

T-25-17
T-01-21

PSI STUD DEVICES

THYRISTORS

ELECTRICAL CHARACTERISTICS

FORWARD CONDUCTING	PSI Type #	A 25	A 35	B 55	B 110	C 160	C 235
IT(AV) - Average Forward Current		16 A.	23 A.	35 A.	70 A.	100 A.	150 A.
V _{TM} - Maximum Peak Forward Voltage Drop at 25°C at 50 A. Peak, 180° Conduction Angle		2.0 V.	2.0 V.	2.5 V.	1.85 V.	2.0 V.	1.7 V.
I _H - Maximum Holding Current at 25°C		50 mA	50 mA	200 mA	200 mA	200 mA	200 mA
I _{TSM} - Maximum Peak One Cycle Surge Current		150 A.	200 A.	900 A.	1600 A.	2000 A.	2000 A.
I ² t - I ² t For Fusing (For Times > 1.5 ms)		90 A ² Sec.	160 A ² Sec.	3370 A ² Sec.	10,700 A ² Sec.	16,000 A ² Sec.	37,000 A ² Sec.
IDRM - Maximum Forward Leakage Current at 125°C Through 300V.		10 mA Peak	10 mA Peak	10 mA	10 mA	25 mA	25 mA
IDRM - Maximum Forward Leakage Current at 125°C, 350V. Through 800V.		5 MA Peak	5 MA Peak				
T _q - Typical Off Time at 125°C		50 μ Sec.	50 μ Sec.	40 μ Sec.	40 μ Sec.	40 μ Sec.	40 μ Sec.
T _n - Typical Turn-On Time		3.5 μ Sec.	3.5 μ Sec.	5.0 μ Sec.	5.0 μ Sec.	5.5 μ Sec.	5.5 μ Sec.
T _r - Typical Rise Time		3.0 μ Sec.	3.0 μ Sec.	2.0 μ Sec.	2.0 μ Sec.	2.0 μ Sec.	2.0 μ Sec.
T _d - Typical Delay Time		0.5 μ Sec.	0.5 μ Sec.	3.0 μ Sec.	3.0 μ Sec.	3.5 μ Sec.	3.5 μ Sec.
θ _{J-C} - Maximum Thermal Resistance, Junction to Case (DC)		1.5° C./W.	1.5° C./W.	0.32° C./W.	0.28° C./W.	0.2° C./W.	0.2° C./W.
T _j - Max. Operating Junction Temperature		125°C	125°C	125°C	125°C	125°C	125°C
T _{stg} - Storage Temperature		-65°C-150°C	-65°C-150°C	-40°C-150°C	-40°C-150°C	-40°C-150°C	-40°C-150°C

BLOCKING

I _{RRM} - Maximum Reverse Leakage Current at 125°C Through 300V.	10 mA Peak	10 mA Peak					
I _{RRM} - Maximum Reverse Leakage Current at 125°C, 350V. Through 800V.	5 mA Peak	5 mA Peak	10 mA	10 mA	25 mA	25 mA	
dv/dt - Minimum Critical Exponential Rate of Rise of Forward Blocking Voltage at 125°C	25V./μs	25V./μs	100V./μs	100V./μs	100V./μs	100V./μs	

TRIGGERING

V _{GT} - Maximum Gate Voltage to Trigger at 25°C	2.0 V.	2.0 V.	3.0 V.	3.0 V.	3.0 V.	3.0 V.	
V _{GT} - Typical Gate Voltage to Trigger at 25°C	0.9 V.	0.9 V.	1.3 V.	1.3 V.	2.0 V.	2.0 V.	
V _{GD} - Maximum Non-Trigging Gate Voltage at 125°C	0.25 V.	0.25 V.	0.25 V.	0.25 V.	0.25 V.	0.25 V.	
I _{GT} - Maximum Gate Current to Trigger at 25°C	40 mA	40 mA	200 mA	150 mA	200 mA	200 mA	
I _{GT} - Typical Gate Current to Trigger at 25°C	20 mA	20 mA	100 mA	70 mA	100 mA	100 mA	
PGM - Maximum Peak Gate Power	5.0 W.	5.0 W.	15.0 W.	15.0 W.	10 W.	10 W.	
PG(AV) - Average Gate Power	0.5 W.	0.5 W.	3.0 W.	3.0 W.	2.0 W.	2.0 W.	
IGM - Maximum Peak Gate Current	2.0 A.	2.0 A.	4.0 A.	4.0 A.	2.0 A.	2.0 A.	
VGM - Maximum Peak Gate Voltage (Forward)	10.0 V.	10.0 V.	10 V.	10.0 V.	10 V.	10 V.	
VGM - Maximum Peak Gate Voltage (Reverse)	5.0 V.	5.0 V.	5 V.	5.0 V.	5.0 V.	5.0 V.	

MECHANICAL CHARACTERISTICS

Mounting Torque . . . in lbs. max.	30	30	150	150	300	300
Jedec Outline	TO-48	TO-48	TO-94	TO-94	TO-93	TO-93
Outline DWG No. *	6	6	7	7	8	8
Voltage, MAX V _{RRM} , V _{DRM}	800V	800V	1400V	1400V	1500V	1500V

DIODES

ELECTRICAL CHARACTERISTICS

	AD-45	AD-65	BD-125	BD-150	CD-160	CD-250	CD-300
Maximum Average Forward Current, Single Phase Half Wave DC Rating at 121°C. Case Temperature	45	65	125	150	160	250	300
Maximum Surge Current (one cycle of 60 Hz sine wave)	700	800	1800	2100	2500	4500	5000
Peak Forward Voltage *C90A for AD types, 200A for BD types, 300A for CD types.	1.15	1.15	1.2	1.1	1.2	1.2	1.1
Rated Peak Reverse Voltage Range	1600	1600	1600	1600	1600	1600	1600
Maximum FCA Reverse Current at 150° C. Case Temperature	2.0	2.0	5.0	5.0	10.0	10.0	10.0
Maximum I ² t (less than 8 ms)	2100	2750	13500	18200	15800	84000	104000
Δ FCA = Full Cycle Average (measured with a DC meter)							
Thermal Impedance, MAX	1.25	.8	.4	.35	.32	.22	.17

MECHANICAL CHARACTERISTICS

Mounting Torque . . . in lbs., max.	75	75	125	125	325	325	325
Jedec Outline	DO-5	DO-5	DO-8	DO-8	DO-9	325	DO-9
Outline DWG No. *	9	9	10	10	11	11	11

*Refer to page 26.

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PSI STUD THYRISTOR AND DIODE DATA

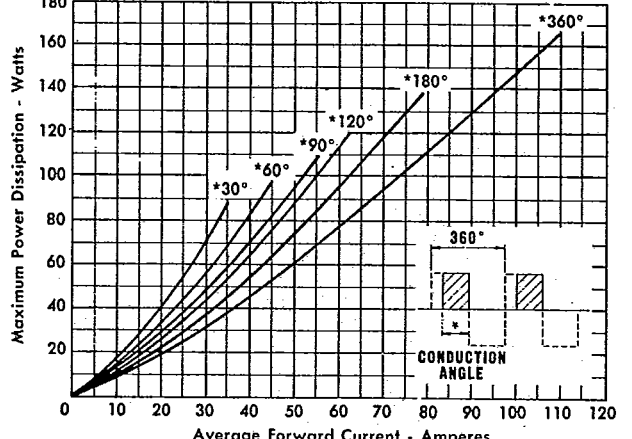
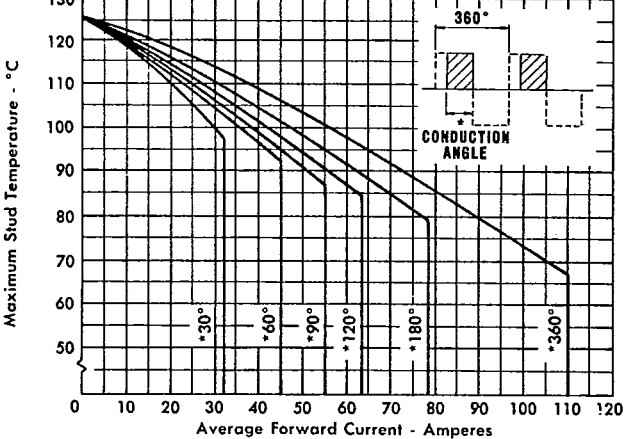
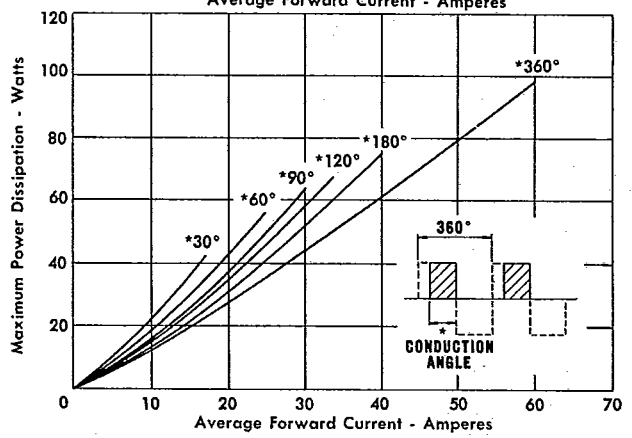
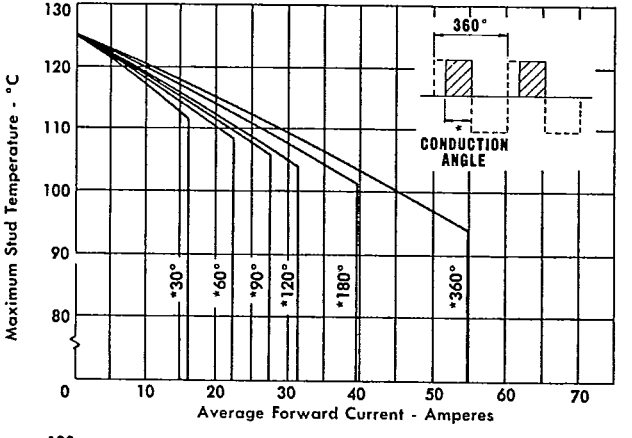
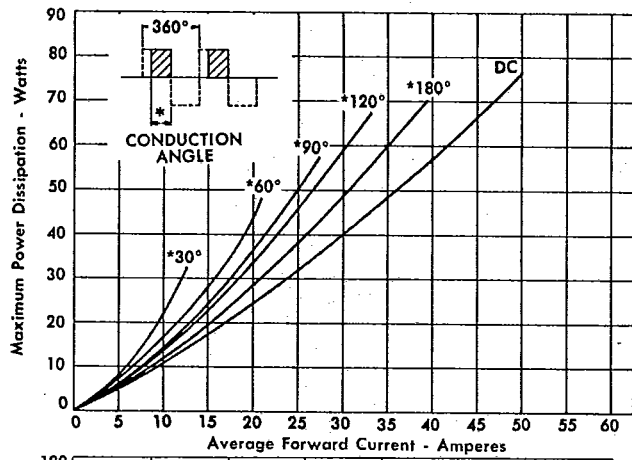
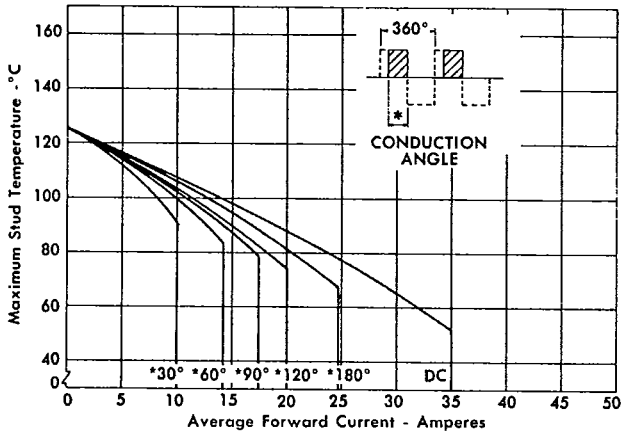
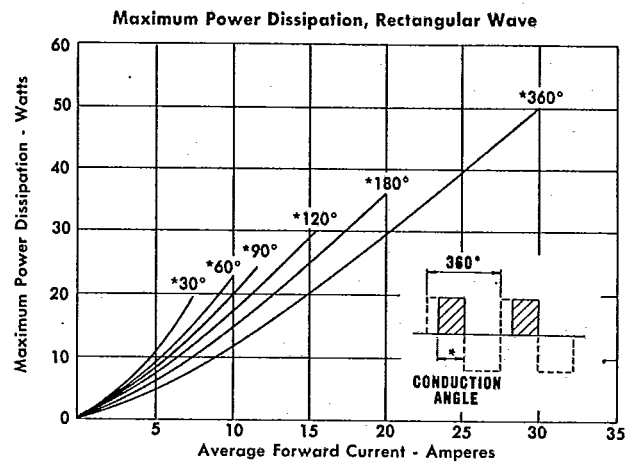
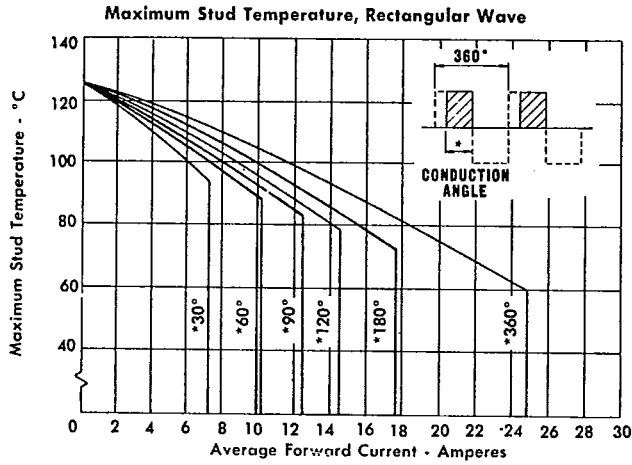
PSI
TYPE

A25

A35

B55

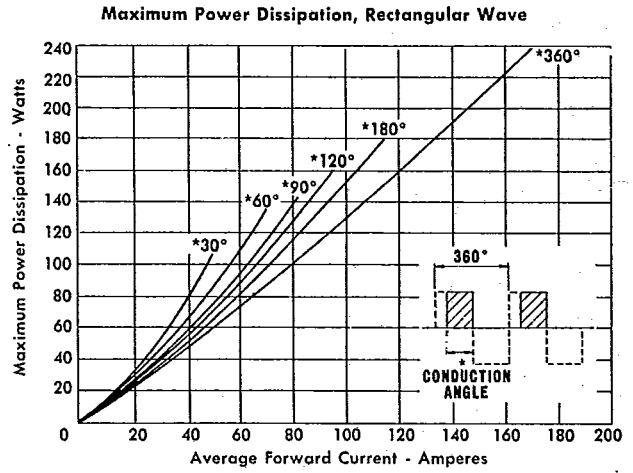
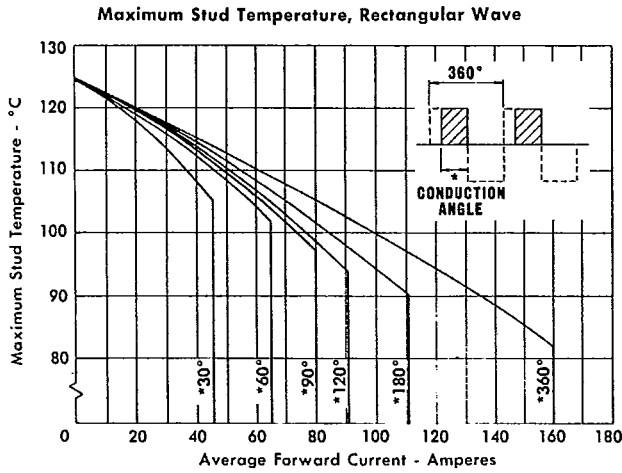
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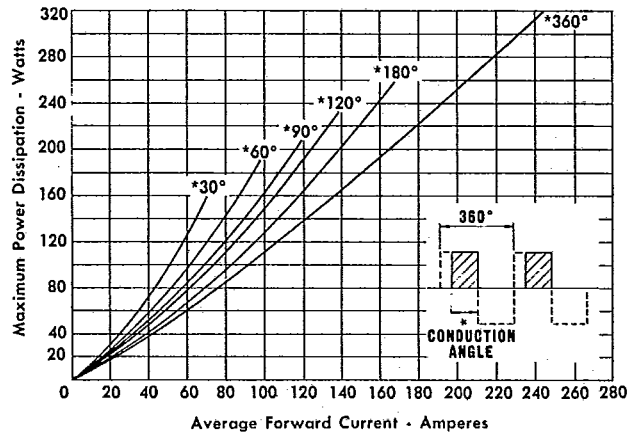
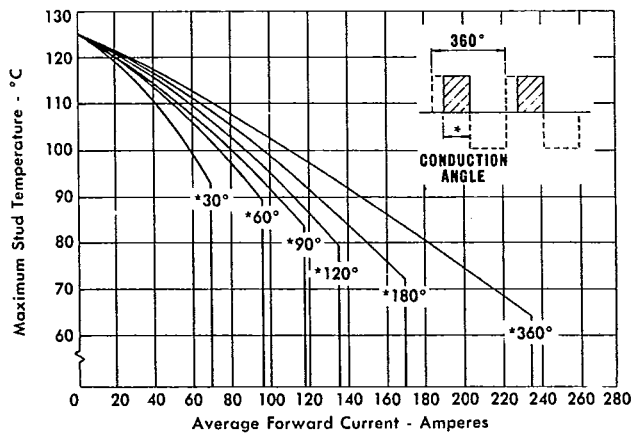
PSI STUD THYRISTOR AND DIODE DATA

PSI TYPE

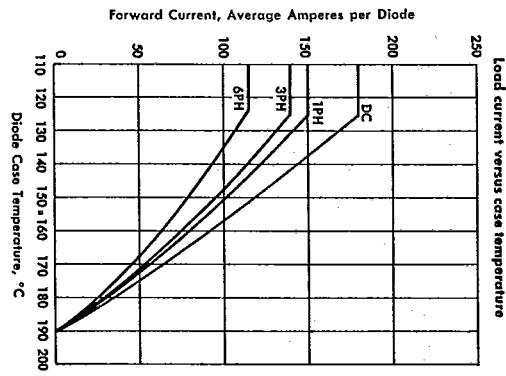
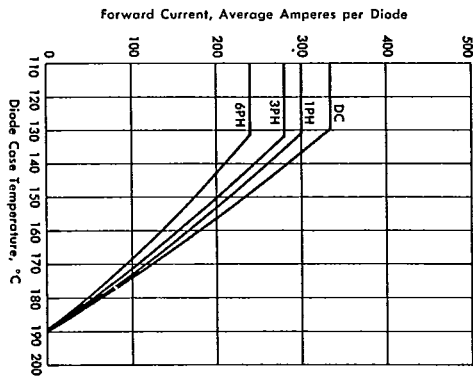
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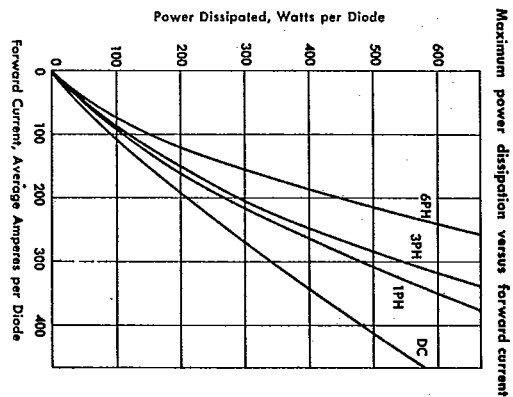
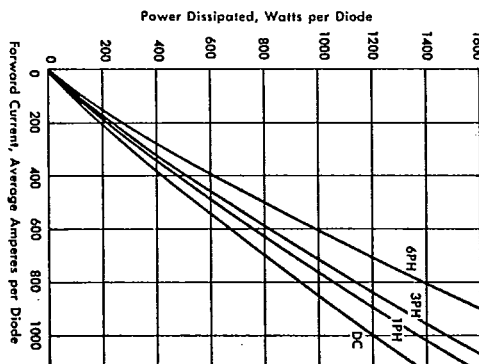
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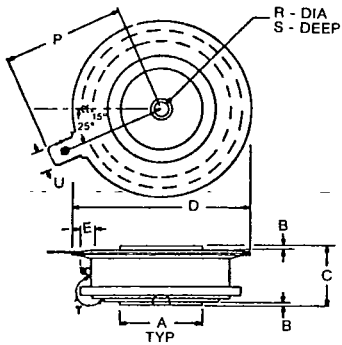
3/8D-150



CD300



Note Additional stud semiconductor types and information is available, please contact factory.



T - SURFACE CREEPAGE
Standard 10 Twisted pair-gate soldered to package

FIG. 1

TABLE OF DIMENSIONS
Conversion Table

SYM	DECIMAL INCHES		METRIC MM	
	MIN	MAX	MIN	MAX
A	.744	.752	18.897	19.101
B	.030	.060	.762	1.524
C	.515	.565	13.081	14.351
D	1.600	1.656	40.64	42.06
E	.110	—	2.794	—
P	1.090	1.125	27.69	28.55
R	.135	.145	3.429	3.683
S	.067	.083	1.701	2.108
T	.340	—	8.636	—
U	.186	.189	4.724	4.801

OUTLINE DRAWINGS

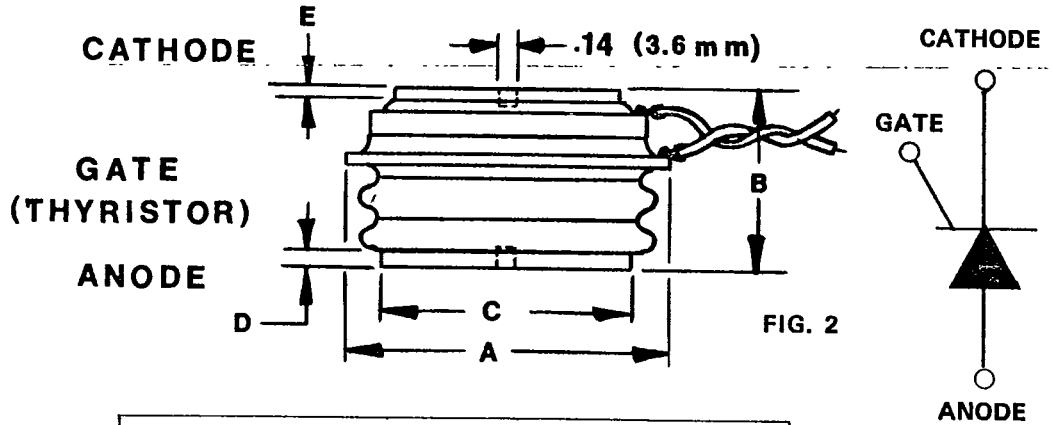


FIG. 2

FIG. 2					
	E-,ED-, Power Pack	F-,FD-, Power Pack	G-,GD-, Mega Pack	H-,HH-HD-, Astro Pack	J-JD J-Pack
A	1.73 (44)	1.73 (44)	1.93 (49)	2.75 (70)	4.80 (122)
B	.625 (16)	.97 (25)	.97 (25)	.97 (25)	1.38 (35.0)
C	1.14 (29)	1.00 (25.4)	1.25 (32)	1.75 (44.5)	3.0 (76.2)
D	.025 (.6)	.08 (2.0)	.08 (2.0)	.07 (1.8)	.14 (3.5)
E	.025 (.6)	.11 (2.8)	.12 (3.05)	.07 (1.8)	.14 (3.5)

Note: Thyristors have gate and aux. cathode leads of #18 stranded wire, 10" (255mm) length standard.

JEDEC Outline TO-48

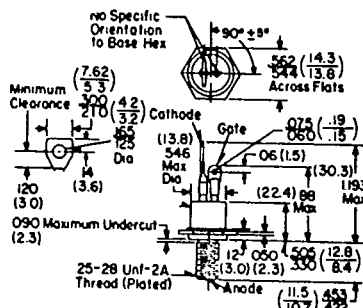


FIG. 6

JEDEC Outline TO-94

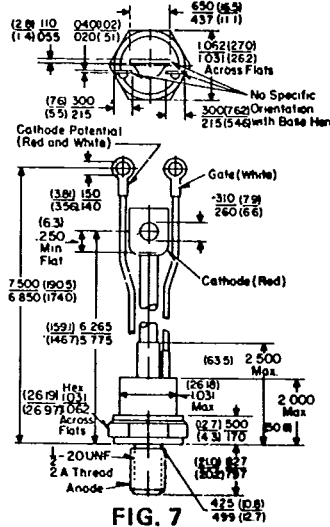


FIG. 7

JEDEC Outline TO-93

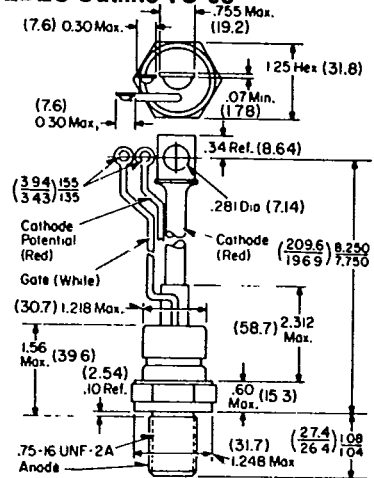


FIG. 8

JEDEC Outline DO-5

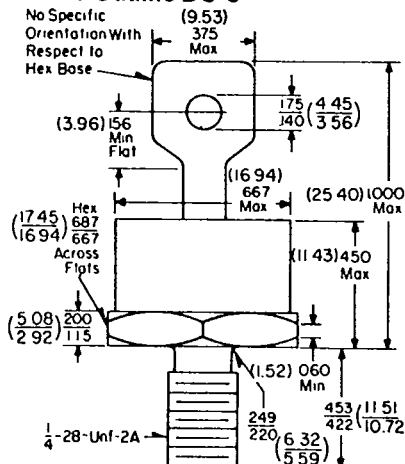


FIG. 9

JEDEC Outline DO-8

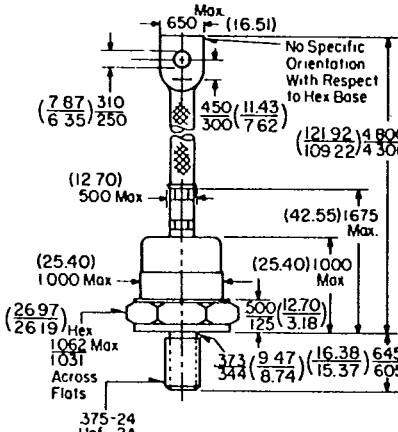


FIG. 10

JEDEC Outline DO-9

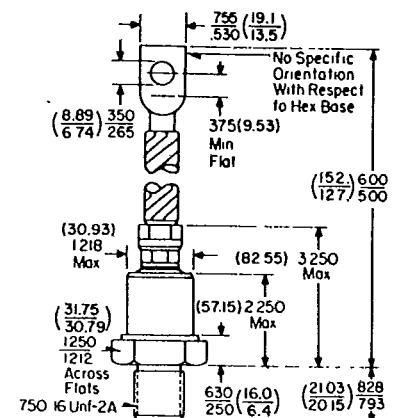


FIG. 11

MOUNTING INSTRUCTIONS

The contact faces of the heat sink should be kept clean and should be flat to within .001"/" T.I.R. The contact pedestals of the POWER PACK should be treated carefully as they are copper and easily damaged. We recommend the use of Penetrox "A" available from Burndy Corporation as heat sink compound. For proper use of this material, contact the factory.

Assembly drawings of the PSI clamps are shown below. The force applied to the heat sinks is controlled by the number of turns made on the bolts. The bolts are first tightened "finger" tight (10 inch-lbs.) using a torque indicating device.

The drawings show the number of turns and the tightening sequence for a range of forces between 500 kg. (1,100 lb.) and 2000 kg. (4,400 lb.) This method of assembly will insure that the force applied to the device will be within ±20% of the specified value and that the thermal impedance (junction to heat sink) will not exceed the value specified on the spec. sheets of the individual devices. Bolts should be tightened in quarter turn increments.

The J-Pack clamp tightening sequence is 5 ft-lbs. followed by 1-1/4 turns. See Figure on page 19.

ASSEMBLY ORDER

1. Bolt
2. Two steel washers
3. Aluminum washer
4. Insulator
5. Aluminum washer
6. One Spring Bar
7. Heat sinks and device
8. One Spring Bar
9. Nut Holder

