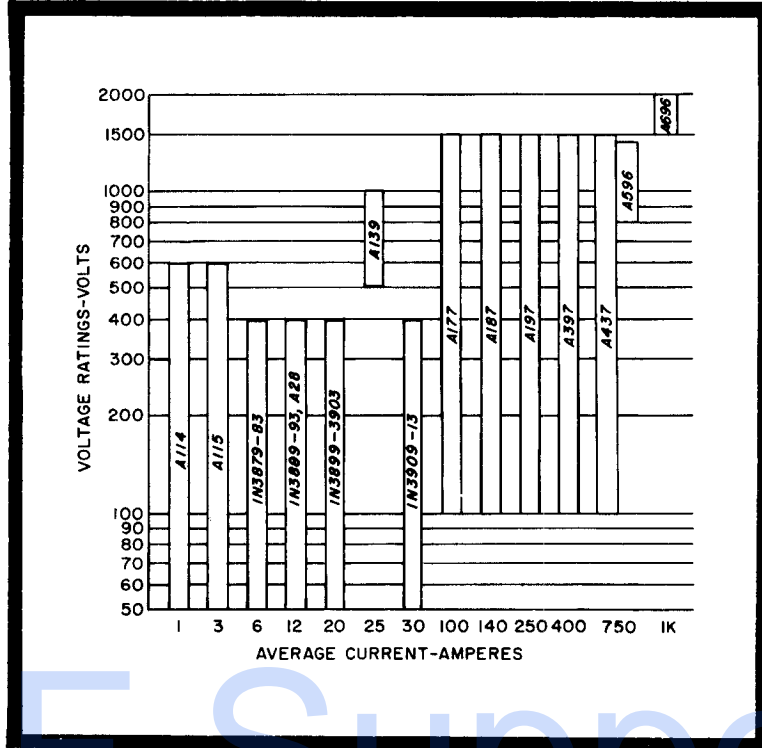
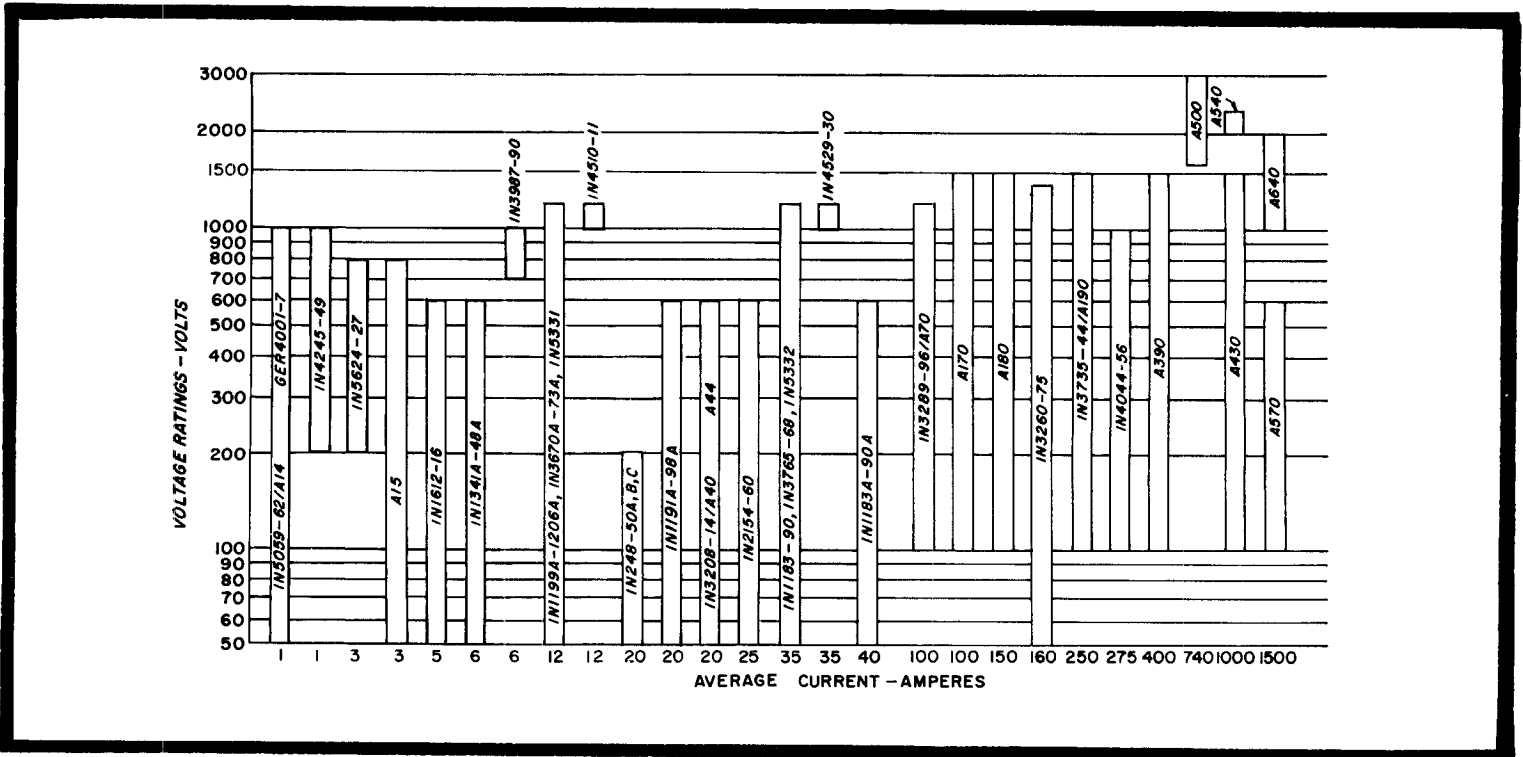
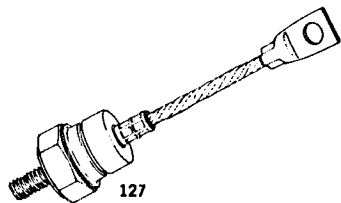


## FAST RECOVERY RECTIFIERS SELECTOR GUIDE



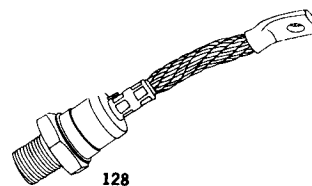
## STANDARD RECTIFIERS SELECTOR GUIDE





127

## RECTIFIERS 100 TO 150 AMPERES



128

JEDEC TYPE		1N3289-96			1N3260-75		
GE TYPE		A70	A170	A177	—	A180	A187
<b>SPECIFICATIONS</b>							
$I_{FM(AV)}$	Max. average forward current (1 phase operation)	100	100	100	160	150	150
	$T_C = (^{\circ}C)$	130	130	130	125	143	110
$V_{RM}$ (surge)	Max. repetitive peak reverse voltage (V)	—	—	—	—	—	—
	50	—	—	—	1N3260	—	—
	100	A70A	A170A	A177A	1N3261	A180A	A187A
	150	—	—	—	1N3262	—	—
	200	A70B 1N3289	A170B	A177B	1N3263	A180B	A187B
	250	—	—	—	1N3264	—	—
	300	A70C 1N3290	A170C	A177C	1N3265	A180C	A187C
	350	—	—	—	1N3266	—	—
	400	A70D 1N3291	A170D	A177D	1N3267	A180D	A187D
	500	A70E 1N3292	A170E	A177E	1N3268	A180E	A187E
	600	A70M 1N3293	A170M	A177M	1N3269	A180M	A187M
	700	A70S	A170S	A177S	1N3270	A180S	A187S
	800	A70N 1N3294	A170N	A177N	1N3271	A180N	A187N
	900	A70T	A170T	A177T	1N3272	A180T	A187T
	1000	A70P 1N3295	A170P	A177P	1N3273	A180P	A187P
	1100	A70PA	A170PA	A177PA	—	A180PA	A187PA
	1200	A70PB 1N3296	A170PB	A177PB	1N3274	A180PB	A187PB
	1300	—	A170PC	A177PC	—	A180PC	A187PC
	1400	—	A170PD	A177PD	1N3275	A180PD	A187PD
	1500	—	A170PE	A177PE	—	A180PE	A187PE
$I_{FM}$ (surge)	Max. peak one cycle, non-recurrent surge current (60 Hz sine wave, 1 phase operation) @ max. rated load conditions (A)	1600	2500	2500	2000	3400	2800
$I^2t$	Max. non-repetitive for 8.3 msec ( $A^2$ sec)	10,000	28,000	23,500	16,000	46,000	33,000
$T_J$	Operating junction temperature range ( $^{\circ}C$ )	-40 to +200	-40 to +200	-40 to +175	-55 to +190	-40 to +200	-40 to +175
$T_{stg}$	Storage temperature range ( $^{\circ}C$ )	-40 to +200	-40 to +200	-40 to +200	-55 to +190	-40 to +200	-40 to +200
$R_{\theta JC}$	Max. thermal resistance, junction-to-case ( $^{\circ}C/W$ )	.4	.4	.4	.3	.3	.3
$V_{FM}$	Max. Peak forward voltage drop @ rated $I_{F(AV)}$ (1 phase operation)	1.15	1.3	1.3	1.6	1.3	—
	@ $T_C = (^{\circ}C)$	25	130	25	125	143	—
$Q_{rr}$	Max. reverse recovered charge, $T_J = 25^{\circ}C$	—	—	25	—	—	30
<b>PACKAGE OUTLINE NO.</b>		127	127	127	128	127	127

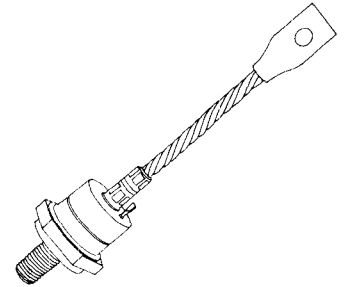
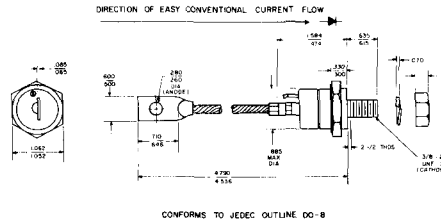
# Silicon Rectifiers

<b>1N3289-96,R</b>
<b>A70S,A70T</b>
<b>A71S,A71T</b>

The 1N3289-1N3296 Series is the ultimate in today's High Current Silicon Rectifier field. By taking full advantage of the most advanced semiconductor component manufacturing techniques, General Electric now offers the industry's first double diffused, all hard solder 100-ampere rectifier in PRV ratings up to 1,200 volts. As a result, circuit designers now receive:

### Features:

- Freedom from Thermal Fatigue Failure
- Higher Surge Current Capabilities
- NEMA Overload Ratings
- Forward and Reverse Polarities



### RATINGS AND SPECIFICATIONS

	1N3289 1N3289R	1N3290 1N3290R	1N3291 1N3291R	1N3292 1N3292R	1N3293 1N3293R	A70S A71S	1N3294 1N3294R	A70T A71T	1N3295 1N3295R	1N3296 1N3296R	
Maximum Allowable Transient Peak Reverse Voltage (non-recurrent, 5 millisecond maximum duration)	300	400	525	650	800	925	1050	1175	1300	1500	volts
Maximum Allowable Repetitive Peak Reverse Voltage, $V_{RM}$ (rep)	200	300	400	500	600	700	800	900	1000	1200	volts
Maximum Allowable RMS Reverse Voltage	140	210	280	350	420	490	560	630	700	840	volts
Maximum Allowable DC Blocking Voltage**	200	300	400	500	600	700	800	900	1000	1200	volts
Maximum Allowable Average Forward Current (single phase, 130°C stud temperature)	← 100 amperes →										
Maximum Allowable Peak One-Cycle Surge Current (60 cps single-phase basis, non-recurrent)	← 1600 amperes →										
Minimum $I^2t$ Rating (non-recurrent)	← 4000 amperes <sup>2</sup> -seconds (See Curve 8) →										
Maximum Full Load Voltage Drop (full-cycle average, 130°C stud temperature, 100 amperes average single phase)	← 0.6 volts →										
Maximum Full Load Reverse Current (full-cycle average, 130° stud temperature, single phase)	9.5	9.0	9.0	8.0	6.5	6.0	5.5	5.5	4.5	3.5	ma
Maximum Thermal Resistance (junction to stud)	← DC = 0.4°C/w; 1φ & 3φ = .55°C/w; 6φ = .72°C/w →										
Storage and Junction Operating Temperature	← -40°C to +200°C →										
Max. Stud Torque***	← 100 Lb-in (120 Kg-cm) →										
Min. Stud Torque	← 90 Lb-in (105 Kg-cm) →										
Weight	← Approximately 2½ ounces →										

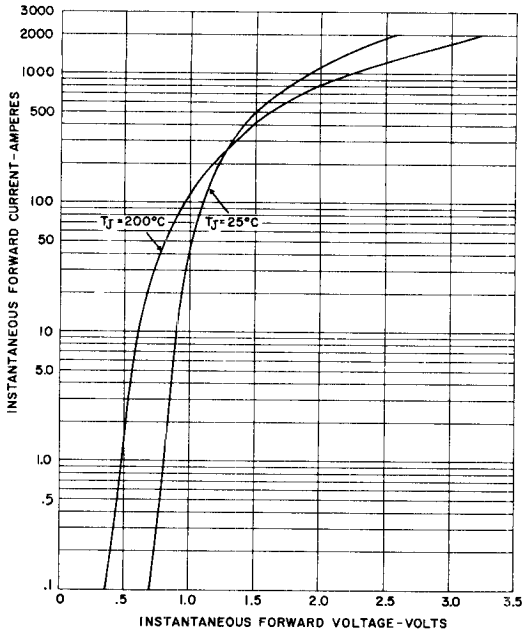
### NOTES:

- † "R" indicates reverse polarity
- \* Rating assumes rectifier cell heat sink of less than 3°C/watt.
- \*\* Rating assumes rectifier cell heat sink of less than 1.5°C/watt.
- \*\*\* Use of silicone grease between rectifier base and heat sink is recommended.

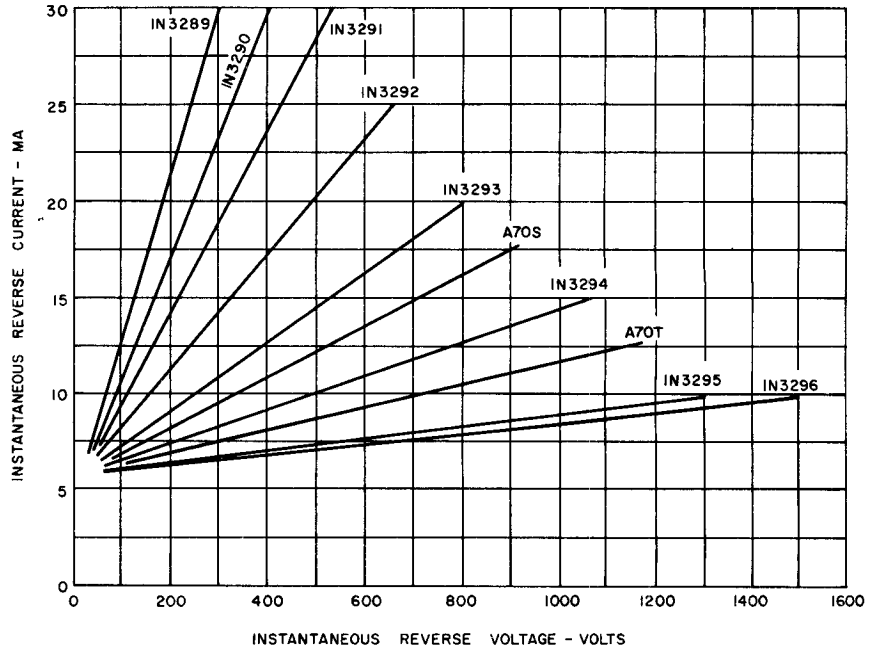
Non-recurrent voltage and current ratings, as contrasted to repetitive ratings, are ratings which apply for occasional or unpredictable overloads. For example, the forward surge current ratings are non-recurrent ratings that are used in fault coordination design work.

# DIODE SPECIFICATIONS

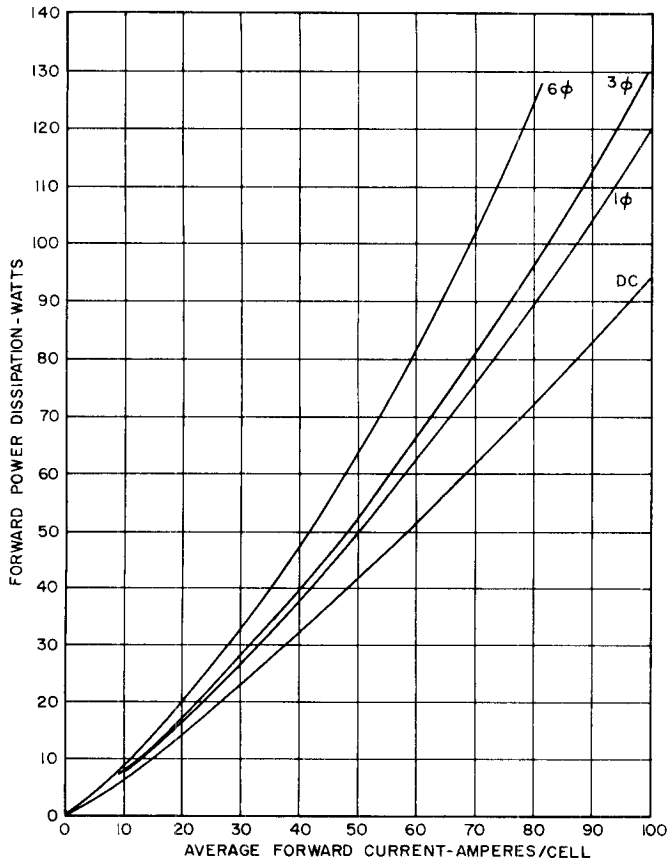
1N3289-96, R
A70S, A70T
A71S, A71T



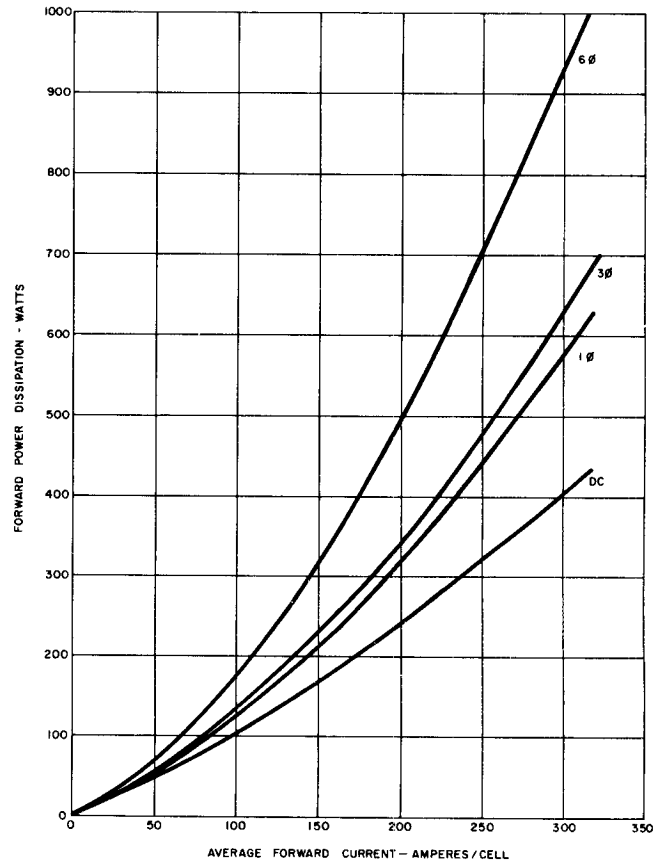
1. MAXIMUM FORWARD CHARACTERISTICS



2. MAXIMUM TRANSIENT REVERSE CHARACTERISTICS ( $T_j = -40^\circ\text{C}$  to  $+200^\circ\text{C}$ )



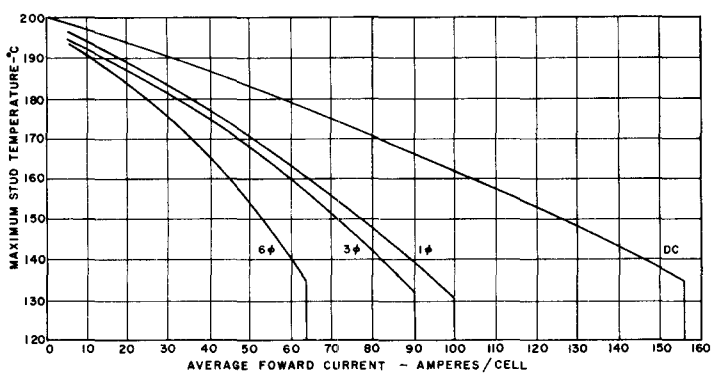
3. AVERAGE FORWARD POWER DISSIPATION VS. AVERAGE FORWARD CURRENT



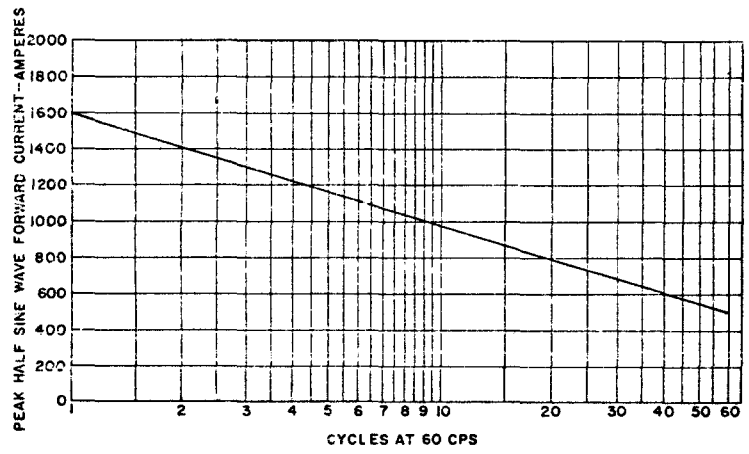
4. AVERAGE FORWARD POWER DISSIPATION VS. AVERAGE FORWARD CURRENT, HIGH LEVEL

**INSTALLATION INSTRUCTIONS**

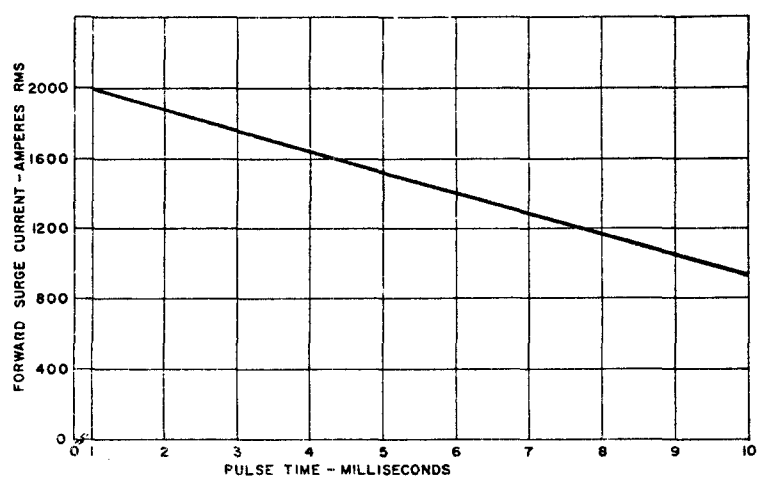
- Following these installation instructions will result in a diode-to-heat-sink thermal resistance of .10°C/watt.
1. Be sure mounting surface is clean and flat at (.001 inch/inch).
  2. Mounting hole diameter should not exceed rectifier stud OD by more than  $\frac{1}{16}$ " and should be deburred.
  3. Use Burndy's "Penetrox A" or equivalent on mounting surfaces which come in contact with the heat-sink.
  4. Use suitable hardware. (Nut and split lockwasher are supplied.)
  5. Tighten nut with a torque wrench, to 100 inch-pounds.



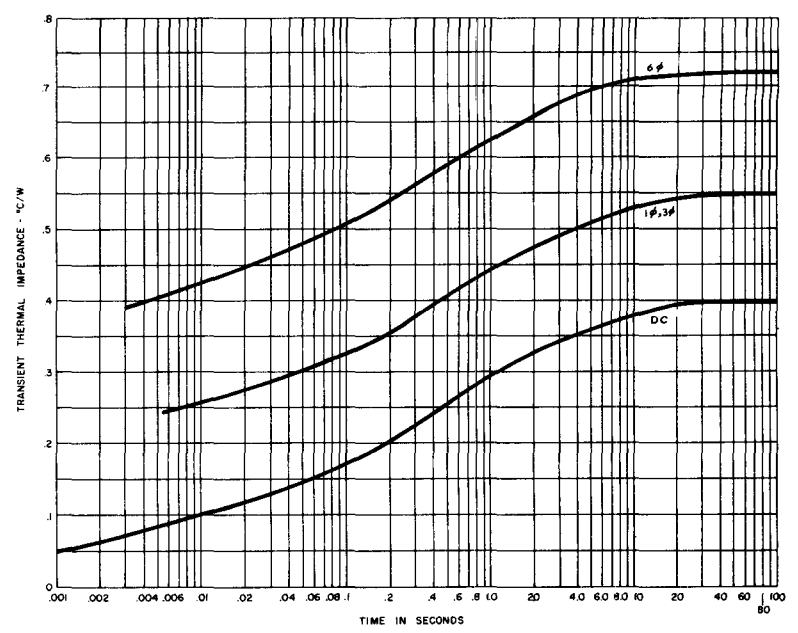
**5. MAXIMUM STUD TEMPERATURE VS. AVERAGE FORWARD CURRENT**



**7. MAXIMUM SURGE CURRENT AT RATED LOAD CONDITIONS**  
(Non-Recurrent)  $T_J = -40^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$

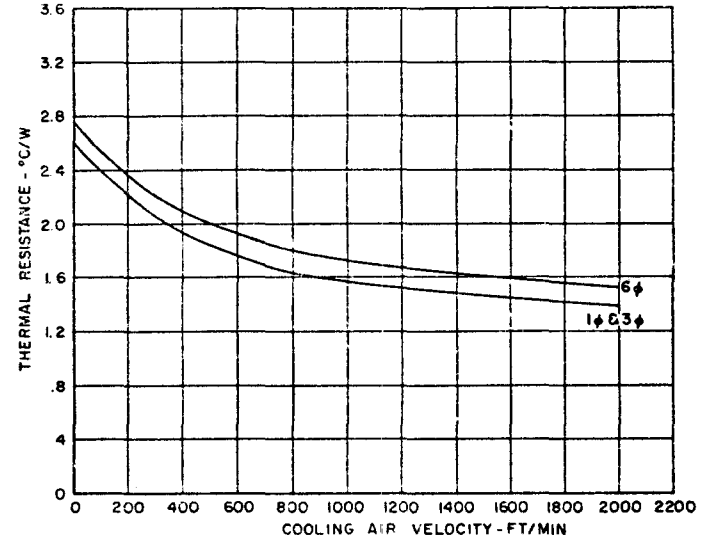


**8. MAXIMUM SURGE CURRENT FOR SUB-CYCLE PULSES AT RATED LOAD CONDITIONS**  
(Non-Recurrent)  $T_J = -40^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$

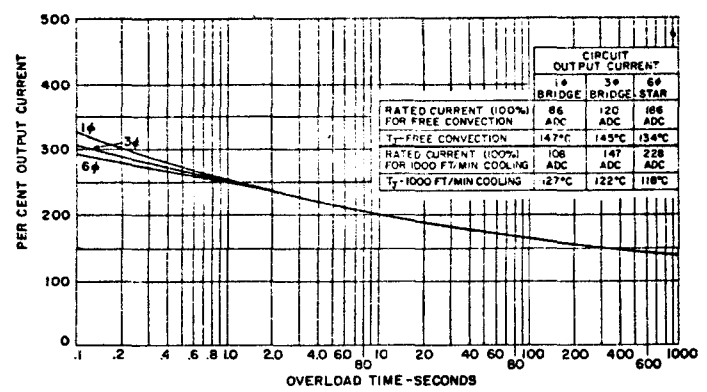


**6. JUNCTION TO CASE TRANSIENT THERMAL IMPEDANCE**

**RECURRENT OVERLOAD RATINGS**  
FOR DIODES MOUNTED ON  $7 \times 7 \times \frac{1}{4}$ " COPPER FIN ( $E = 0.9$ )



**STEADY-STATE THERMAL RESISTANCE, JUNCTION TO AMBIENT**



**RECURRENT OVERLOAD CURVE MEETING NEMA STANDARDS FOR "General Purpose Rectifier Equipments Under 100 KW" AT  $40^{\circ}\text{C}$  AMBIENT**