

High Speed Fast Recovery Rectifier

A197

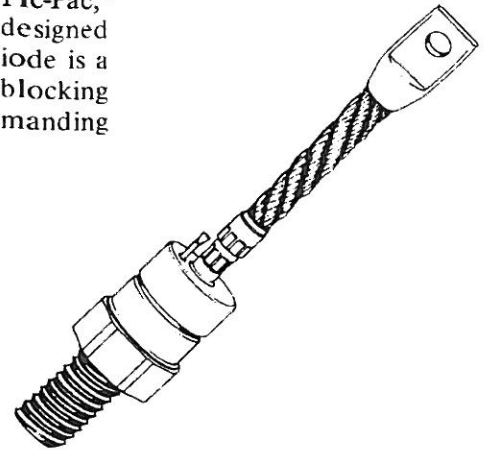
1500 Volts 250A Avg.

The A197 series is General Electric's highly reliable, all-diffused, Pic-Pac,⁴ 250 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

FEATURES:

- Published Current Ratings Up To 20,000 Hz
- All-Diffused
- Thermal Fatigue Resistant Pic-Pac⁴ Construction
- Cathode Strain Buffer
- Soft Recovery With Low Recovered Charge
- Rugged Hermetic Package



MAXIMUM ALLOWABLE RATINGS AND SPECIFICATIONS

TYPES*	REPETITIVE PEAK ¹ REVERSE VOLTAGE V_{RRM} $T_J = -40^{\circ}\text{C to } +125^{\circ}\text{C}$	NON-REPETITIVE ² PEAK REVERSE VOLTAGE, V_{RSM} $T_J = 25^{\circ}\text{C to } +125^{\circ}\text{C}$	DC REVERSE ³ VOLTAGE, V_R $T_J = -40^{\circ}\text{C to } +125^{\circ}\text{C}$	REPETITIVE PEAK REVERSE CURRENT, I_{RRM} $T_J = 125^{\circ}\text{C}$
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

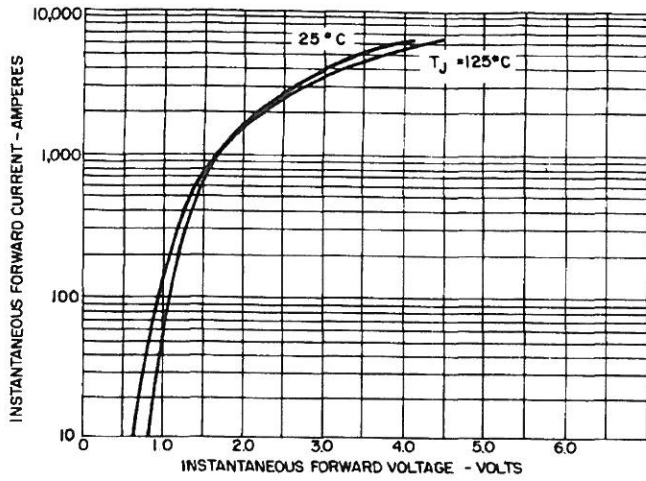
*Models listed are stud cathode (forward polarity) types. Specify A197R- for stud anode (reverse polarity) types. Ratings and specifications are for frequencies from 50 to 20,000 Hz, except where noted otherwise.

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-Repertive), Forward Current, I_{FSM}	5000 Amperes
Minimum I^2t Rating (See Curve 11), $t \geq 1$ msec. (Non-Repertive)	44,000 (RMS Ampere) ² Seconds
Thermal Resistance, $R_{\theta JC}$ (D. C.)	0.18 ^o C/Watt
Storage Temperature, T_{stg}	-40 ^o C to +150 ^o C
Operating Junction Temperature, T_J	-40 ^o C to +125 ^o C
Stud Torque	275 Lb-in (Min.), 325 Lb-in (Max.) 31 N-m (Min.), 36.7 N-m (Max.)

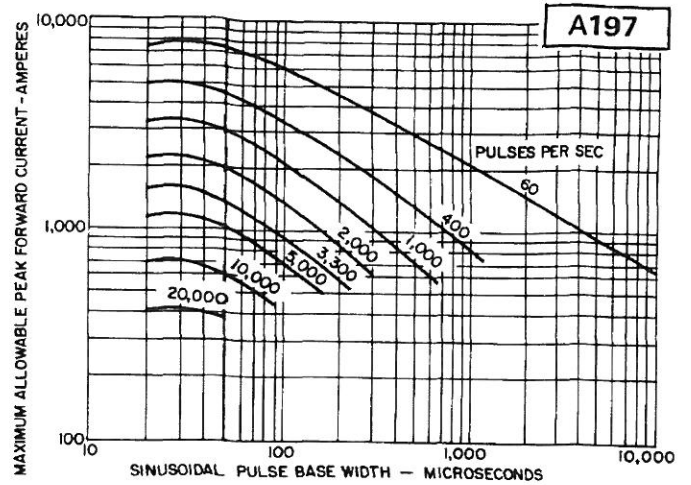
NOTES:

- ¹ Assumes a heatsink thermal resistance of less than 2.0^oC/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^oC/watt.
- ⁴ "Pic-Pac" is an acronym for Pressure Internal Contact Package. **588**

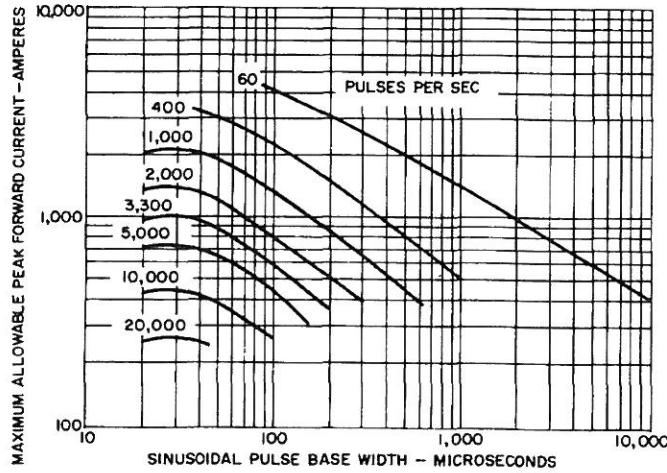
DEVICE SPECIFICATIONS



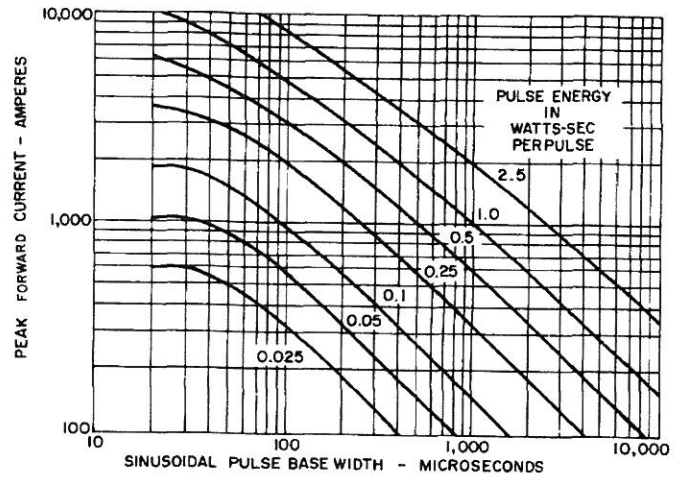
1. MAXIMUM FORWARD CHARACTERISTICS



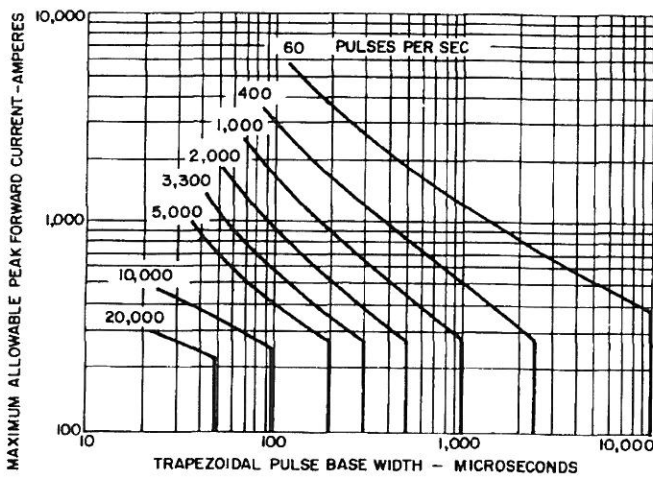
2. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT SINUSOIDAL WAVEFORM ($T_C = 65^\circ\text{C}$)



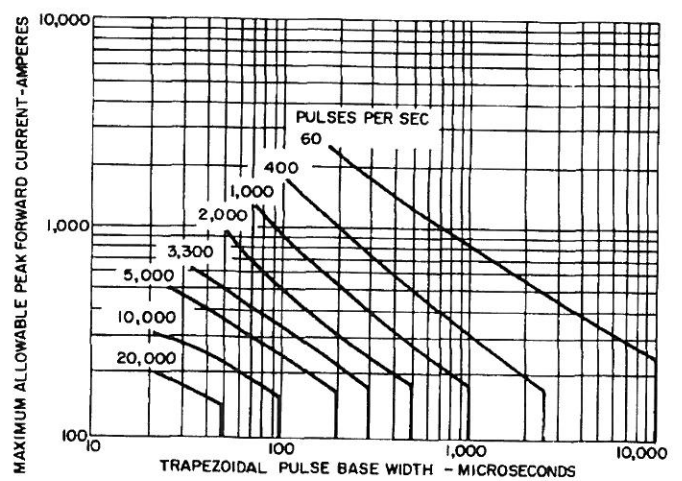
3. MAXIMUM ALLOWABLE FORWARD CURRENT SINUSOIDAL WAVEFORM ($T_C = 90^\circ\text{C}$)



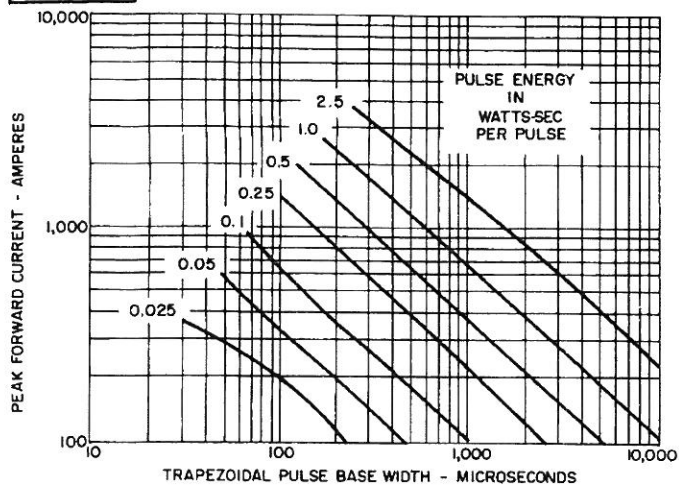
4. SINUSOIDAL PULSE ENERGY ($T_J = 125^\circ\text{C}$)



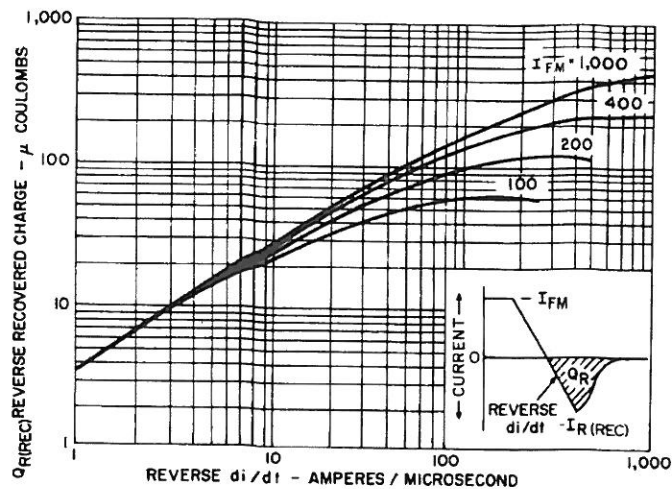
5. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT, TRAPEZOIDAL WAVEFORM ($T_C = 65^\circ\text{C}$), DI/DT (RISING & FALLING) = $100\text{ A}/\mu\text{S}$



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

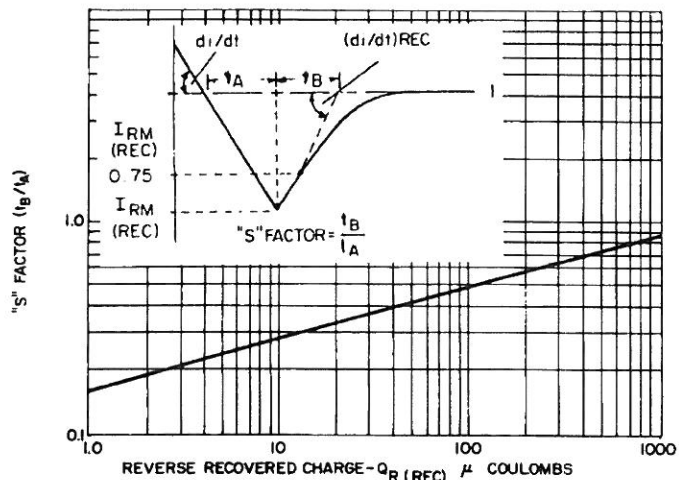


7. TRAPEZOIDAL PULSE ENERGY ($T_J = 125^\circ\text{C}$)
 DI/DT (RISING & FALLING) = $100 \text{ A}/\mu\text{s}$

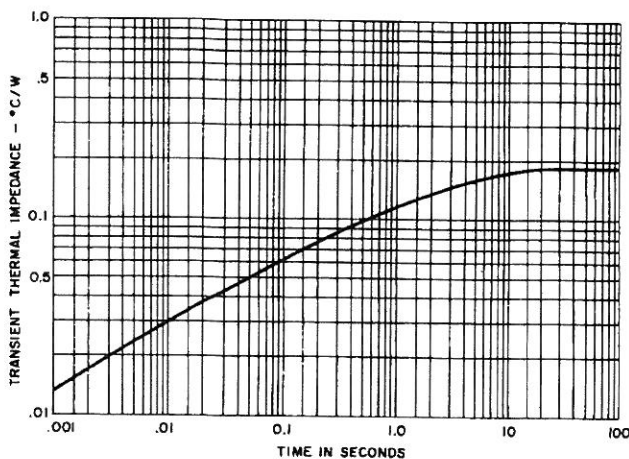


8. RECOVERED CHARGE ($T_J = 125^\circ\text{C}$)
 (Maximum Recovered Charge Group 12)

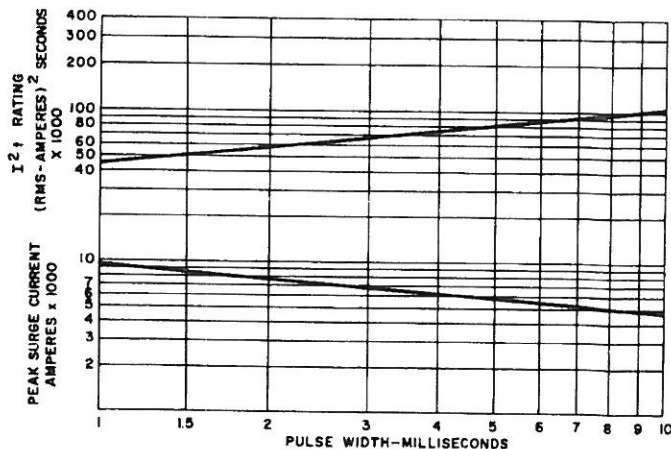
If maximum recovered charge group 12 is required, request A197___ X9, e.g. A197BX9, A197RBX9, etc.



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

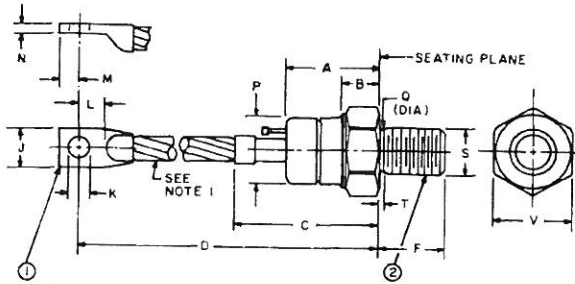


10. TRANSIENT THERMAL IMPEDANCE -
 JUNCTION-TO-CASE



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 THREAD SIZE
A197 FORWARD POLARITY	ANODE	CATHODE	3/4 - 16
A197R REVERSE 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°C/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.