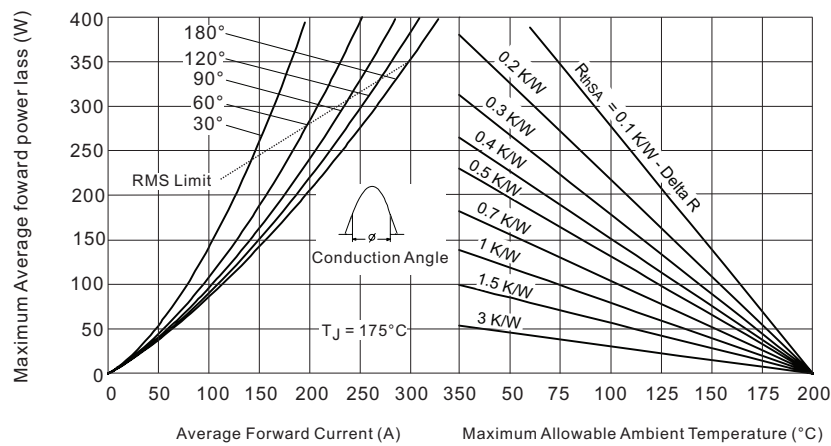


Fig.4 Forward power loss characteristics

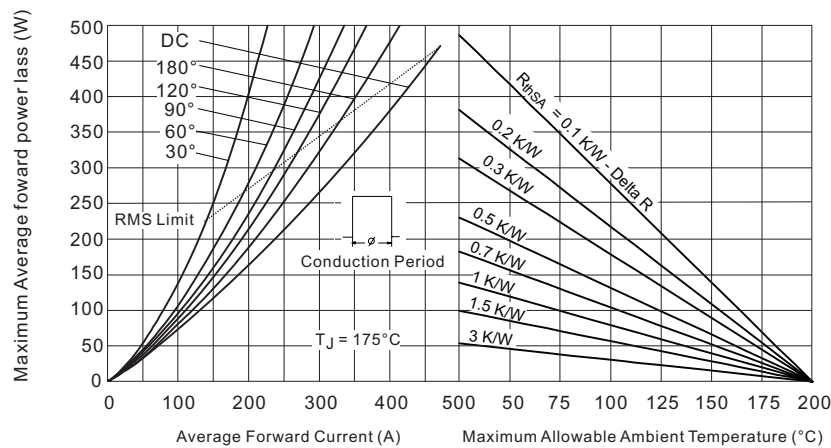


Fig.5 Maximum non-repetitive surge current

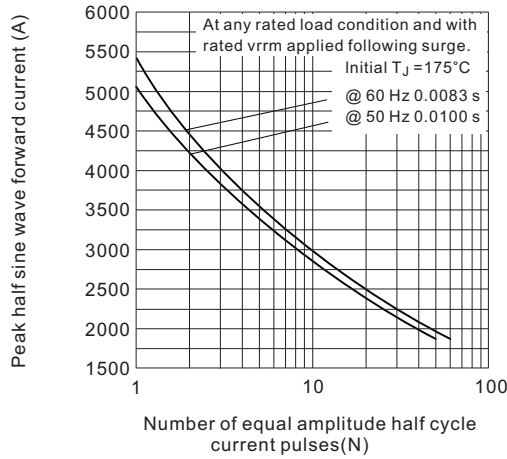


Fig.6 Maximum non-repetitive surge current

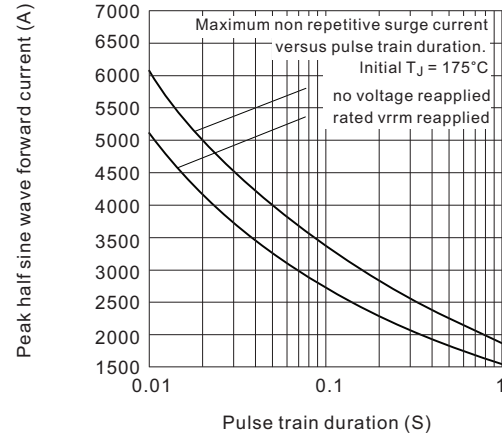


Fig.7 Forward voltage drop characteristics

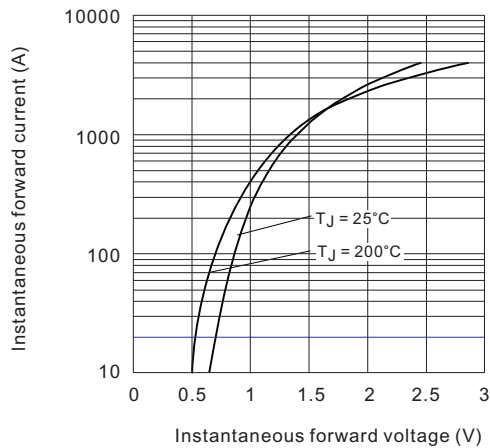
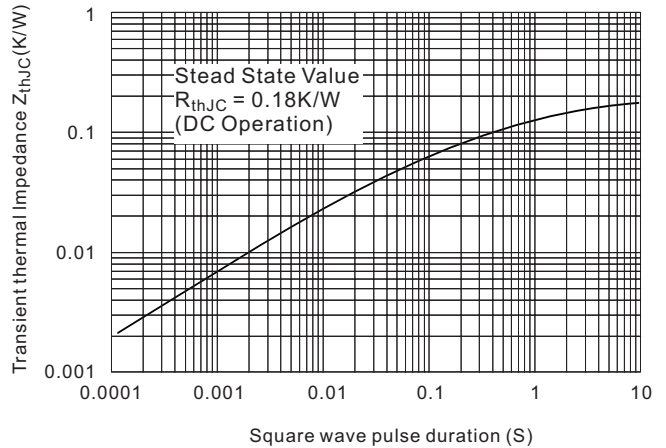


Fig.8 Thermal Impedance Z_{thJC} characteristic



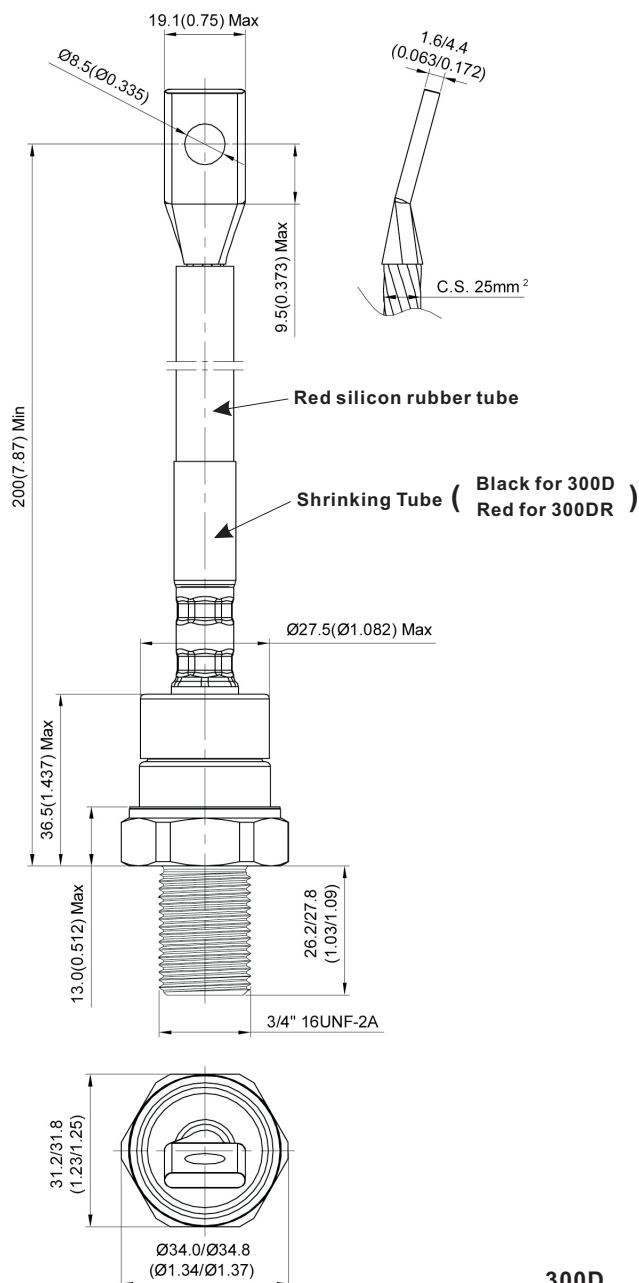
ORDERING INFORMATION TABLE

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)

300D

Anode



Cathode

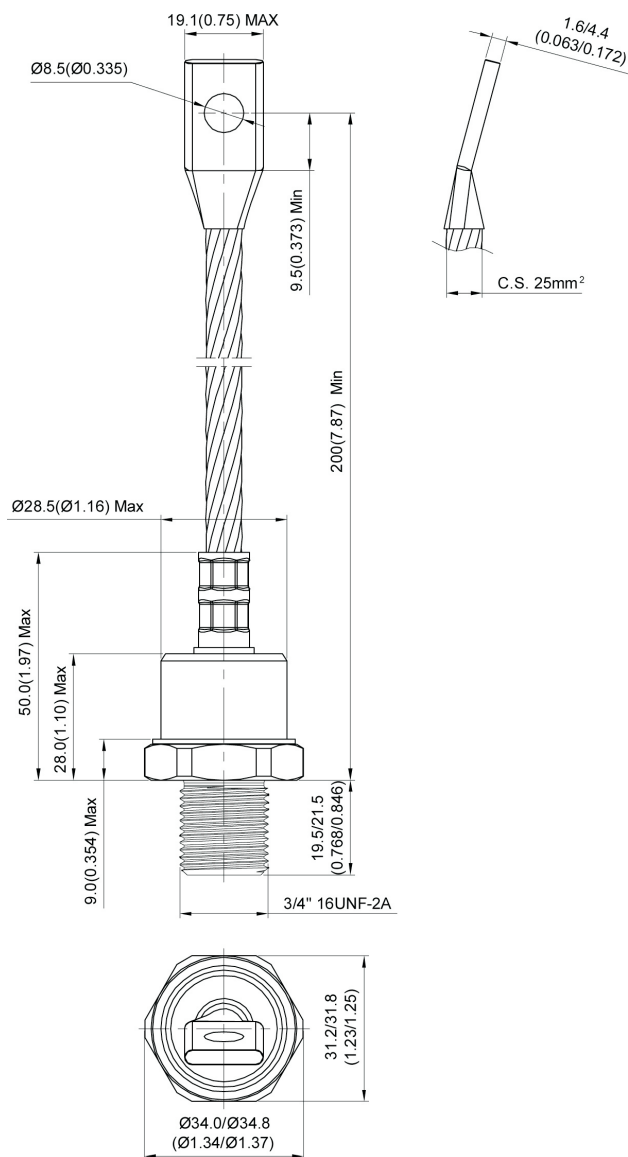
300D(R)

Cathode



Anode

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



300D

Anode



Cathode

300D(R)

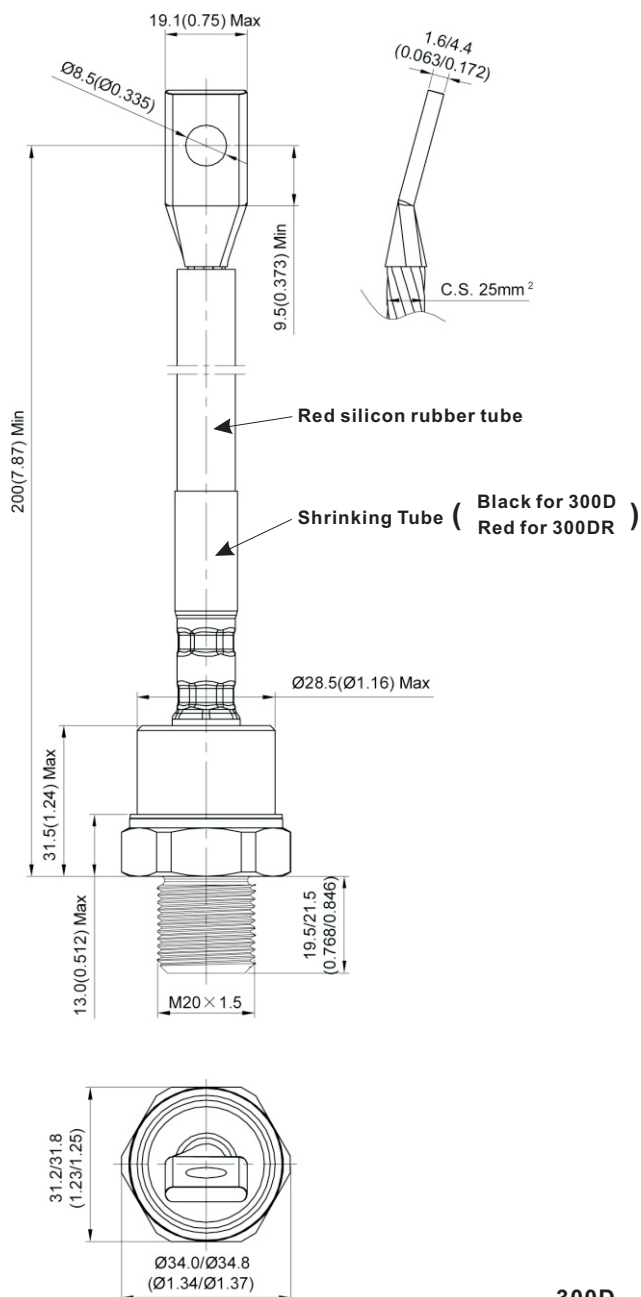
Cathode



Anode

All dimensions in millimeters (inches)

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



All dimensions in millimeters (inches)

300D



300D(R)

