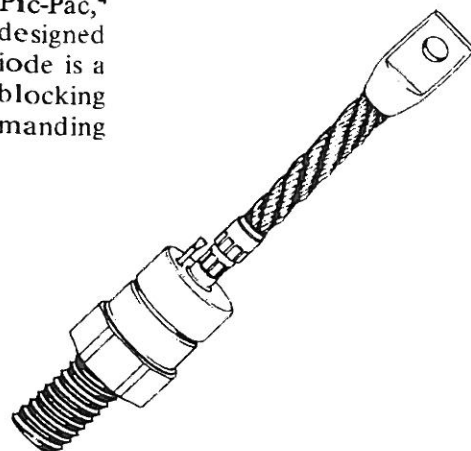


## A197

The A197 series is General Electric's highly reliable, all-diffused, Pic-Pac,<sup>4</sup> 250 ampere, fast recovery, silicon rectifier diode. These diodes are designed for use in high frequency applications or where a fast recovery diode is a necessity. These diodes provide a superior combination of speed, blocking voltage capability and soft recovery, which is required in such demanding applications as:

- Inverter Feedback Diode
- Free Wheeling Diode
- High Frequency Rectification
- Low EMI Power Supplies

- Published Current Ratings Up To 20,000 Hz
- All-Diffused
- Thermal Fatigue Resistant Pic-Pac<sup>4</sup> Construction
- Cathode Strain Buffer
- Soft Recovery With Low Recovered Charge
- Rugged Hermetic Package



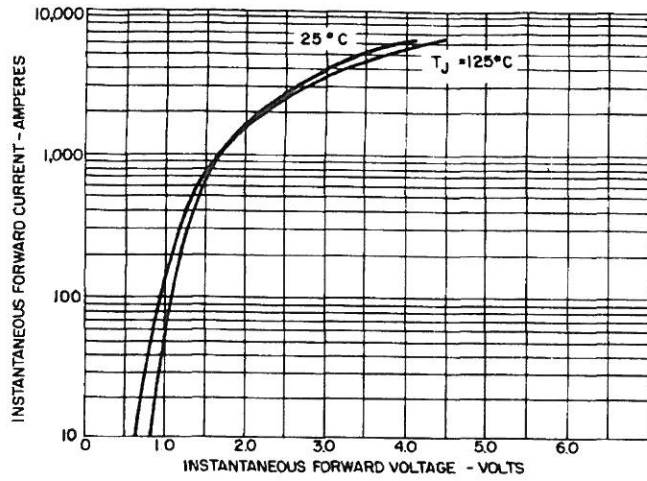
| TYPES* | REPETITIVE PEAK <sup>1</sup><br>REVERSE VOLTAGE<br>$V_{RRM}$<br>$T_J = -40^{\circ}\text{C to } +125^{\circ}\text{C}$ | NON-REPETITIVE <sup>2</sup><br>PEAK REVERSE<br>VOLTAGE, $V_{RSM}$<br>$T_J = 25^{\circ}\text{C to } +125^{\circ}\text{C}$ | DC REVERSE <sup>3</sup><br>VOLTAGE, $V_R$<br>$T_J = -40^{\circ}\text{C to } +125^{\circ}\text{C}$ | REPETITIVE<br>PEAK REVERSE<br>CURRENT, $I_{RRM}$<br>$T_J = 125^{\circ}\text{C}$ |
|--------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| A197A  | 100 Volts                                                                                                            | 200 Volts                                                                                                                | 100 Volts                                                                                         | 25 mA                                                                           |
| A197B  | 200                                                                                                                  | 300                                                                                                                      | 200                                                                                               | 25                                                                              |
| A197C  | 300                                                                                                                  | 400                                                                                                                      | 300                                                                                               | 25                                                                              |
| A197D  | 400                                                                                                                  | 500                                                                                                                      | 400                                                                                               | 25                                                                              |
| A197E  | 500                                                                                                                  | 600                                                                                                                      | 500                                                                                               | 25                                                                              |
| A197M  | 600                                                                                                                  | 720                                                                                                                      | 600                                                                                               | 25                                                                              |
| A197S  | 700                                                                                                                  | 840                                                                                                                      | 700                                                                                               | 25                                                                              |
| A197N  | 800                                                                                                                  | 950                                                                                                                      | 800                                                                                               | 25                                                                              |
| A197T  | 900                                                                                                                  | 1075                                                                                                                     | 900                                                                                               | 25                                                                              |
| A197P  | 1000                                                                                                                 | 1200                                                                                                                     | 1000                                                                                              | 25                                                                              |
| A197PA | 1100                                                                                                                 | 1300                                                                                                                     | 1100                                                                                              | 25                                                                              |
| A197PB | 1200                                                                                                                 | 1400                                                                                                                     | 1200                                                                                              | 25                                                                              |
| A197PC | 1300                                                                                                                 | 1500                                                                                                                     | 1300                                                                                              | 25                                                                              |
| A197PD | 1400                                                                                                                 | 1600                                                                                                                     | 1400                                                                                              | 25                                                                              |
| A197PE | 1500                                                                                                                 | 1700                                                                                                                     | 1500                                                                                              | 25                                                                              |

|                                                                                                                                 |                                          |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Peak Forward Current, $I_{FM}$ ( $T_C = +65^\circ\text{C}$ , Half Sine Wave Pulse Base Width = 8.3 msec., D.F. = 50%) . . . . . | 720 Amperes                              |
| Peak One-Cycle Surge (Non-Repetitive), Forward Current, $I_{FSM}$ . . . . .                                                     | 5000 Amperes                             |
| Minimum $I^2t$ Rating (See Curve 11), $t \geq 1$ msec. (Non-Repetitive) . . . . .                                               | 44,000 (RMS Ampere) <sup>2</sup> Seconds |
| Thermal Resistance, $R_{\theta JC}$ (D. C.) . . . . .                                                                           | 0.18°C/Watt                              |
| Storage Temperature, $T_{stg}$ . . . . .                                                                                        | -40°C to +150°C                          |
| Operating Junction Temperature, $T_J$ . . . . .                                                                                 | -40°C to +125°C                          |
| Stud Torque . . . . .                                                                                                           | 275 Lb-in (Min.), 325 Lb-in (Max.)       |
| <b>NOTES:</b>                                                                                                                   | 31 N-m (Min.), 36.7 N-m (Max.)           |

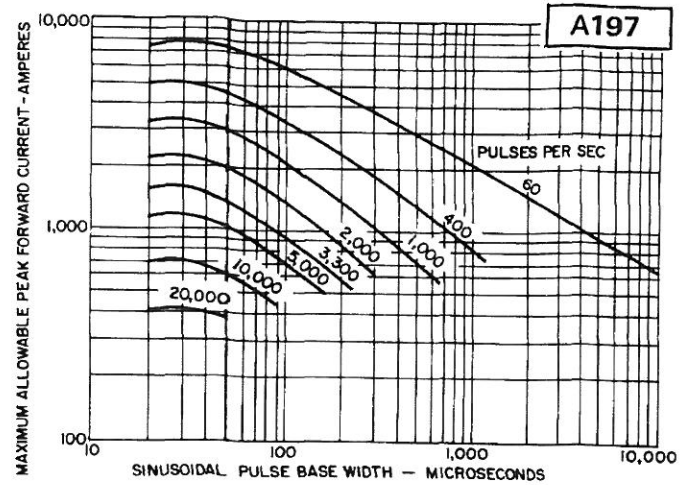
**NOTES:**

- 1 Assumes a heatsink thermal resistance of less than 2.0°C/watt.  
2 Non-repetitive voltage and current ratings, as contrasted to repetitive ratings, apply for occasional or unpredictable overloads. For example, the forward surge current ratings are non-repetitive ratings that are used in fault coordination work.  
3 Assumes a heatsink thermal resistance of less than 1.0°C/watt.  
4 "Pic-Pac" is an acronym for Pressure Internal Contact Package. 588

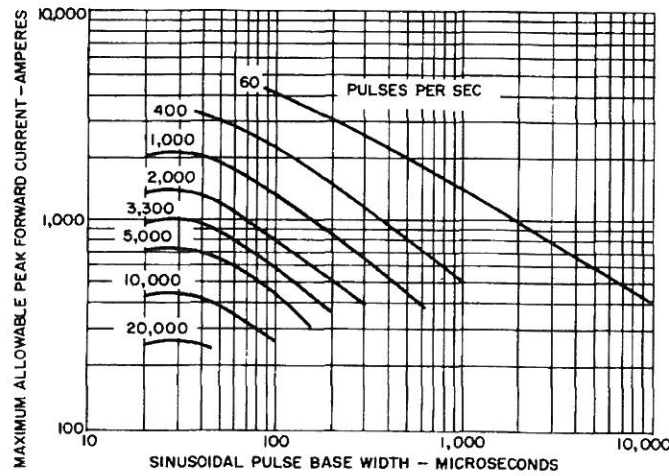
# DEVICE SPECIFICATIONS



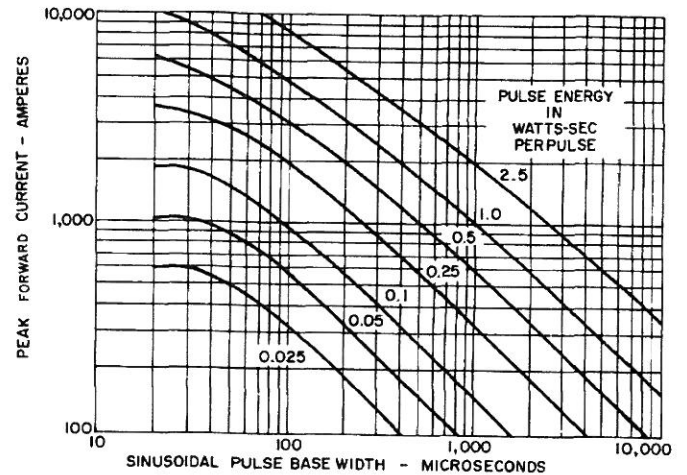
1. MAXIMUM FORWARD CHARACTERISTICS



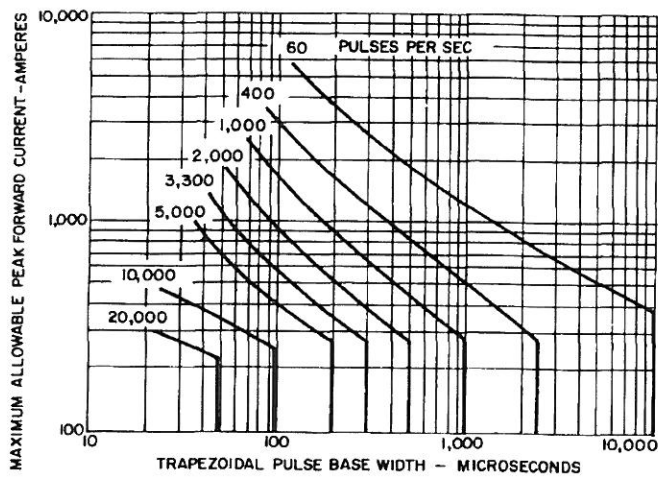
2. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT SINUSOIDAL WAVEFORM ( $T_C = 65^\circ\text{C}$ )



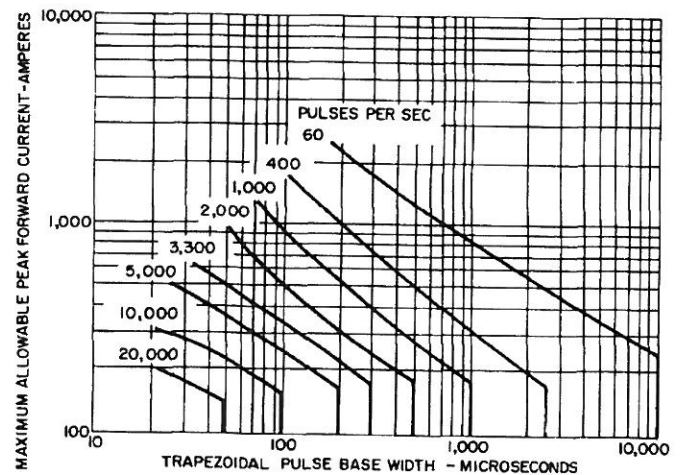
3. MAXIMUM ALLOWABLE FORWARD CURRENT SINUSOIDAL WAVEFORM ( $T_C = 90^\circ\text{C}$ )



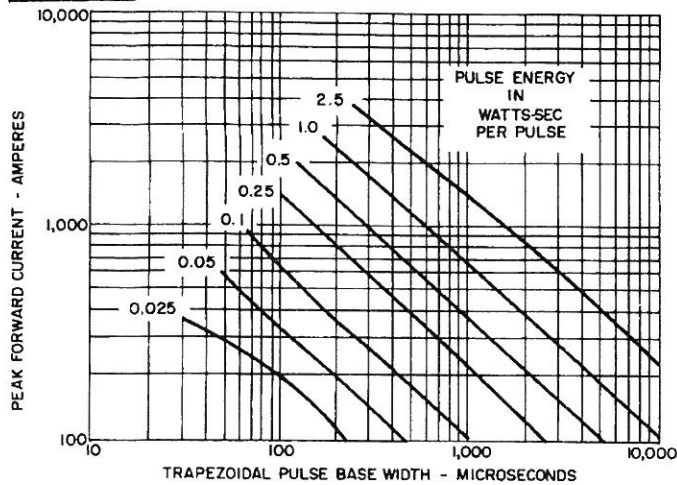
4. SINUSOIDAL PULSE ENERGY ( $T_J = 125^\circ\text{C}$ )



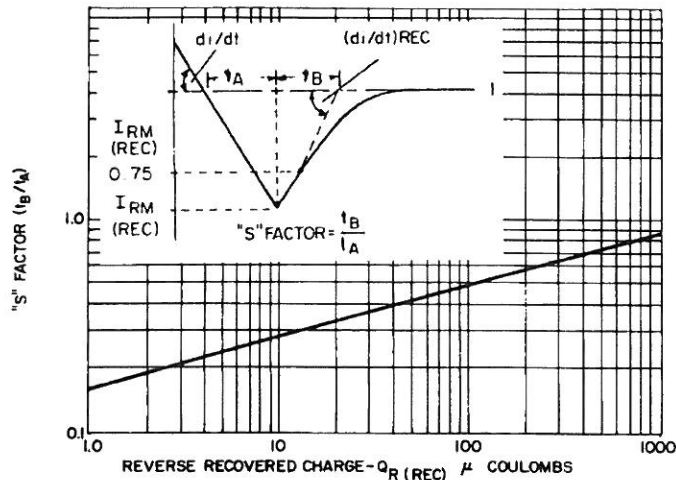
5. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT, TRAPEZOIDAL WAVEFORM ( $T_C = 65^\circ\text{C}$ ),  $DI/DT$  (RISING & FALLING) =  $100\text{ A}/\mu\text{S}$



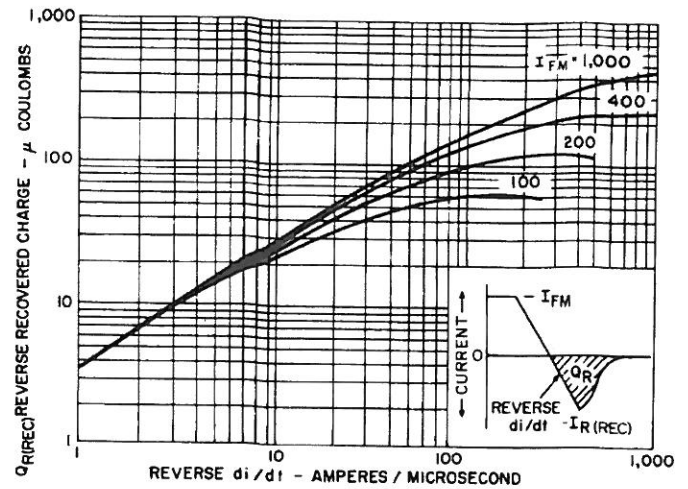
6. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT, TRAPEZOIDAL WAVEFORM ( $T_C = 90^\circ\text{C}$ ),  $DI/DT$  (RISING & FALLING) =  $100\text{ A}/\mu\text{S}$



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

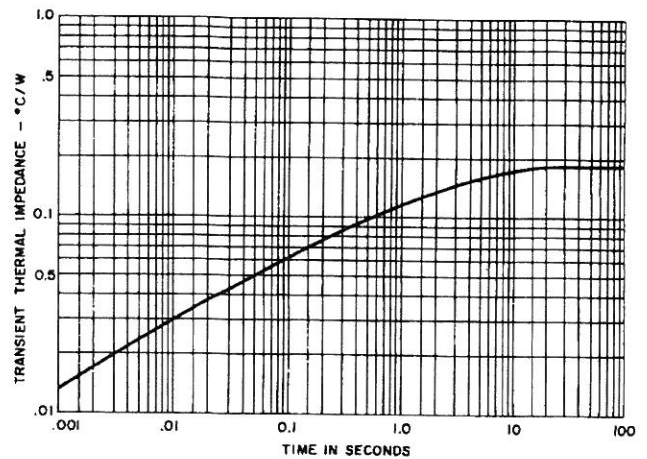


9. TYPICAL "S" FACTOR VERSUS  
 REVERSE RECOVERED CHARGE ( $T_J = 125^\circ\text{C}$ )

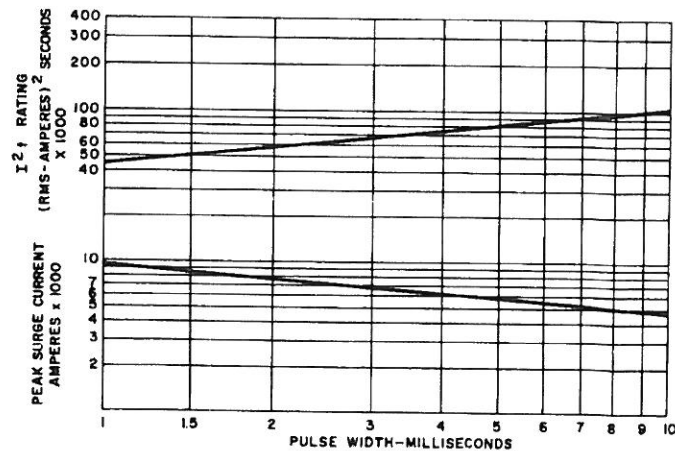


8. RECOVERED CHARGE ( $T_J = 125^\circ\text{C}$ )  
 (Maximum Recovered Charge Group 12)

If maximum recovered charge group 12 is required,  
 request A197 X9, e.g. A197BX9, A197RBX9, etc.

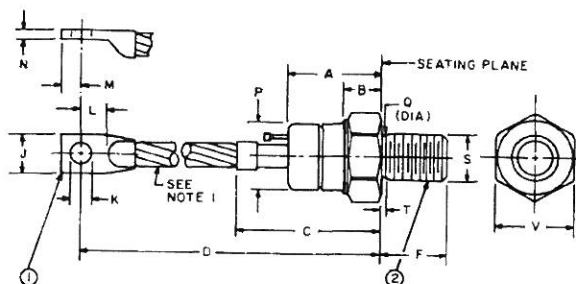


10. TRANSIENT THERMAL IMPEDANCE -  
 JUNCTION-TO-CASE



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

## OUTLINE DRAWING



| MODEL                        | TERMINAL 1 | TERMINAL 2 | S<br>THREAD SIZE |
|------------------------------|------------|------------|------------------|
| A197<br>FORWARD<br>POLARITY  | ANODE      | CATHODE    | 3/4 - 16         |
| A197R<br>REVERSE<br>POLARITY | CATHODE    | ANODE      | UNF - 2A         |

TABLE OF DIMENSIONS  
Conversion Table

| SYM. | DECIMAL INCHES |       | METRIC MM |        | NOTES |
|------|----------------|-------|-----------|--------|-------|
|      | MIN.           | MAX.  | MIN.      | MAX.   |       |
| A    | 1.450          | 1.550 | 36.83     | 39.37  |       |
| B    | .500           | .750  | 12.70     | 19.05  |       |
| C    | 2.300          | 2.500 | 58.42     | 63.50  |       |
| D    | 5.300          | 5.700 | 134.62    | 144.78 |       |
| F    | .797           | .827  | 20.24     | 21.01  |       |
| J    | .665           | .755  | 16.89     | 19.18  |       |
| K    | .322           | .333  | 8.17      | 8.46   |       |
| L    | .437           | -     | 11.99     | -      |       |
| M    | .325           | .360  | 8.25      | 9.14   |       |
| N    | .155           | .170  | -         | -      |       |
| P    | 1.060          | 1.100 | 26.92     | 27.94  |       |
| Q    | .660           | .749  | 16.76     | 19.02  |       |
| T    | -              | .156  | -         | 3.96   | 3     |
| V    | 1.240          | 1.250 | 31.49     | 31.75  |       |

## NOTES:

1. Flexible Copper Lead
2. One Nut and One Lockwasher Supplied With Each Unit. Material of Hardware is Steel, Cad Plated
3. "T" Dimension is Area of Unthreaded Portion. Complete Threads are Within 2.5 Threads of Seating Plane
4. Angular Orientation of Terminals is Undefined

## MOUNTING INSTRUCTIONS

Following these installation instructions will result in a rectifier diode-to-heat sink contact thermal resistance of  $0.08^{\circ}\text{C}/\text{watt}$  or less.

1. Be sure mounting surface is clean and flat within .001 inch/inch.
2. Mounting hole diameter should not exceed the outside diameter of the rectifier diode stud by more than 1/16 inch, and should be deburred.
3. Use Dow Corning's DC3, 4, 340 or 640 or GE G322L or equivalent, on mounting surfaces that come in contact with the heat sink.
4. Use only hardware furnished with each rectifier diode.
5. Tighten with a torque wrench, from nut side, to 325 lb-in max.