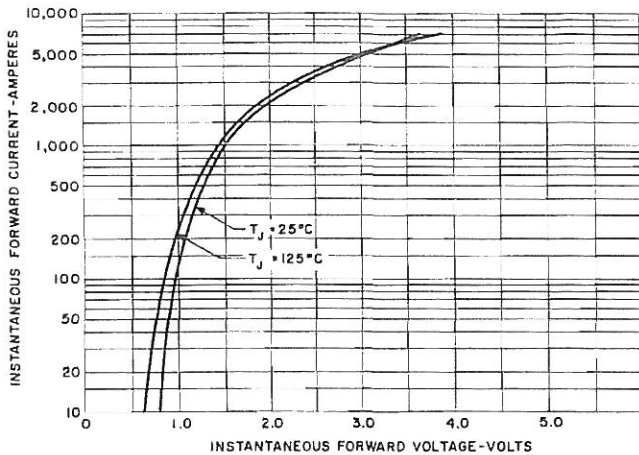
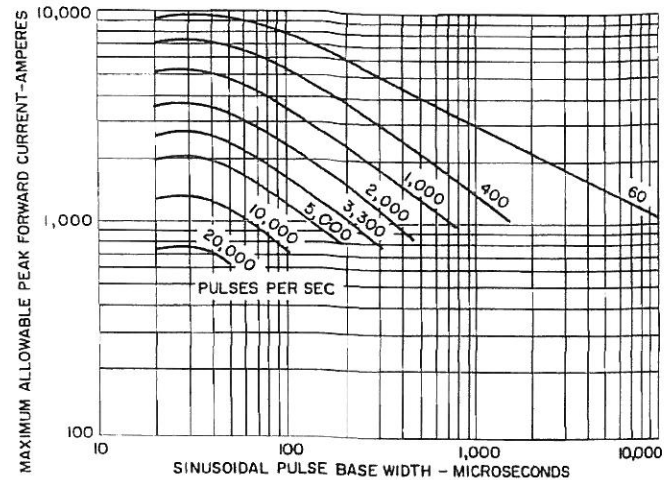


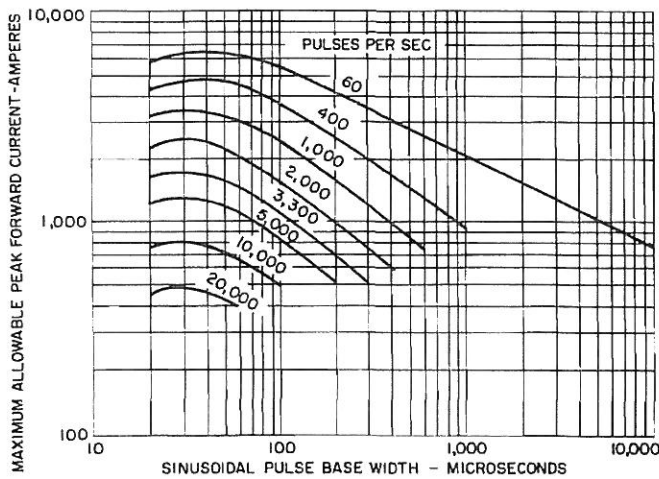




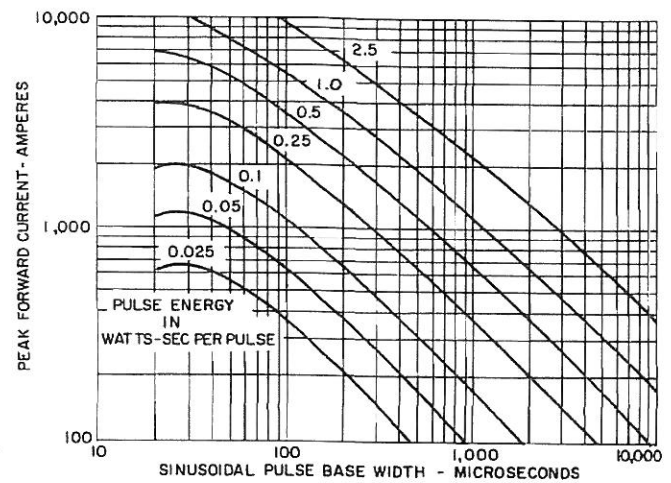
1. MAXIMUM FORWARD CHARACTERISTICS



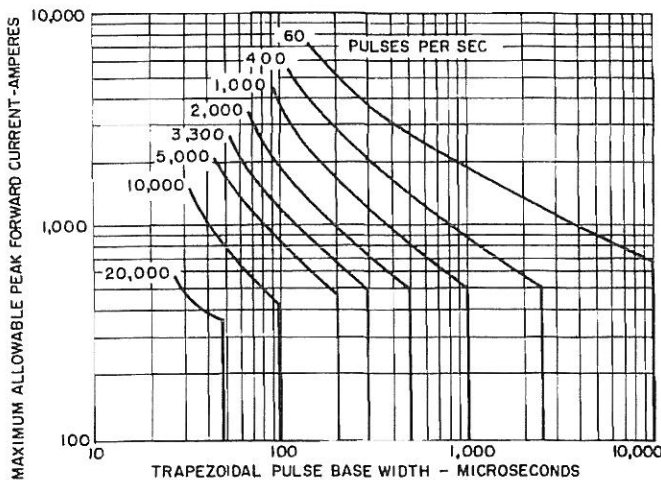
2. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT SINUSOIDAL WAVEFORM ( $T_C = 65^\circ\text{C}$ ) DOUBLE SIDE COOLED



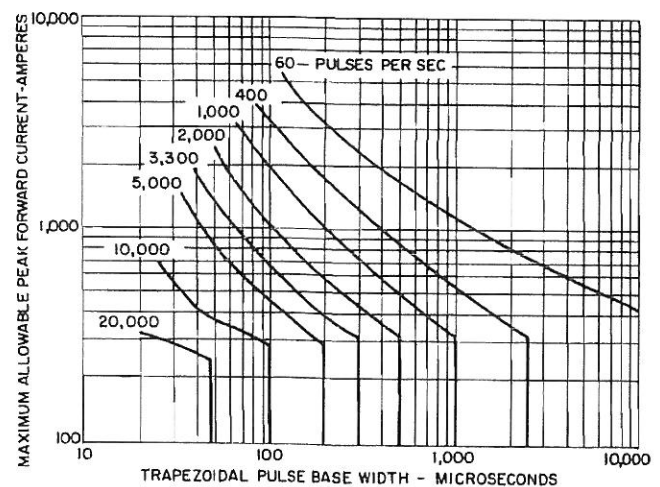
3. MAXIMUM ALLOWABLE FORWARD CURRENT SINUSOIDAL WAVEFORM ( $T_C = 90^\circ\text{C}$ ) DOUBLE SIDE COOLED



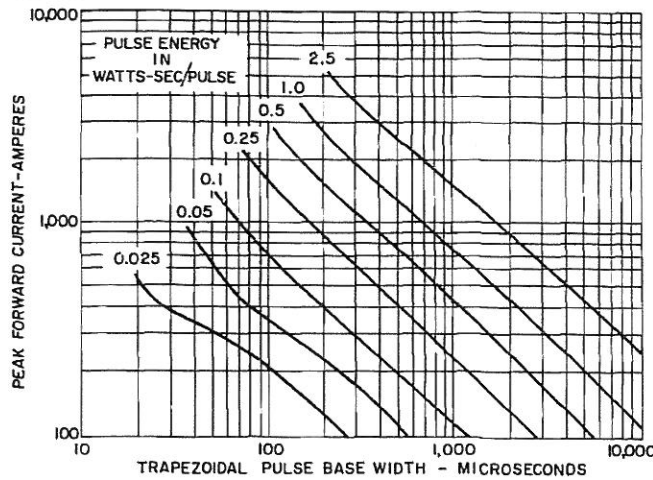
4. SINUSOIDAL PULSE ENERGY ( $T_J = 125^\circ\text{C}$ )



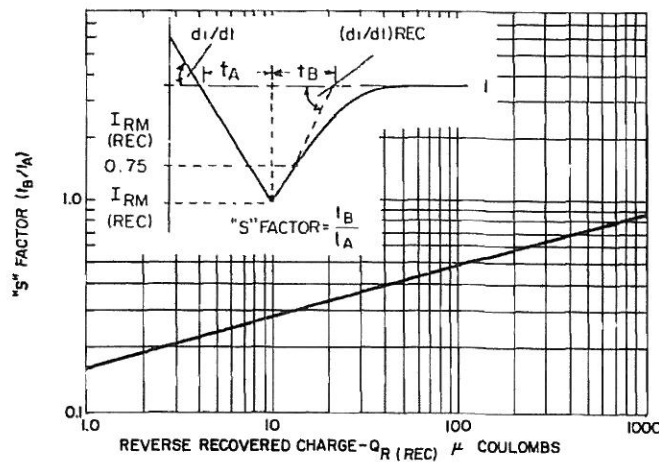
5. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT TRAPEZOIDAL WAVEFORM ( $T_C = 65^\circ\text{C}$ ) DI/DT (RISING & FALLING) =  $100\text{ A}/\mu\text{s}$  DOUBLE SIDE COOLED



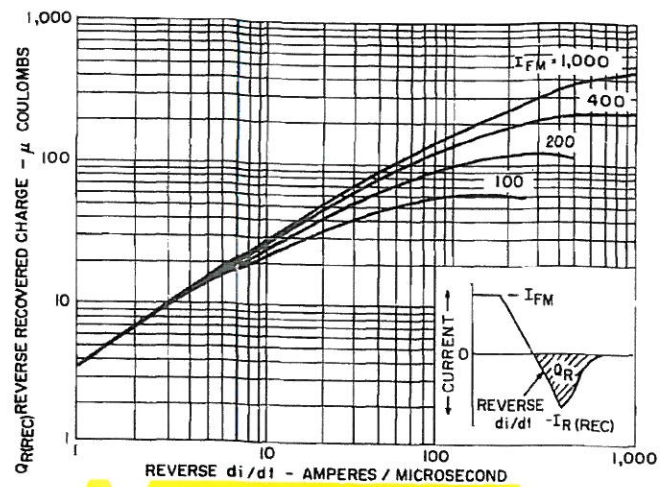
6. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT TRAPEZOIDAL WAVEFORM ( $T_C = 90^\circ\text{C}$ ) DI/DT (RISING & FALLING) =  $100\text{ A}/\mu\text{s}$  DOUBLE SIDE COOLED



7. TRAPEZOIDAL PULSE ENERGY DI/DT  
(RISING & FALLING) = 100 A/μS ( $T_J = 125^\circ\text{C}$ )

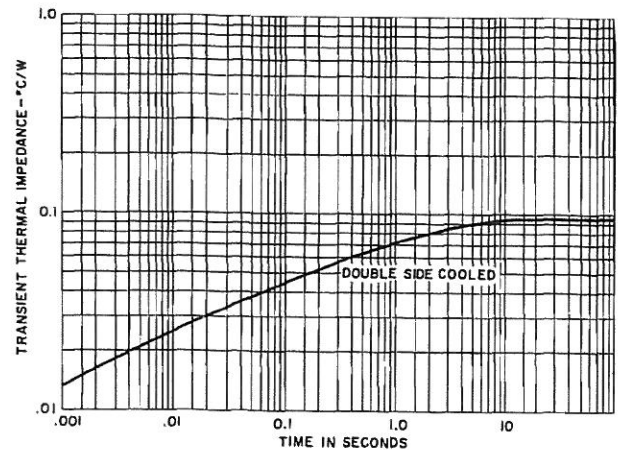


9. TYPICAL "S" FACTOR VERSUS RECOVERY  
CHARGE ( $T_J = 125^\circ\text{C}$ )

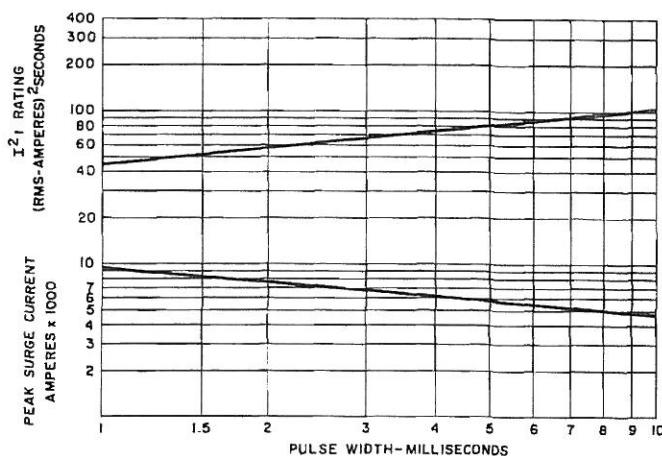


8. TYPICAL RECOVERED CHARGE

(Maximum Recovered Charge Group 12)  
If maximum recovered charge group 12 is required,  
request A397—X9, e.g. A397BX9, etc.



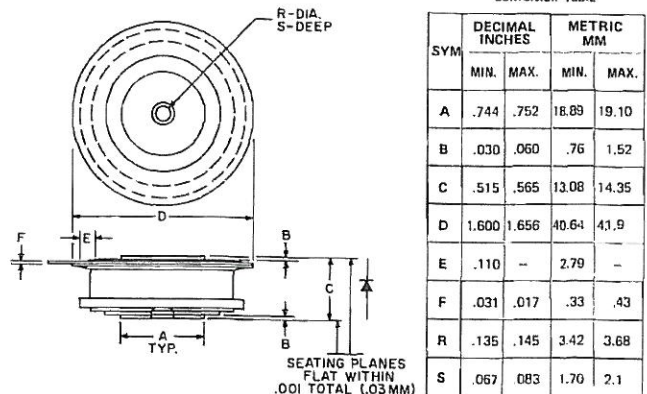
10. TRANSIENT THERMAL IMPEDANCE —  
JUNCTION-TO-CASE



11. SUB-CYCLE SURGE FORWARD CURRENT  
AND  $I^2t$  RATING VERSUS PULSE TIME  
FOLLOWING RATED LOAD CONDITIONS

## OUTLINE DRAWING

TABLE OF DIMENSIONS  
Conversion Table



## SUGGESTED MOUNTING METHODS FOR PRESS-PAKS TO HEAT DISSIPATORS A397

When the Press-Pak is assembled to a heat sink in accordance with the following general instructions, a reliable and low thermal resistance interface will result:

1. Check each mating surface for nicks, scratches, flatness and surface finish. The heat dissipator mating surfaces should be flat within .0005 inch/inch and have a surface finish of 63 micro-inches.
2. It is recommended that the heat dissipator be plated with nickel, tin, or silver. Bare aluminum or copper surfaces will oxidize in time resulting in excessively high thermal resistance.

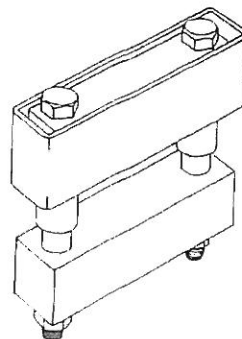
3. Sand each surface **lightly** with 600 grit paper just prior to assembly. Clean off and apply silicone oil (GE SF1154 200 centistoke viscosity) or silicone grease (GE G322L or Dow Corning DC 3, 4, 340 or 640). Clean off and apply again as a **thin** film. (A thick film will adversely affect the electrical and thermal resistances.)
4. Assemble with the specified mounting force applied through a self-leveling, swivel connection. The force has to be evenly distributed over the full area. Center holes on both top and bottom of the Press-Pak are for locating purposes only.

### MOUNTING THE A397, ONE-HALF INCH PRESS-PAK USING THE SERIES 1000 CLAMP

#### CLAMP FEATURES:

- *Hardened Steel Pivot* insuring *constant pressure* in rugged applications over long periods.
- One-piece phenolic insulator gives added 1/2" creep distance.
- Use of special *Force Indicator Gauge* eliminates need for torque wrenches, inaccurate "flex" gauges and guesswork.
- Various bolt lengths available to accommodate most mounting situations.
- No loose parts to complicate assembly.
- Stiffening *brace* to reinforce heat sink available upon request.

- Single-side cooling terminal available upon request.
- Positive, non-binding swivel action.



SERIES 1000

#### MOUNTING PROCEDURE:

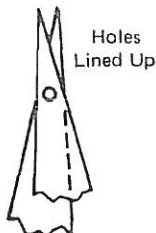
With the semiconductor positively located in place on the heatsink(s), place the clamp in position with the bolts through the holes in the heatsink(s), and proceed as follows:

1. Refer to SCR Manual, Fifth Edition for Preparation of Mounting the Press-Pak SCR, 18.2.7.
2. Tighten the nuts evenly until finger tight.
3. Tighten each bolt 1/2 turn, using a 7/16 socket wrench on the bolt heads.
4. Place the Force Indicator Gauge firmly against the springs, as shown on the Outline Drawing, so that both ends and the middle are in solid contact with the springs. The holes of the gauge will then indicate the spring deflection, or force; correct mounting force is indicated when the holes coincide.

#### Examples:



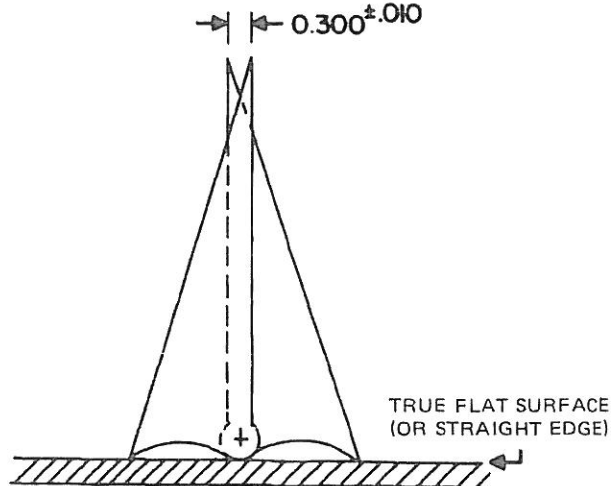
Less than rated force. Tighten nuts alternately 1/4 turn at a time until points coincide.



Correct Force



Excessive force. Loosen nuts and start over. **NEVER** try to adjust spring force by backing off the nuts, spring friction will produce false readings. Always start at Step 1.



If the points are not  $0.300 \pm .010$  apart, calibrate the gauge by filing the bottom contact points.

## 5.2 Condensed Electrical and Thermal Characteristics and Ratings



109.1



183

### RECTIFIERS 300 TO 450 AMPERES



324

| JEDEC TYPE | —    | —    | —    | —    | —    |
|------------|------|------|------|------|------|
| GE TYPE    | A230 | A390 | A197 | A398 | A432 |

#### SPECIFICATIONS

|                                                 |                                                                               |                      |            |            |            |            |            |
|-------------------------------------------------|-------------------------------------------------------------------------------|----------------------|------------|------------|------------|------------|------------|
| I <sub>FM(AV)</sub>                             | Max. average forward (1 phase operation)                                      |                      | 300        | 400        | 400        | 400        | 450        |
|                                                 | T <sub>C</sub> = (°C)                                                         |                      | 68         | 145        | 110        | 90         | 65         |
| V <sub>RM</sub> (Rep)                           | Max. repetitive peak reverse voltage (V)                                      |                      | 50-800     | 100-1500   | 100-1500   | 100-1500   | 1600-2600  |
| I <sub>FM</sub><br>(Surge)                      | Max. peak one cycle, non-recurrent surge current (1 phase operation) 50 Hz.   |                      | 5000       | 6600       | 4800       | 6500       | 7000       |
|                                                 | @ max. rated load conditions (A) 60 Hz.                                       |                      | 5500       | 7000       | 5000       | 7000       | 7400       |
| I <sup>2</sup> <sub>t</sub>                     | Max. non-repetitive for 1.5 msec (A <sup>2</sup> sec)                         |                      | 95000      | 82000      | 51000      | 170000     | 98000      |
| T <sub>J</sub>                                  | Operating junction temperature range (°C)                                     |                      | -40 to 175 | -40 to 200 | -40 to 125 | -40 to 175 | -40 to 150 |
| R <sub>θJC</sub>                                | Max. thermal resistance, junction-to-case (°C/W)                              |                      | 0.3        | .15        | .095       | .095       | .06        |
| V <sub>FM</sub>                                 | Max. peak forward voltage drop @ rated I <sub>F(AV)</sub> (1 phase operation) |                      | 1.2        | 1.4        | 1.75       | 1.7        | 2.65       |
|                                                 | @ T <sub>C</sub> = (°C)                                                       |                      | 68         | 144        | 25         | 25         | 65         |
| Q <sub>R(REC)</sub>                             | Reverse recovered charge @ rated T <sub>J</sub> (μc)                          |                      | —          | —          | 70         | 15         | 230        |
| t <sub>rr</sub>                                 | Reverse recovery time @ rated T <sub>J</sub> (μs)                             |                      | —          | —          | 2.8        | 1.5        | 5          |
| V <sub>F</sub>                                  | Max. forward <sup>(1)</sup> voltage drop for the current range:               | I <sub>MIN</sub> (A) | 100        | 100        | 20         | 10         | 200        |
|                                                 |                                                                               | I <sub>MAX</sub> (A) | 6000       | 8000       | 7000       | 9000       | 5000       |
|                                                 |                                                                               | A                    | -.607      | -.1115     | .2337      | -.02       | .24        |
|                                                 |                                                                               | B                    | .378       | .2393      | .1446      | .18        | .165       |
|                                                 |                                                                               | C                    | .00081     | .0005      | .0004      | .0004      | .00067     |
|                                                 |                                                                               | D                    | -.05       | -.0244     | -.0055     | -.0005     | .01        |
| R <sub>θJC</sub>                                | Transient thermal <sup>(2)</sup> resistance for time:                         | T <sub>MIN</sub> (S) | .001       | .001       | .001       | .001       | .001       |
|                                                 |                                                                               | T <sub>MAX</sub> (S) | .01        | .01        | .01        | .01        | .01        |
|                                                 |                                                                               | F                    | .128       | .072       | .072       | .072       | .29        |
|                                                 |                                                                               | G                    | .431       | .24        | .24        | .24        | .61        |
| Package Outline No.                             |                                                                               |                      | 324        | 109.1      | 109.1      | 109.1      | 183        |
| Maximum Stud Torque (In-Lbs/N-M)                |                                                                               |                      | 15/1.7     | —          | —          | —          | —          |
| Max Mounting Force (Lbs/Kn)                     |                                                                               |                      |            | 800/3.56   | 800/3.56   | 800/3.56   | 2000/8.9   |
| Expanded Electrical Characterization, see page: |                                                                               |                      | 152        | 157        | 158        | 160        | 165        |

<sup>(1)</sup>Voltage Drop Model:  $V_F = A + B \cdot L_N(I) + C \cdot I + D \cdot \sqrt{I}$

<sup>(2)</sup>Transient Thermal Resistance Model:  $R_{\theta JC} = F \cdot t^G$