

STANDARD RECOVERY DIODES

Stud Version

Features

- Diffused diode
- Wide current range
- High voltage ratings up to 1600V
- High surge current capabilities
- Stud cathode and stud anode version

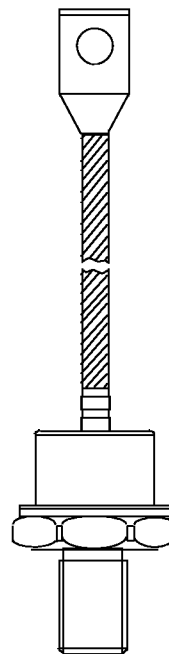
Typical Applications

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

Major Ratings and Characteristics

Parameters	70/300U(R)..D	Units
$I_{F(AV)}$	250	A
@ T_C	145	°C
$I_{F(RMS)}$	390	A
I_{FSM} @ 50Hz	6550	A
@ 60Hz	6850	A
I^2t @ 50Hz	214	KA ² s
@ 60Hz	195	KA ² s
V_{RRM} range	1200 to 1600	V
T_J	- 40 to 200	°C

250A



case style
DO-205AB (DO-9)

ELECTRICAL SPECIFICATIONS**Voltage Ratings**

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ $T_J = T_J$ max. mA
70/300U(R)..D	120	1200	1300	60
	160	1600	1700	

Forward Conduction

Parameter		70/300U(R)..D	Units	Conditions			
$I_{F(AV)}$	Max. average forward current @ Case temperature	250	A	180° conduction, half sine wave			
		145	°C				
$I_{F(RMS)}$	Max. RMS forward current	390	A	DC @ 134°C case temperature			
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	6550	A	t = 10ms	No voltage	Sinusoidal half wave, Initial $T_J = T_J$ max.	
		t = 8.3ms		reapplied			
		t = 10ms		100% V_{RRM}			
		t = 8.3ms		reapplied			
I^2t	Maximum I^2t for fusing	214	KA²s	t = 10ms	No voltage		Initial $T_J = T_J$ max.
		195		t = 8.3ms	reapplied		
		151		t = 10ms	100% V_{RRM}		
		138		t = 8.3ms	reapplied		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	2140	KA²√s	t = 0.1 to 10ms, no voltage reapplied			
$V_{F(TO)1}$	Low level value of threshold voltage	0.61	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.			
$V_{F(TO)2}$	High level value of threshold voltage	0.83		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.			
r_{f1}	Low level value of forward slope resistance	0.75	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.			
r_{f2}	High level value of forward slope resistance	0.49		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.			
V_{FM}	Max. forward voltage drop	1.30	V	$I_{pk} = 785A, T_J = 25^\circ C, t_p = 10ms$ sinusoidal wave			

Thermal and Mechanical Specifications

Parameter	70/300U(R)..D	Units	Conditions
T_J Max. junction operating temperature range	-40 to 200	°C	
T_{stg} Max. storage temperature range	-40 to 200		
R_{thJC} Max. thermal resistance, junction to case	0.18	K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.08		Mounting surface, smooth, flat and greased
T Max. allowed mounting torque +0 -20%	37	Nm	Not lubricated threads
	28		Lubricated threads
wt Approximate weight	250	g	
Case style	DO-205AB (DO-9)		See Outline Table

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.020	0.015	K/W	$T_J = T_{J \text{ max.}}$
120°	0.024	0.025		
90°	0.031	0.034		
60°	0.045	0.047		
30°	0.077	0.077		

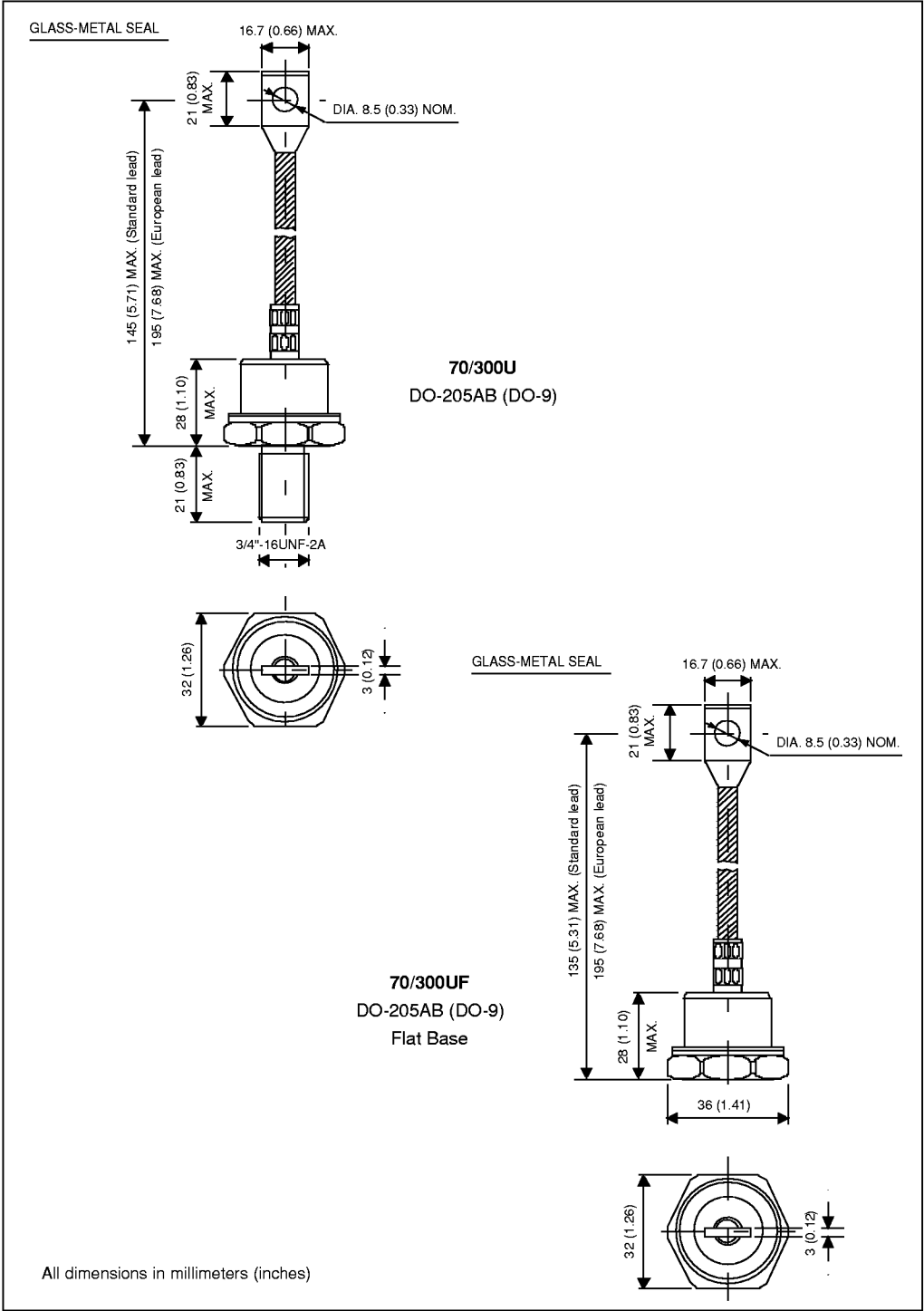
Ordering Information Table

Device Code								
	300	U	F	R	160	A	Y	P D
	1	2	3	4	5	6	7	8 9
1	300 = Standard 300U device 70 = Standard 70U device 302 = 300U Top Threaded version 72 = 70U Top Threaded version							
2	U = Essential Part Number							
3	- F = Flat Base (with Pinch Bolt) - None = Normal Stud							
4	- R = Stud Reverse Polarity (Anode to Stud) - None = Stud Normal Polarity (Cathode to Stud)							
5	Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)							
6	- A = Essential Part Number only for 300U Series - None = 70U Series							
7	- Y = European Lead - None = Standard Lead							
8	P = Forward Selection ($1.045V < V_{FM} < 1.125V$, $I_{FM} = 470A$, $T_J = 25^\circ C$)							
9	D = Diffused diode							

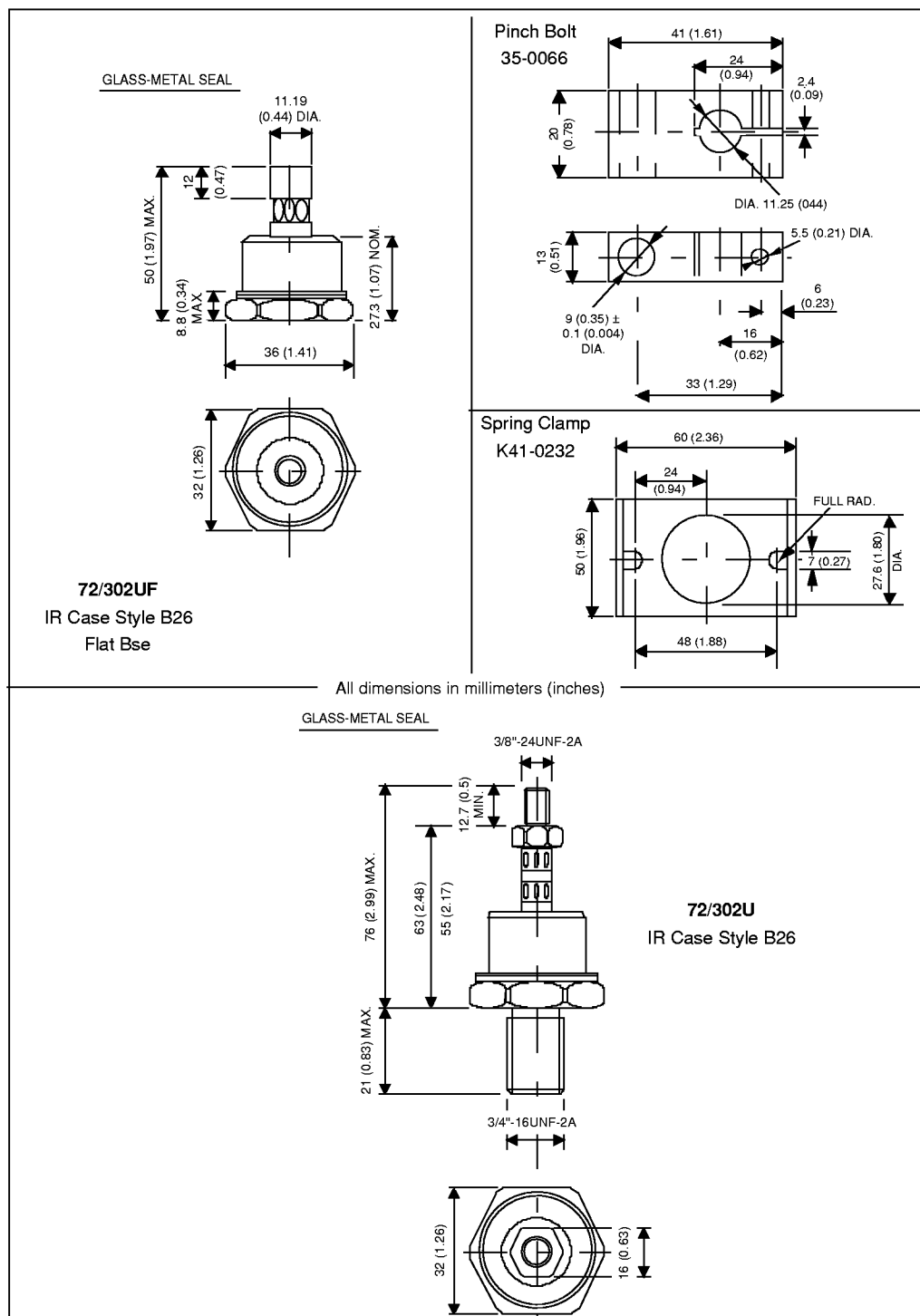
70/300U(R)..D Series

Bulletin I2031 rev. A 01/97

Outline Table



Outline Table



70/300U(R)..D Series

Bulletin I2031 rev. A 01/97

International
IRF Rectifier

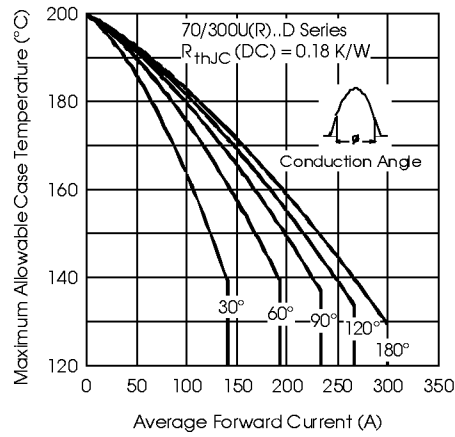


Fig. 1 - Current Ratings Characteristics

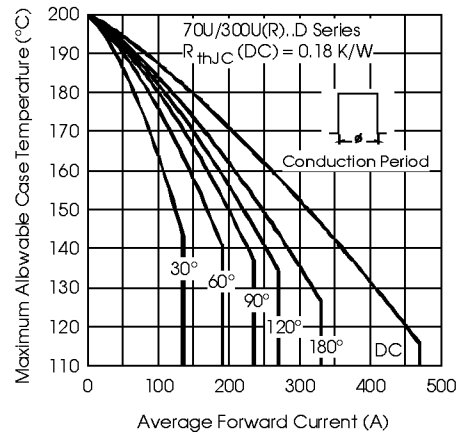


Fig. 2 - Current Ratings Characteristics

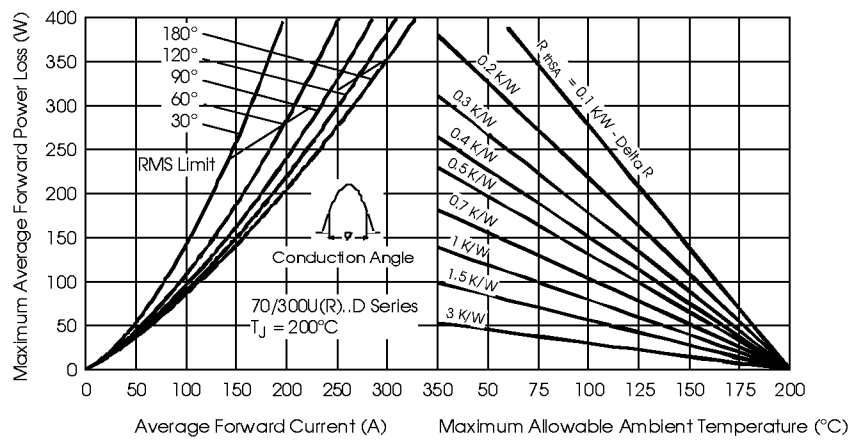


Fig. 3 - Forward Power Loss Characteristics

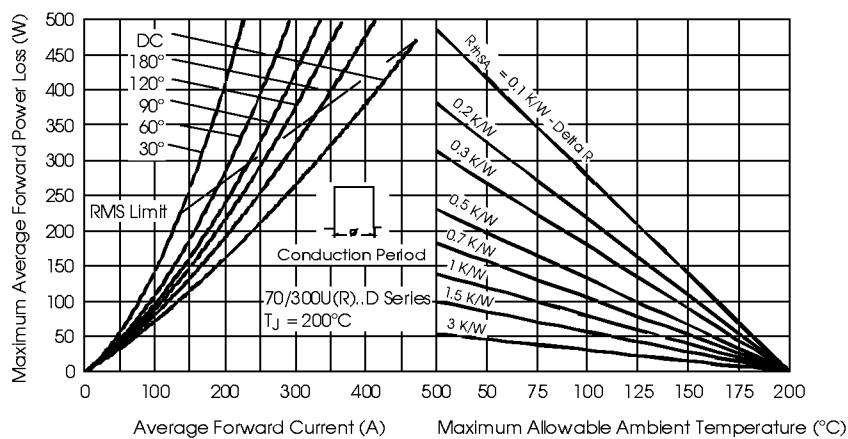


Fig. 4 - Forward Power Loss Characteristics

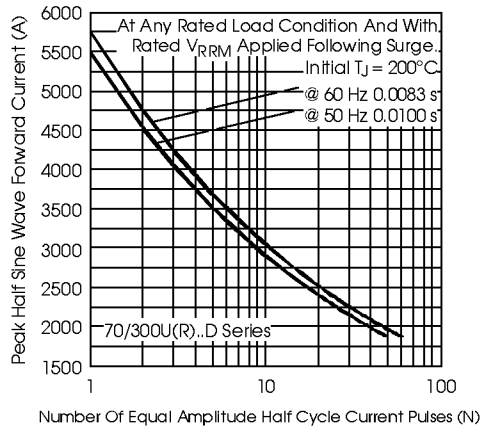


Fig. 5 - Maximum Non-Repetitive Surge Current

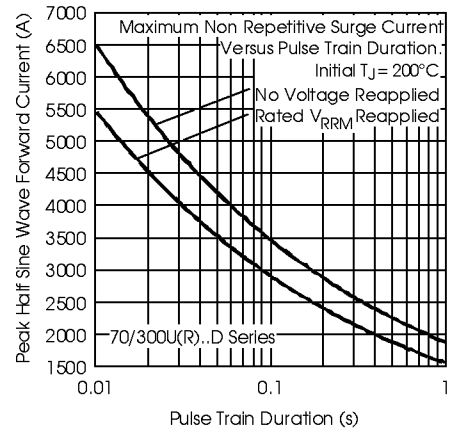


Fig. 6 - Maximum Non-Repetitive Surge Current

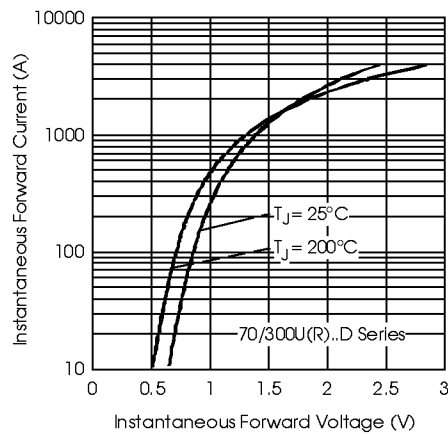


Fig. 7 - Forward Voltage Drop Characteristics

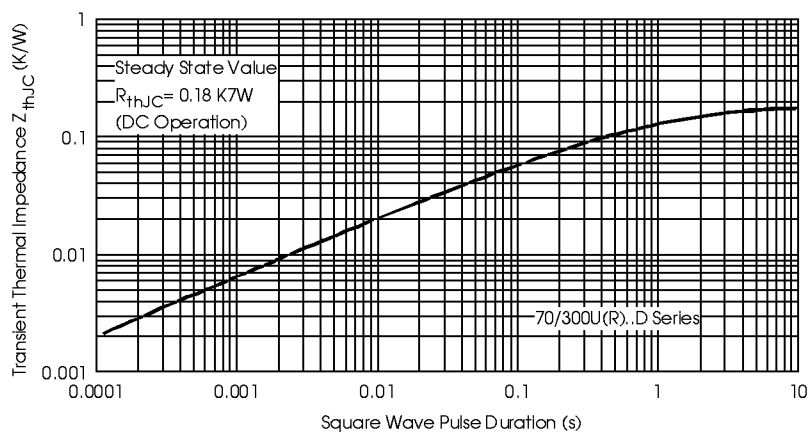


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic