

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
- RoHS Compliant

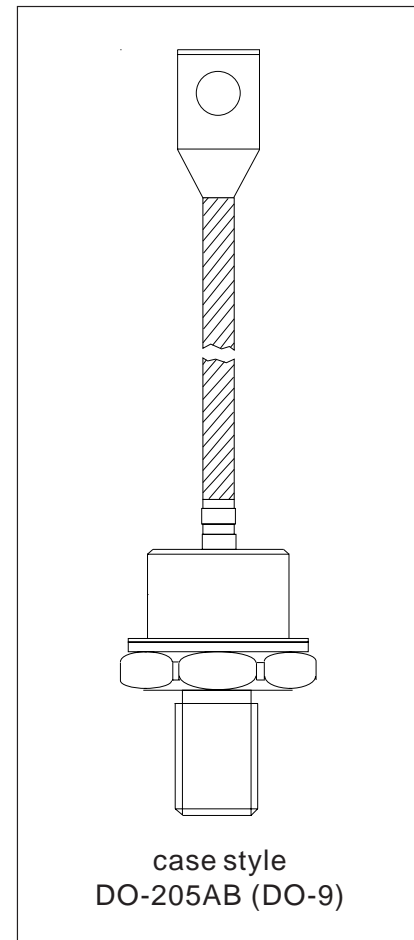
Typical Applications

- 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



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 reappplied
	6850		t = 8.3ms reappplied
	5500		t = 10ms 100% V_{RRM} reappplied
	5750		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	214	KA ² s	t = 10ms No voltage reappplied
	195		t = 8.3ms reappplied
	151		t = 10ms 100% V_{RRM} reappplied
	138		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	2140	KA ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ 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	N m	Not lubricated threads
	28		Lubricated threads
wt Approximate weight	250	g	
Case style	DO-205AB (DO-9)		See Outline Table

ΔR_{thJC} Conduction

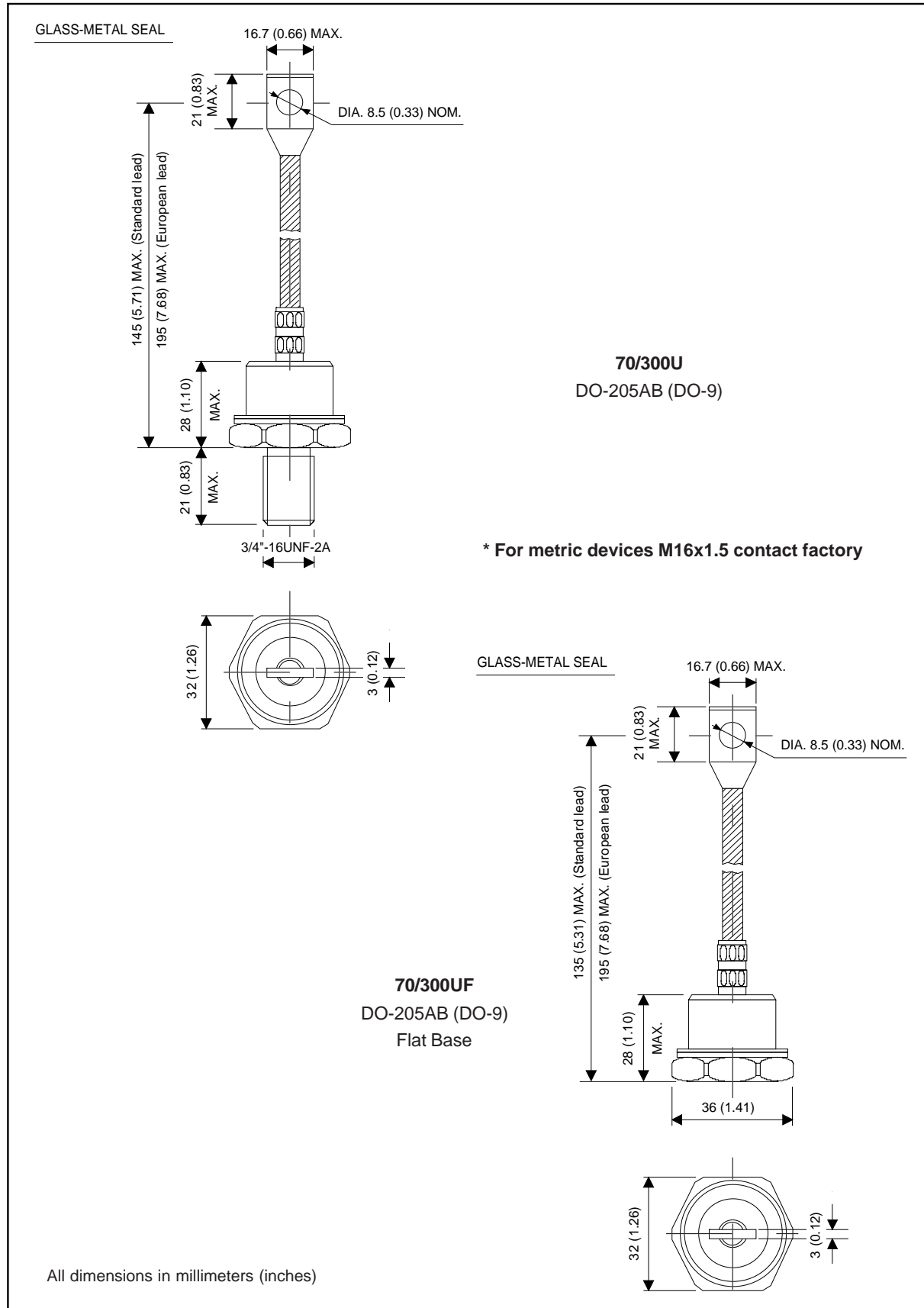
(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.020	0.015	K/W	T _J = T _J max.
120°	0.024	0.025		
90°	0.031	0.034		
60°	0.045	0.047		
30°	0.077	0.077		

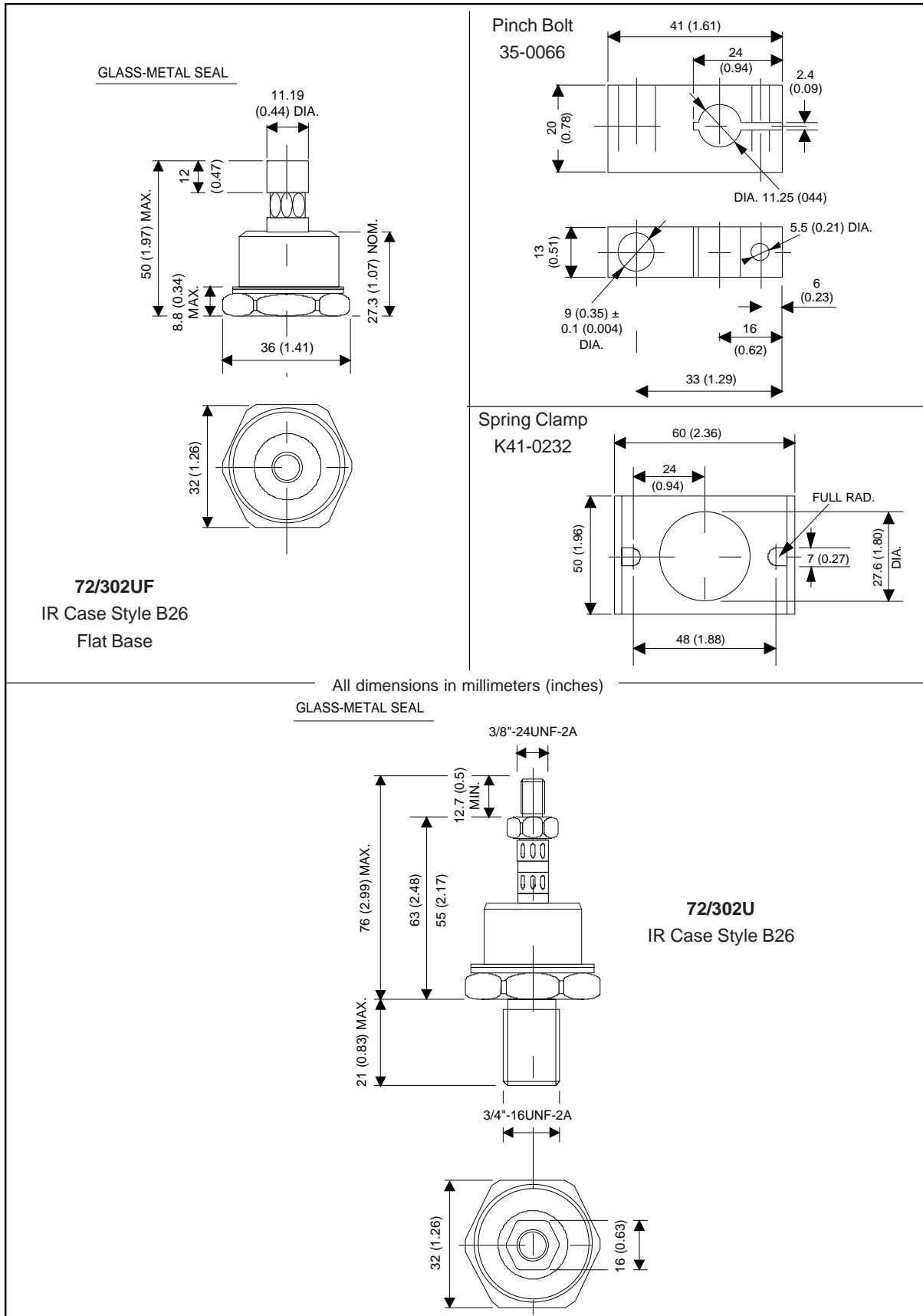
Ordering Information Table

Device Code																			
	<table border="1" style="margin: auto;"> <tr> <td style="background-color: black; color: white; padding: 5px;">300</td> <td style="background-color: black; color: white; padding: 5px;">U</td> <td style="background-color: black; color: white; padding: 5px;">F</td> <td style="background-color: black; color: white; padding: 5px;">R</td> <td style="background-color: black; color: white; padding: 5px;">160</td> <td style="background-color: black; color: white; padding: 5px;">A</td> <td style="background-color: black; color: white; padding: 5px;">Y</td> <td style="background-color: black; color: white; padding: 5px;">P</td> <td style="background-color: black; color: white; padding: 5px;">D</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> <td style="text-align: center;">9</td> </tr> </table>	300	U	F	R	160	A	Y	P	D	1	2	3	4	5	6	7	8	9
300	U	F	R	160	A	Y	P	D											
1	2	3	4	5	6	7	8	9											
<p>1 - 300 = Standard 300U device 70 = Standard 70U device 302 = 300U Top Threaded version 72 = 70U Top Threaded version</p> <p>2 - U = Essential Part Number</p> <p>3 - F = Flat Base (with Pinch Bolt) None = Normal Stud Base 3/4"-16UNF-2A</p> <p>4 - R = Stud Reverse Polarity (Anode to Stud) None = Stud Normal Polarity (Cathode to Stud)</p> <p>5 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)</p> <p>6 - A = Essential Part Number only for 300U Series None = 70U Series</p> <p>7 - Y = European Lead None = Standard Lead</p> <p>8 - P = Forward Selection (1.045V < V_{FM} < 1.125V, I_{FM} = 470A, T_J = 25°C)</p> <p>9 - D = Diffused diode</p>																			

Outline Table



Outline Table



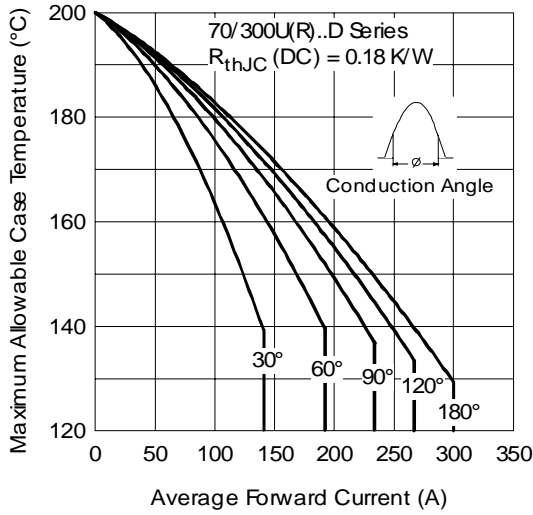


Fig. 1 - Current Ratings Characteristics

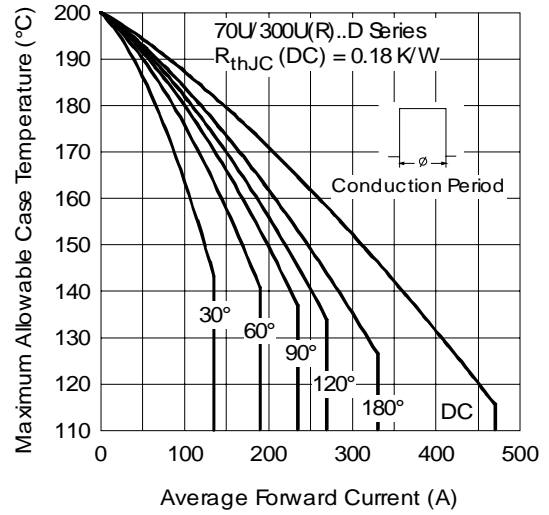


Fig. 2 - Current Ratings Characteristics

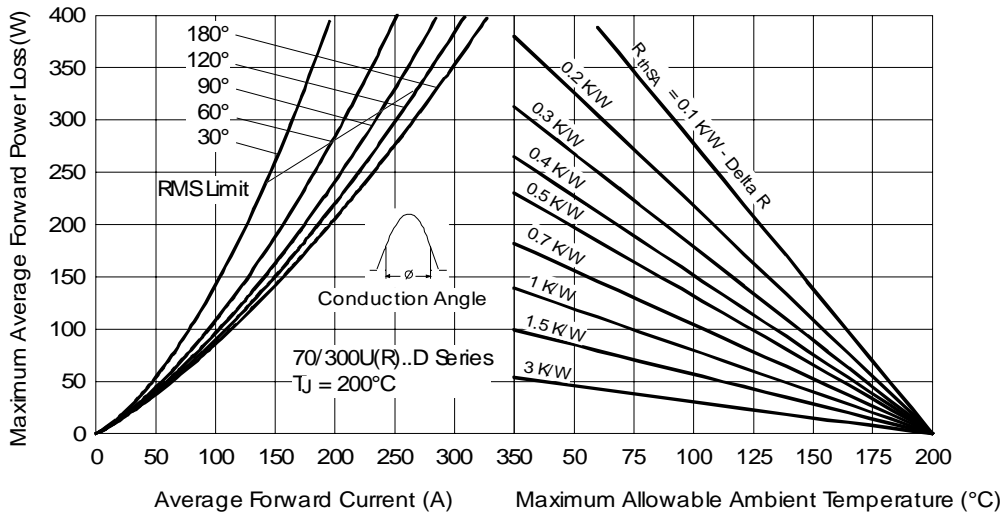


Fig. 3 - Forward Power Loss Characteristics

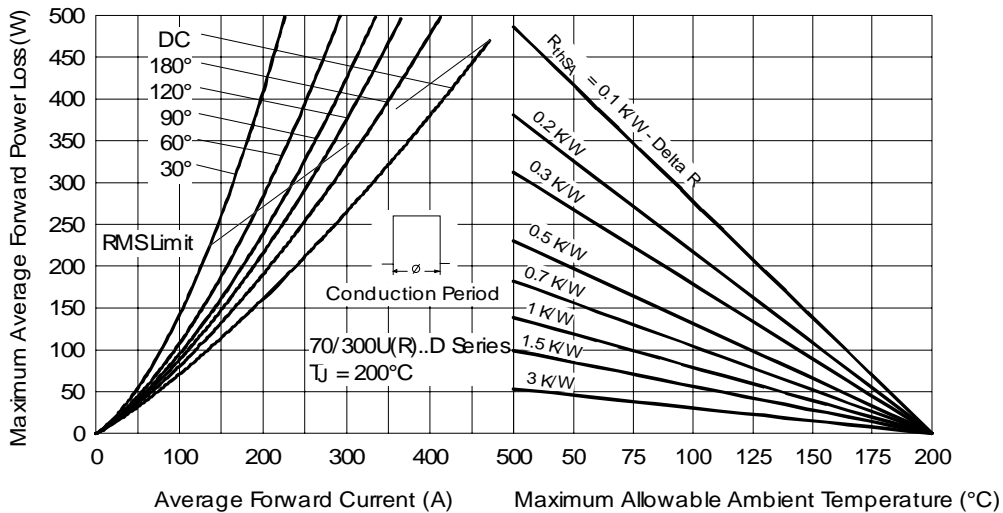


Fig. 4 - Forward Power Loss Characteristics

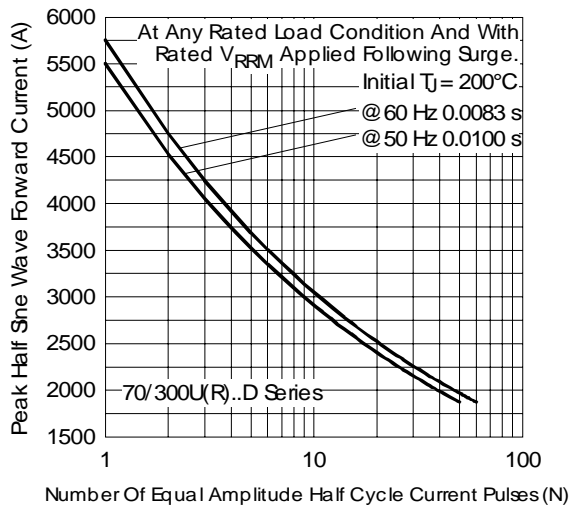


Fig. 5 - Maximum Non-Repetitive Surge Current

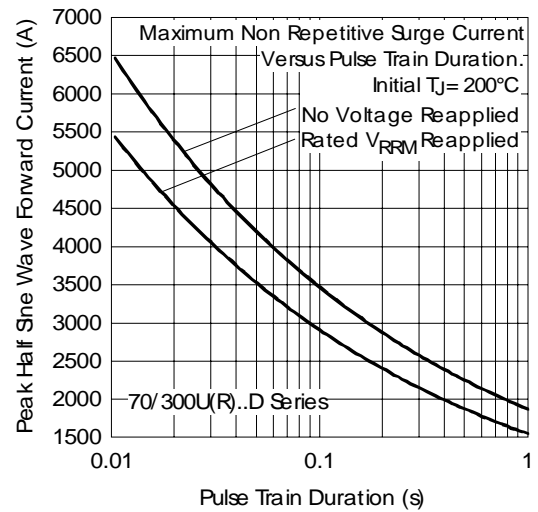


Fig. 6 - Maximum Non-Repetitive Surge Current

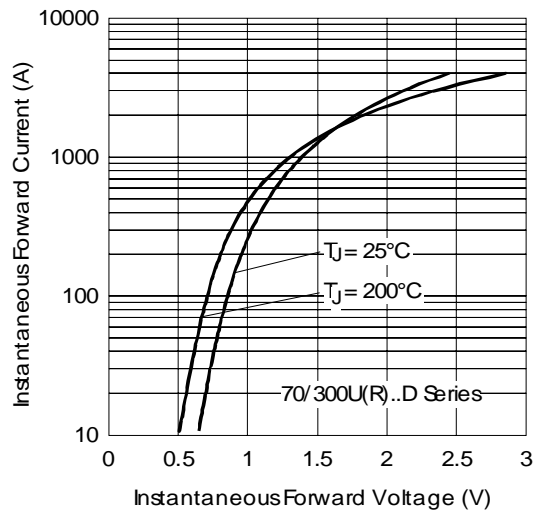


Fig. 7 - Forward Voltage Drop Characteristics

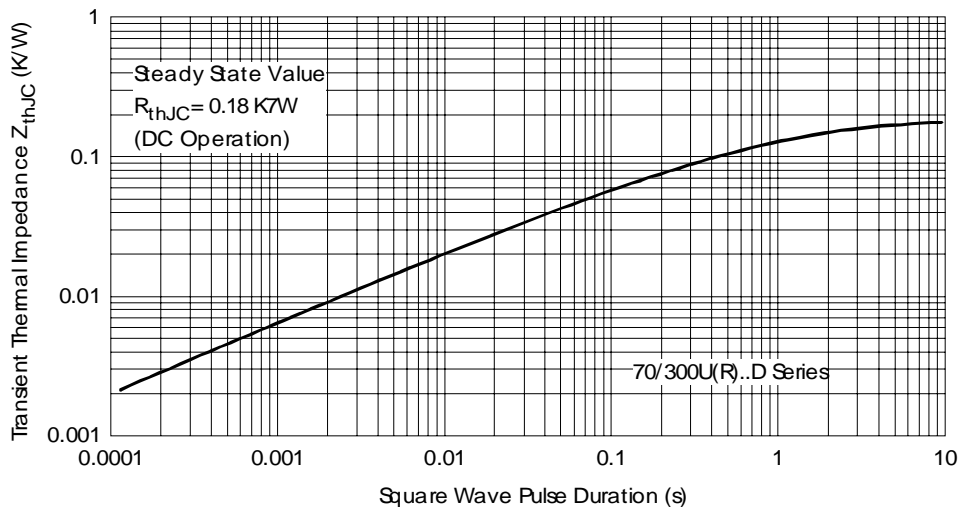


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 06/06