INTERNATIONAL RECTIFIER IOR

70U, 300U-A SERIES

250 and 300 Amp Avg
Power Silicon Rectifier Diodes

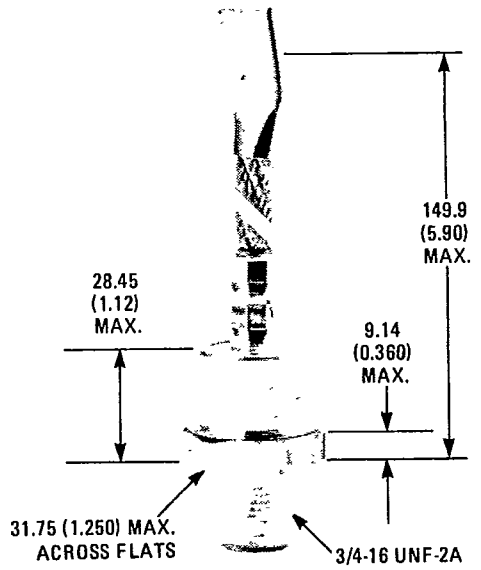
Major Ratings and Characteristics

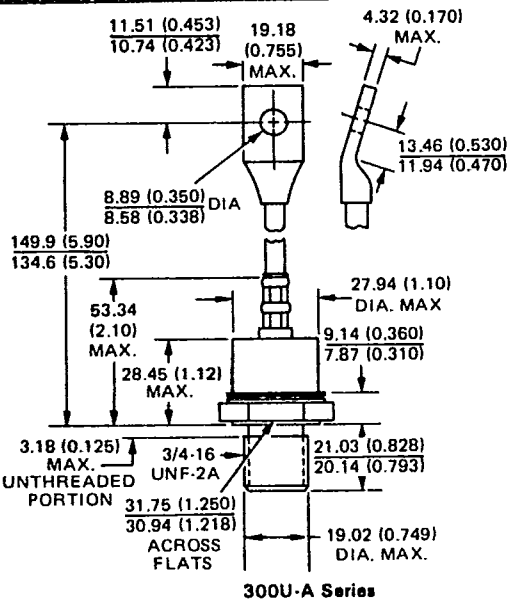
		70U	300U-A, 302U-A	Units
$I_{F(AV)}$		250	300	A
@ T_C		150	130	°C
I_{FSM}	@ 50 Hz	5500	5500	A
	@ 60 Hz	5750	5750	
I^2t	@ 50 Hz	151 000	151 000	A^2s
	@ 60 Hz	138 000	138 000	
$I^2\sqrt{t}$		2,139,000	2,139,000	$A^2\sqrt{s}$
V_{RRM} Range		100 – 1200	50-1200	V

Description and Features

- Peak reverse voltage up to 1200V
- Popular series for rough service
- For many AC-to-DC circuit applications

CASE STYLE AND DIMENSIONS





300U-A Series

Conforms to JEDEC Outline DO-205AB (DO-9)
All Dimensions in Millimeters and (Inches)

For other outlines see page 231.

VOLTAGE RATINGS

PART NUMBER ①		V_{RRM} Max. repetitive peak reverse voltage (V)	V_{RSM} Max. non-repetitive peak reverse voltage (V)	V_R Max. average reverse voltage (V)	I_{RM} Max. peak reverse current at rated V_{RRM} (mA)
DO-205AB (DO-9)		T_J = −40°C to 200°C	T_J = −40°C to 200°C	T_J = −40°C to 200°C	T_J = 200°C
70U10		100	200	100	60
70U20		200	300	200	60
70U40		400	500	400	60
70U60		600	720	600	60
70U80		800	960	800	60
70U100		1000	1200	1000	60
70U120		1200	1440	1200	60
		T_J = −65°C to 200°C	T_J = −65°C to 200°C	T_J = −65°C to 200°C	T_J = 175°C
300U5A	302U5A	50	100	50	40
300U10A	302U10A	100	200	100	40
300U20A	302U20A	200	300	200	40
300U30A	302U30A	300	400	300	40
300U40A	302U40A	400	500	400	40
300U60A	302U60A	600	720	600	40
300U80A	302U80A	800	960	800	35
300U100A	302U100A	1000	1200	1000	30
300U120A	302U120A	1200	1440	1200	25

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, i.e., 70UR20, 300UR120A etc.

ELECTRICAL SPECIFICATIONS

		70U	300U-A/302U-A	Units	Conditions
$I_{F(AV)}$	Max. average forward current	250	300	A	1-phase operation, 180° conduction
	@ Max. T_C	150	130	°C	
I_{FSM}	Max. peak one-cycle non-repetitive surge current	5500		A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse; Following any rated load condition and with rated V_{RRM} applied.
		5750			Half cycle 60 Hz sine wave or 5 ms rectangular pulse
		6550		A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse; Following any rated load condition and with V_{RRM} applied following surge = 0.
		6850			Half cycle 60 Hz sine wave or 5 ms rectangular pulse
I^2t	Max. I^2t for fusing	151 000		A^2s	t = 10 ms; With rated V_{RRM} applied following surge, initial $T_J = T_J$ Max.
		138 000			t = 8.3 ms
	Max. I^2t for individual device fusing	214 000			t = 10 ms; With V_{RRM} = 0 following surge, initial $T_J = T_J$ Max.
		195 000			t = 8.3 ms
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual device fusing	2 139 000		$A^2\sqrt{s}$	t = 0.1 to 10 ms, V_{RRM} = 0 following surge ②
V_{FM}	Max. peak forward voltage	1.30	—	V	$I_{FM} = \pi \times I_{F(AV)}$ (785 A peak), T_J = 25°C
		—	1.40	V	$I_{FM} = \pi \times I_{F(AV)}$ (942 A peak), T_J = 25°C
$V_{F(TO)}$	Max. value of threshold voltage	0.610		V	T_J = 200°C
r_F	Max. value of forward slope resistance	0.751		mΩ	

THERMAL-MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range		−65 to 200 ③	°C	
T_{stg}	Max. storage temperature range		−65 to 200 ③	°C	
R_{thJC}	Max. internal thermal resistance, junction-to-case		0.18	K/W	DC operation
R_{thCS}	Thermal resistance, case-to-sink		0.08	K/W	Mounting surface flat, smooth, and greased.
T	Mounting torque	Min.	31.1 (275)	Nm (lbf-in)	Non lubricated threads
		Max.	36.7 (325)		
wt	Approximate weight		213 (7.5)	g (oz)	
	Case style		DO-205AB (DO-9) ④		JEDEC

② I^2t for time $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$

③ −40 to 200°C for 70U.

④ 302U-A uses IR case style B-26 (see page B-83).

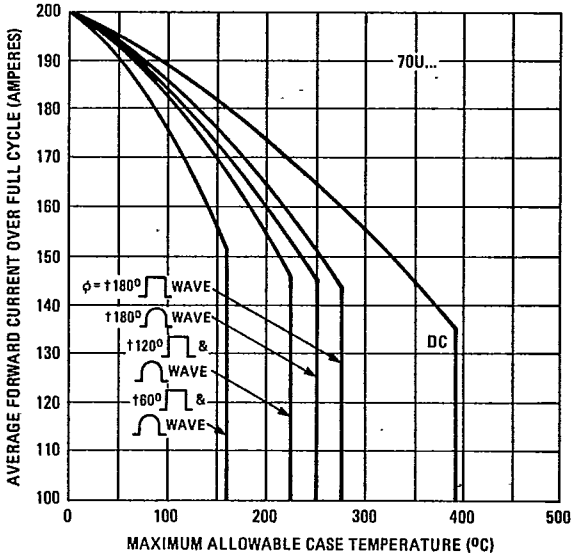


Fig. 1 — Average Forward Current Vs. Maximum Allowable Case Temperature, 70U Series

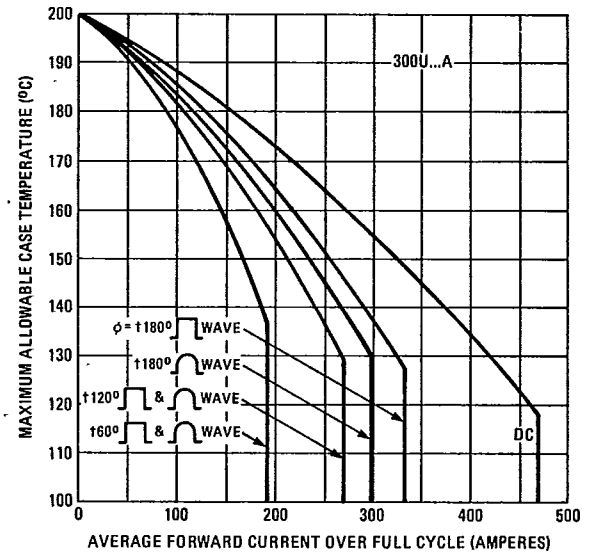
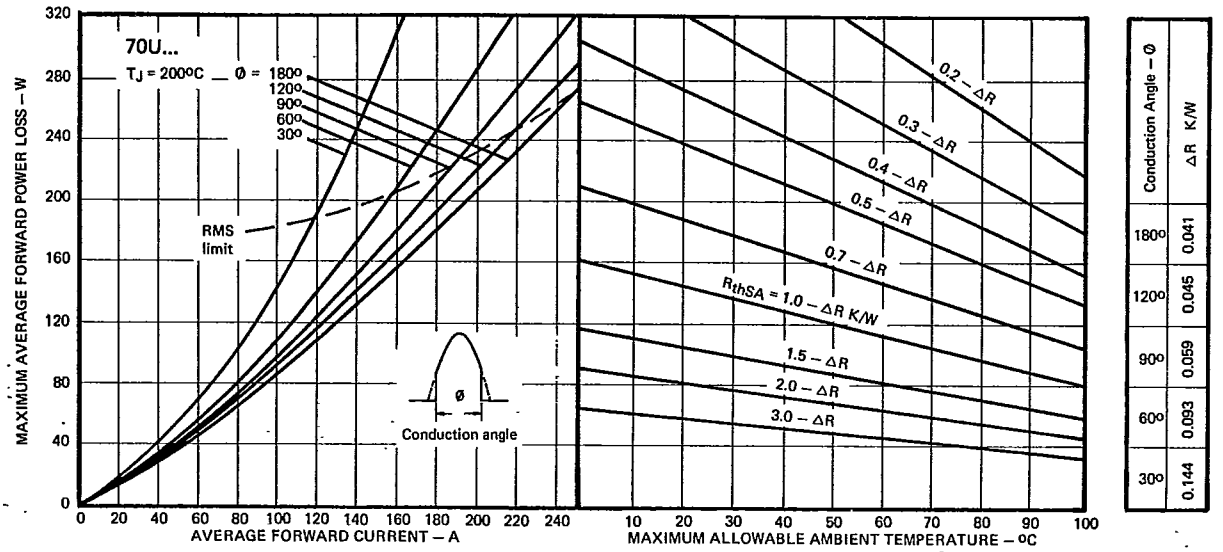
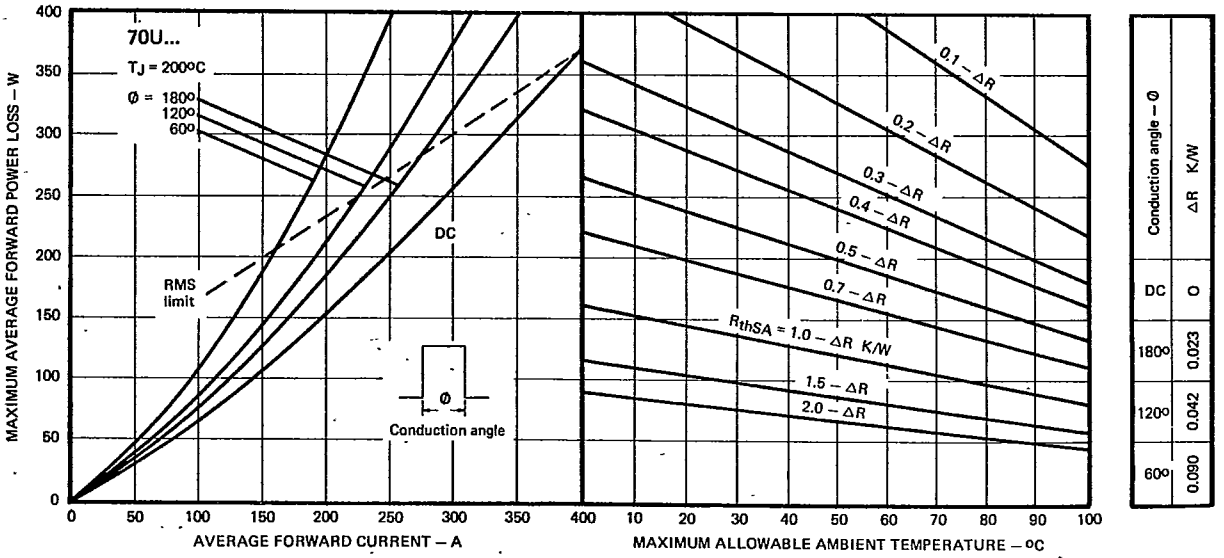


Fig. 2 — Average Forward Current Vs. Maximum Allowable Case Temperature, 300U_A Series



Conduction Angle – Ø	ΔR K/W
180°	0.041
120°	0.045
90°	0.059
60°	0.093
30°	0.144

Fig. 3 — Current Rating Nomogram (Sinusoidal Waveforms 40—1000 Hz), 70U Series.



Conduction angle – Ø	ΔR K/W
DC	0
180°	0.023
120°	0.042
60°	0.090

Fig. 4 — Current Rating Nomogram (Rectangular Waveforms), 40 — 1000 Hz, 70U Series

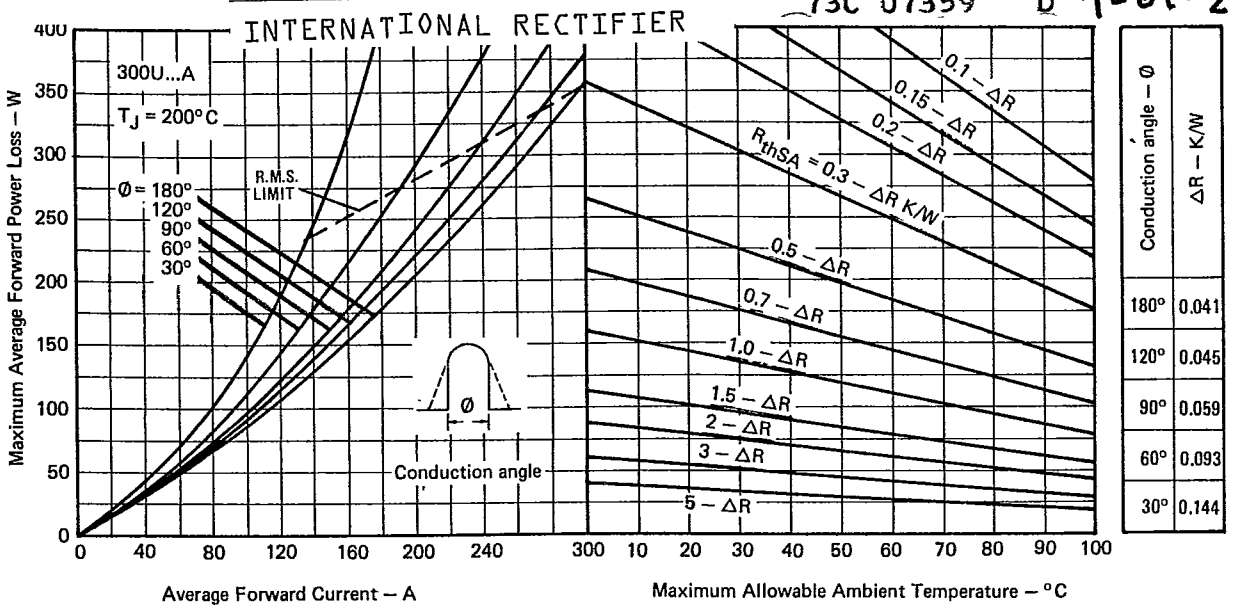


Fig. 5 – Current Rating Nomogram (Sinusoidal Waveforms), 300U_A Series

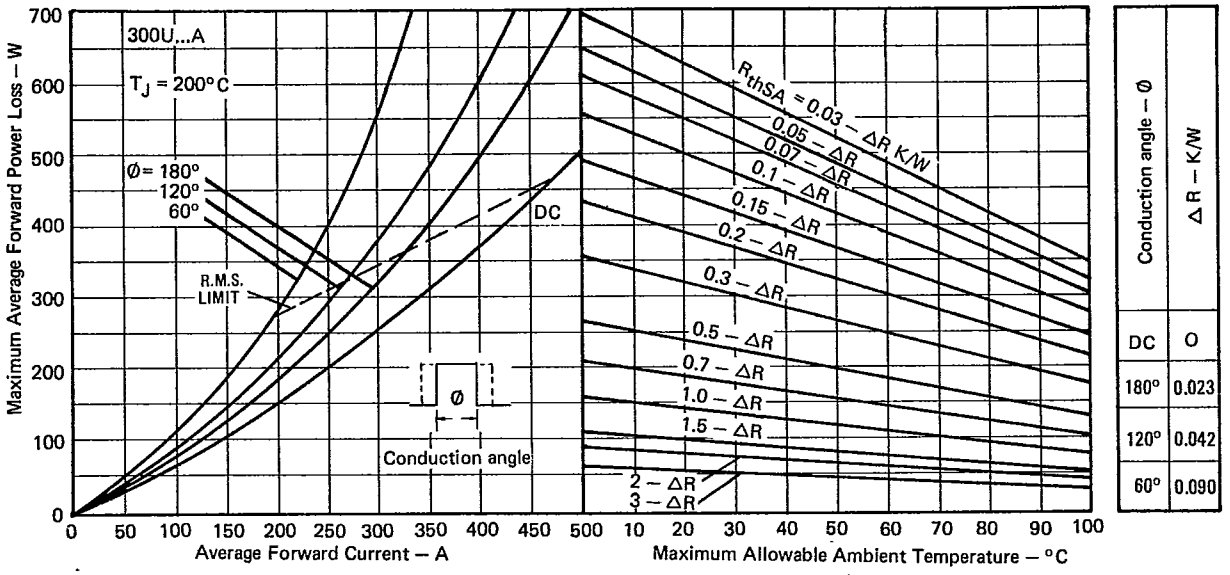


Fig. 6 – Current Rating Nomogram (Rectangular Waveforms) 300U_A Series

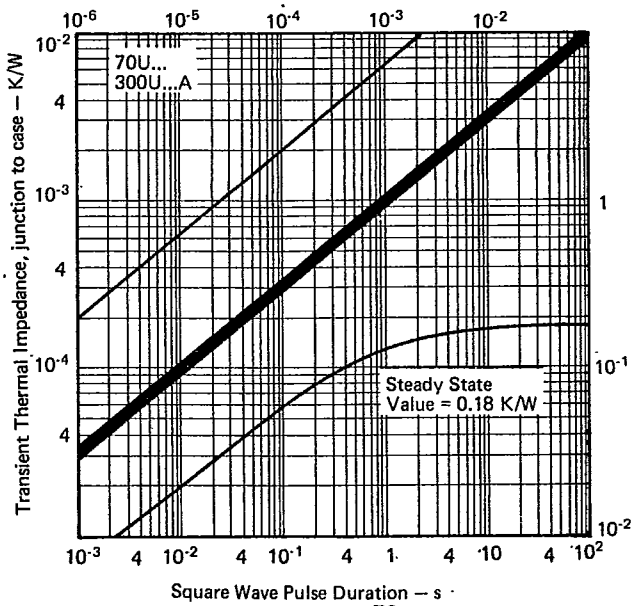


Fig. 7 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration, Both Series.

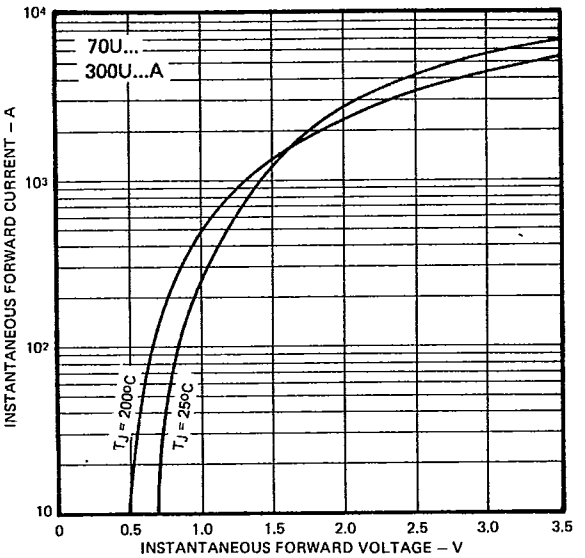


Fig. 8 – Maximum Forward Voltage Vs. Forward Current, Both Series.

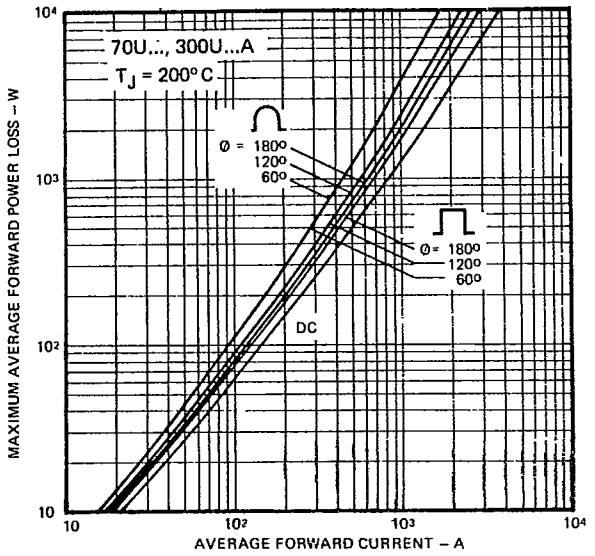


Fig. 9 – Maximum High Level Forward Power Loss Vs. Average Forward Current, Both Series.

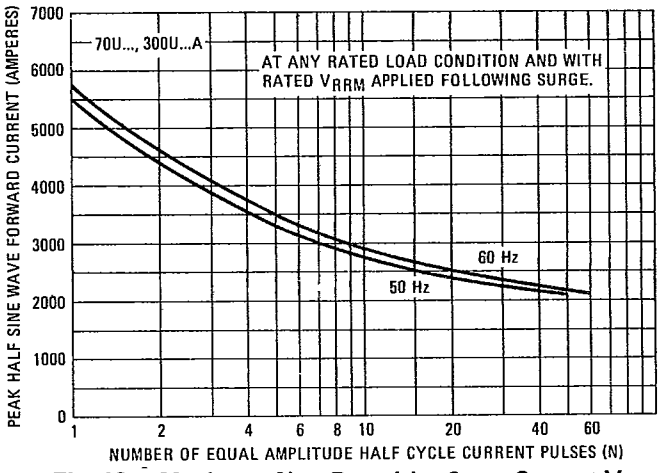
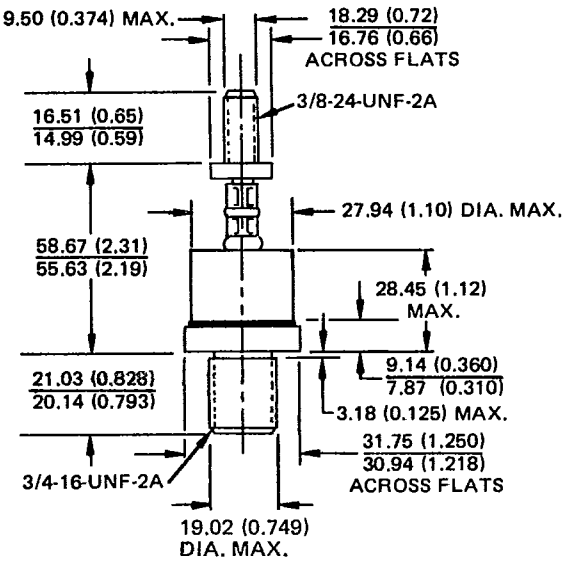


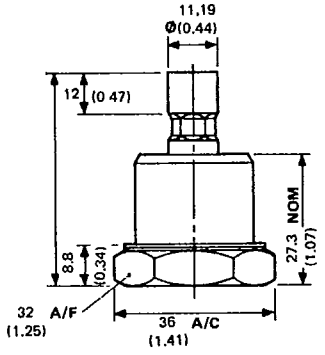
Fig. 10 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, Both Series.



Torque Limits on Threaded Top Terminal (Lubricated Threads) Min. 75 (8.5) lbf-in. (N·m) Max. 100 (11.3) lbf-in. (N·m)
Hex on top stud must be held while this torque is applied

302U-A Series
IR Case Style B26
Dimensions in Millimeters and (Inches)

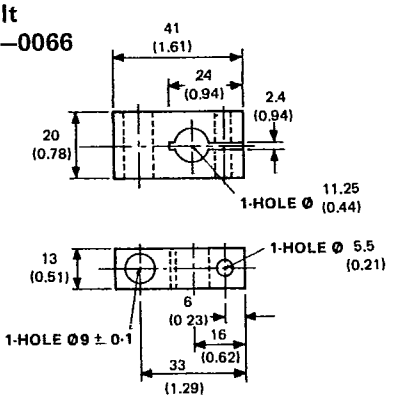
72UF...



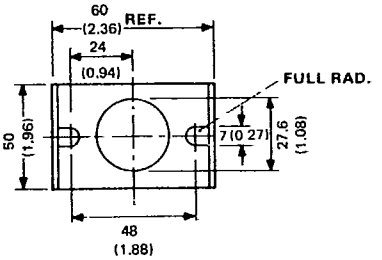
NOTES
1. 70UF... supplied with spring clamp K41-0232
2. 72UF... supplied with pinch bolt 35-0066 and spring clamp K41-0232

All dimensions in millimetres

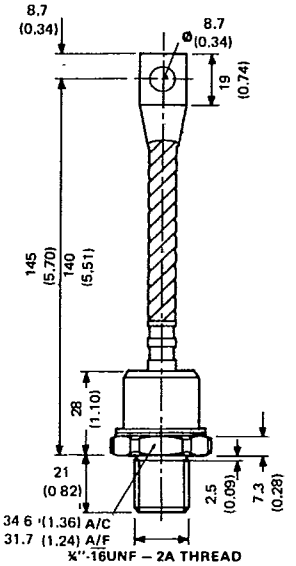
Pinch Bolt 35–0066



Spring Clamp K41-0232



70U...



Similar to
JEDEC	:	DO–9
IEC 191	:	A10U1
BS 3934	:	SO–42
DIN41887	:	106 B 2

All dimensions in millimetres.