Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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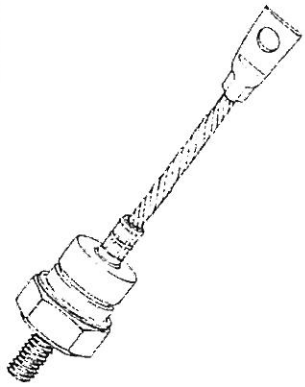
High Speed
Fast Recovery Rectifier

A177

1500 Volts 100A Avg.

The A177 series is General Electric's highly reliable, all-diffused, Pic-Pac,[4] 100 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-Pac[4] Construction
- Cathode Strain Buffer
- Soft Recovery With Low Recovered Charge
- Rugged Hermetic Package
- Available in 3/8" or 1/2" Stud

MAXIMUM ALLOWABLE RATINGS AND SPECIFICATIONS

TYPES*	REPETITIVE PEAK [1] REVERSE VOLTAGE V_{RRM} T_J = -40°C to +125°C	NON-REPETITIVE[2] PEAK REVERSE VOLTAGE, V_{RSM} T_J = 25° to +125°C	DC REVERSE[3] VOLTAGE, V_R T_J = -40°C to +125°C	REPETITIVE PEAK REVERSE CURRENT, I_{RRM} T_J = 125°C
A177A	100 Volts	200 Volts	100 Volts	20 mA
A177B	200	300	200	20
A177C	300	400	300	20
A177D	400	500	400	20
A177E	500	600	500	20
A177M	600	720	600	20
A177S	700	840	700	20
A177N	800	950	800	20
A177T	900	1075	900	20
A177P	1000	1200	1000	20
A177PA	1100	1300	1100	20
A177PB	1200	1400	1200	20
A177PC	1300	1500	1300	20
A177PD	1400	1600	1400	20
A177PE	1500	1700	1500	20

*Models listed are stud cathode (forward polarity) types. Specify A177R- 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°C, Half Sine Wave Pulse Base Width = 8.3 msec., D.F. = 50%) . . . . . 280 Amperes
Peak One-Cycle Surge (Non-Repetitive), Current, I_{FSM} . . . . . 2500 Amperes
Minimum I^2t Rating (See Curve 11), $t \geq 1$ msec. (Non-Repetitive) . . . . . 13,500 (RMS Ampere)^2 Seconds
Thermal Resistance, $R_{\theta JC}$ (D.C.) . . . . . 0.4°C/Watt
Storage Temperature, T_{stg} . . . . . -40°C to +150°C
Operating Junction Temperature, T_J . . . . . -40°C to +125°C
Stud Torque . . . . . 90 Lb-in (Min.), 100 Lb-in (Max.)
10.2 N-m (Min.), 11.3 N-m (Max.)

NOTES:

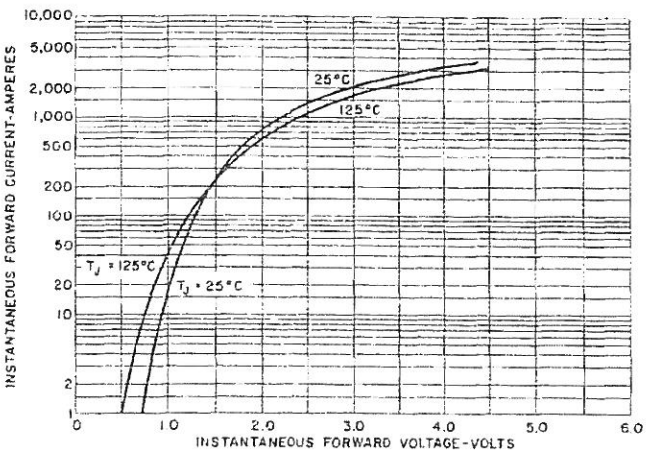
[1] Assumes a heatsink thermal resistance of less than 2.0°C/watt.

[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.

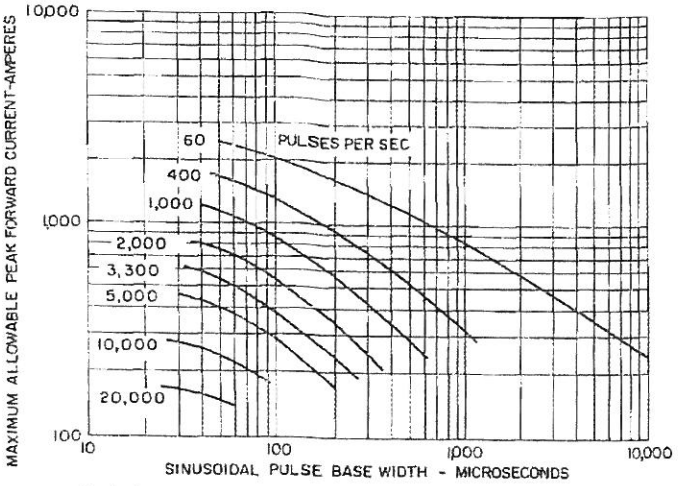
[3] Assumes a heatsink thermal resistance of less than 1.0°C/watt.

[4] "Pic-Pac" is an acronym for Pressure Internal Contact Package.

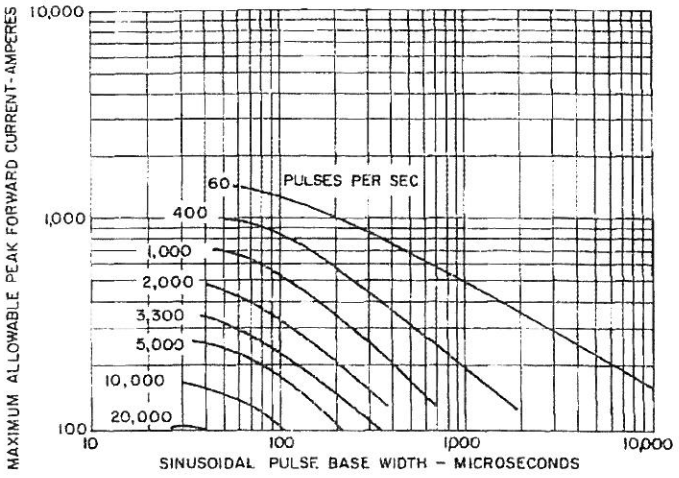
A177



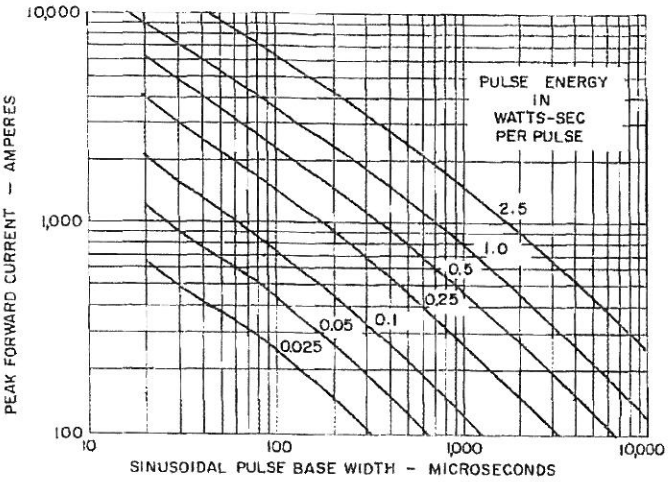
1. MAXIMUM FORWARD CHARACTERISTICS



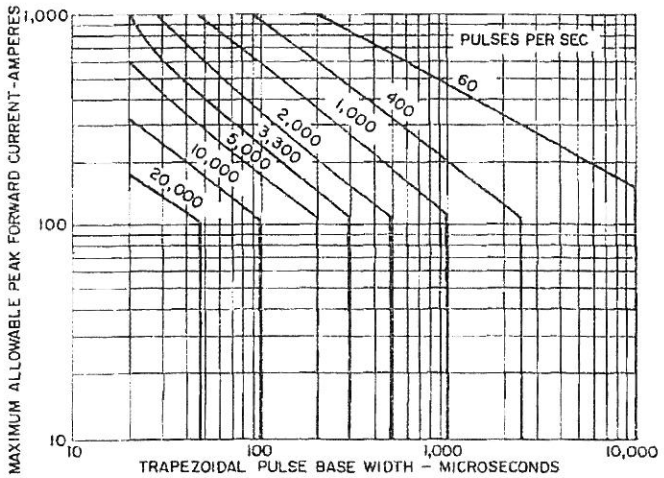
2. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT
SINUSOIDAL WAVEFORM (T_C = 65°C)



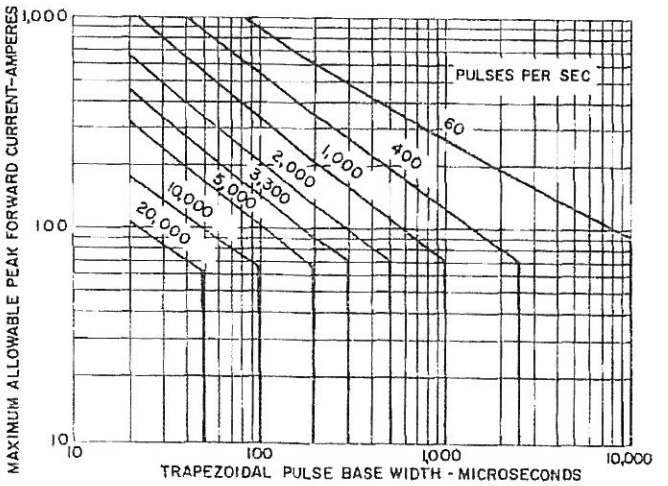
3. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT
SINUSOIDAL WAVEFORM (T_C = 90°C)



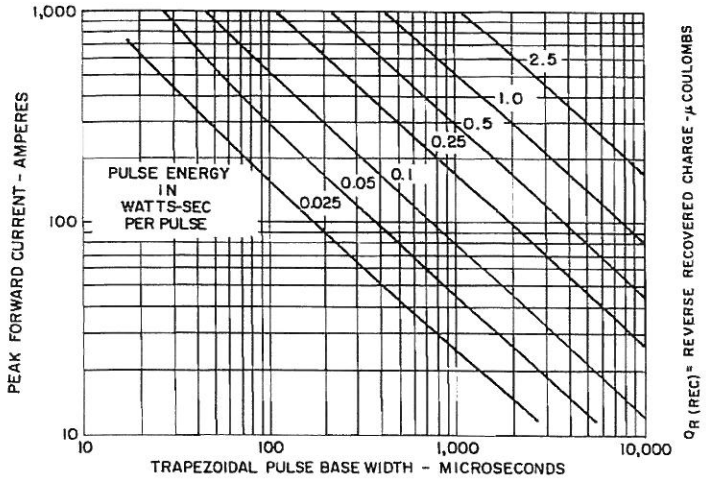
4. SINUSOIDAL PULSE ENERGY (T_C = 125°C)



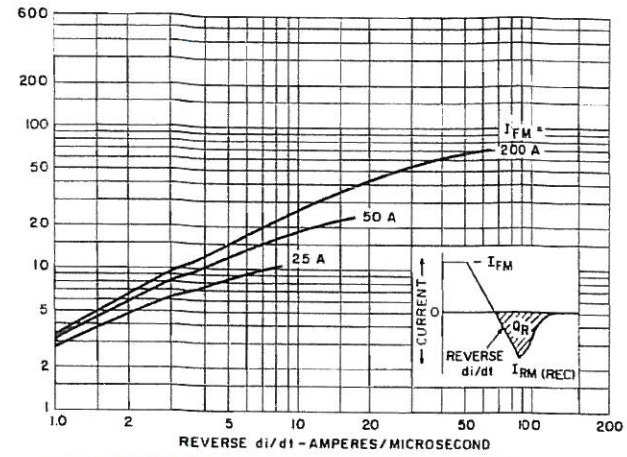
5. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT, TRAPEZOIDAL WAVEFORM (T_C = 65°C), DI/DT (RISING & FALLING) = 100 A/μS



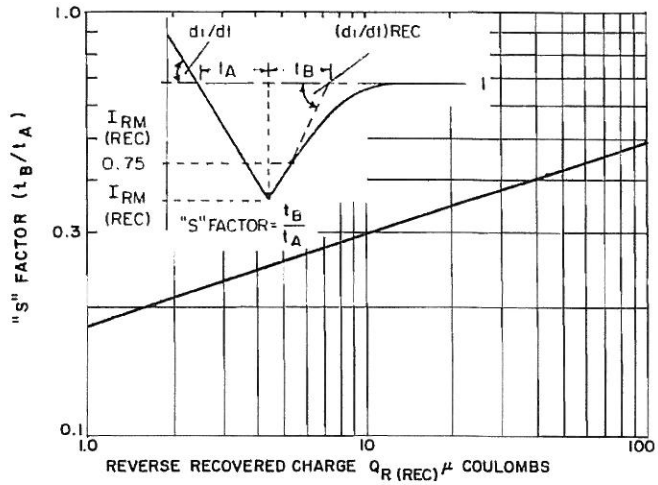
6. MAXIMUM ALLOWABLE PEAK FORWARD CURRENT, TRAPEZOIDAL WAVEFROM (T_C = 90°C), DI/DT (RISING & FALLING) = 100 A/μS



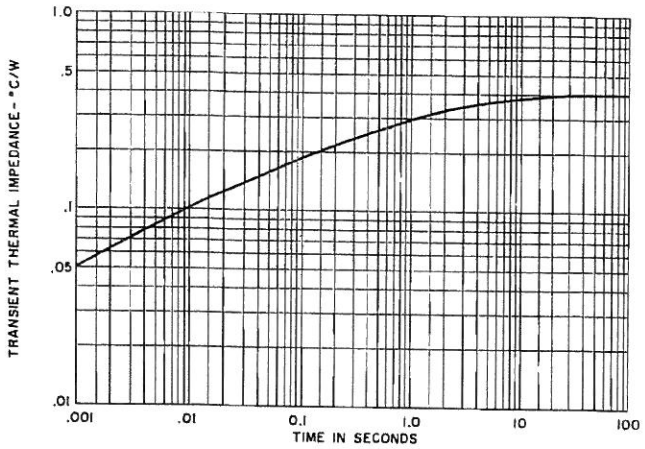
7. TRAPEZOIDAL PULSE ENERGY
DI/DT (RISING & FALLING) = 100 A/μS



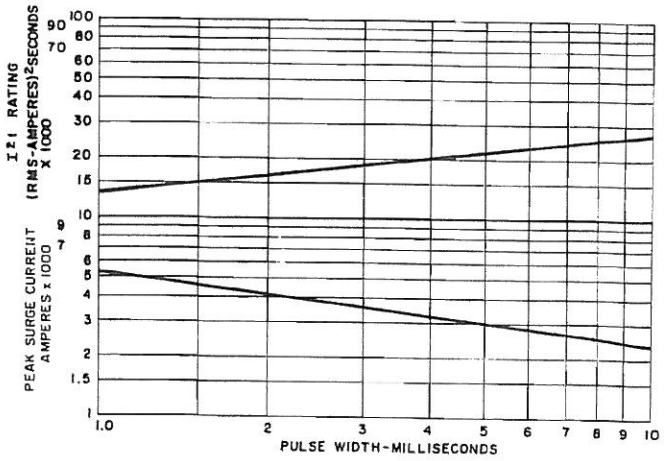
8. RECOVERED CHARGE (T_J = 125°C)
(Maximum Recovered Charge Group 12)
If maximum recovered charge group 12 is required, request A177___ X9, e.g. A177BX9, A177RBX9, etc.



9. TYPICAL "S" FACTOR VERSUS REVERSE RECOVERED CHARGE (T_J = 125°C)

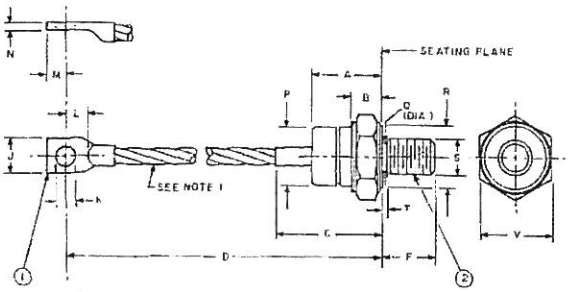


10. TRANSIENT THERMAL IMPEDANCE – JUNCTION-TO-CASE



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

OUTLINE DRAWING



MODEL	TERMINAL 1	TERMINAL 2	S THREAD SIZE	F THREAD LENGTH	Q RELIEF DIAMETER
A177 FORWARD POLARITY	ANODE	CATHODE	3/8 - 24 UNF - 2A	.640 / .610 IN.	.373 / .344 IN.
A177R REVERSE POLARITY	CATHODE	ANODE		16.26 / 15.49 MM	9.47 / 8.74 MM

TABLE OF DIMENSIONS
Conversion Table

SYM.	DECIMAL INCHES MIN.	DECIMAL INCHES MAX.	METRIC MM. MIN.	METRIC MM. MAX.	NOTES
A	1.020	1.140	25.90	28.96	
B	.390	.500	9.90	12.70	
C	1.570	1.750	39.87	44.45	
D	4.345	4.745	110.36	120.52	
J	.500	.625	12.70	13.20	
K	.259	.281	6.57	7.14	
L	.320	–	8.12	–	
M	.280	.320	7.11	8.13	
N	.060	.090	1.52	2.29	
P	.840	.910	21.33	23.11	
R	.920	–	23.36	–	3
T	–	.060	–	1.52	4
V	1.052	1.063	26.72	27.00	

NOTES:

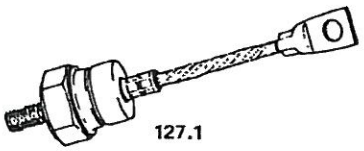
1. Flexible Copper Lead, 3/16 Inch Nominal Diameter.
2. One Nut and One Lockwasher Supplied With Each Unit. Material of Hardware is Steel Cad Plated.
3. "R" Dimension is Diameter of Effective Seating Area.
4. "T" Dimension is Area of Unthreaded Portion. Complete Threads are Within 2.5 Threads of Seating Plane.
5. Angular Orientation of Terminals is Undefined.
6. Approximate Weight: 105 Grams.

MOUNTING INSTRUCTIONS

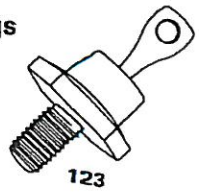
Following these installation instructions will result in a rectifier diode-to-heatsink contact thermal resistance of 0.10°C/watt or less.

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 heatsink.
4. Use only hardware furnished with each rectifier diode.
5. Tighten with a torque wrench, from nut side, to 100 lb-in max.

5.2 Condensed Electrical and Thermal Characteristics and Ratings


127.1

RECTIFIERS
20 TO 100 AMPERES


123


128

JEDEC TYPE		—	—	1N3289-96	1N3289A-96A	—
GE TYPE		A44	A139	—	A170	A177

SPECIFICATIONS

$I_{FM(AV)}$	Max. average forward (1 phase operation)		20	25	100	100	100
	T_C = (°C)		110	75	130	130	65
V_{RM} (Rep)	Max. repetitive peak reverse voltage (V)		50-600	50-1000	200-1200	100-1500	100-1500
I_{FM} (Surge)	Max. peak one cycle, non-recurrent surge current (1 phase operation) 50 Hz.		270	360	1440	2250	2250
	@ max. rated load conditions (A) 60 Hz.		300	400	1600	2500	2500
I^2t	Max. non-repetitive for 1.5 msec (A^2sec)		100	500	4000	5500	15000
T_J	Operation junction temperature range (°C)		−65 to 175	−40 to 125	−40 to 200	−40 to 200	−40 to 125
$R_{\theta JC}$	Max. thermal resistance, junction-to-case (°C/W)		1.5 TYPICAL	1.0	.4	.4	.4
V_{FM}	Max. peak forward voltage drop @ rated $I_{F(AV)}$ (1 phase operation)		1.0 TYPICAL	1.0	1.4	1.3	1.3
	@ T_C = (°C)		25	75	25	130	25
$Q_{R(REC)}$	Reverse recovered charge @ rated T_J (μc)		—	—	—	—	50
t_{rr}	Reverse recovery time @ rated T_J (μs)		—	0.5	—	—	2.3
V_F	Max. forward [1] voltage drop for the current range:	I_{MIN}(A)	.2	.8	2	1	3
		I_{MAX}(A)	200	800	2000	1000	3000
		A	.38	.6702	.4283	.4290	.4405
		B	.0352	−.0094	−.0099	.1008	.1163
		C	.0082	−.0008	.0002	.0011	.0007
		D	.0559	.1434	−0553	−.0008	.0172
$R_{\theta JC}$	Transient thermal[2] resistance for time:	T_{MIN}(S)	—	—	.001	.001	.001
		T_{MAX}(S)	—	—	.01	.01	.01
		F	—	—	.4	.4	.4
		G	—	—	.3	.3	.3
Package Outline No.			126	123	127.1	127.1	127.1
Maximum Stud Torque (In-Lbs/N-M)			—	30/3.39	100/11.3	100/11.3	100/11.3
Expanded Electrical Characterization, see page:			N.A.	N.A.	N.A.	N.A.	N.A.

[1]Voltage Drop Model: $V_F = A + B \cdot L_N(I) + CI + D\sqrt{I}$
[2]Transient Thermal Resistance Model: $R_{\theta JC} = F \cdot t^G$