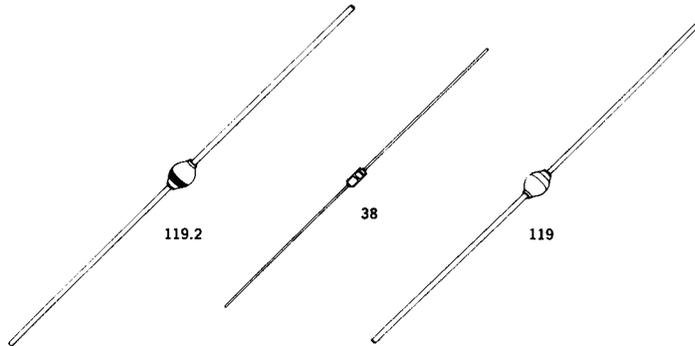


# RECTIFIERS

THE INDUSTRY'S BROADEST LINE OF POWER RECTIFIERS—.250 TO 1500 AMPERES, UP TO 3000 VOLTS

- CURRENT/VOLTAGE RATINGS
- HIGH-SPEED FAST RECOVERY
- PACKAGING
- TRANSIENT SELF-PROTECTION
- MOUNTING AND COOLING
- GENERAL PURPOSE



## RECTIFIERS .25 TO 3 AMPERES

JEDEC	—		1N5059-62	1N4245-49	—	—	1N5624-27	—	—
GE TYPE	DT230	A14A-P	—	GER4001-7	A114A-M	—	A15A-N	A115A-M	—
<b>SPECIFICATIONS</b>									
$I_{FM(AV)}$ (A)	.25	1	1	1	1	3	3	3	
@ $T_A(^{\circ}C)$	50	100	55	75	55	70	70	55	
$V_{RM(rep)}$ — Max. repetitive peak reverse voltage (V)									
50	DT230F	A14F	—	GER4001	A114F	—	A15F	A115F	
100	DT230A	A14A	—	GER4002	A114A	—	A15A	A115A	
150	DT230G	—	—	—	—	—	—	—	
200	DT230B	1N5059	1N4245 *	GER4003	A114B	1N5624	A15B	A115B	
250	DT230H	—	—	—	—	—	—	—	
300	—	A14C	—	—	A114C	—	A15C	A115C	
400	—	1N5060	1N4246 *	GER4004	A114D	1N5625	A15D	A115D	
500	—	A14E	—	—	A114E	—	A15E	A115E	
600	—	1N5061	1N4247 *	GER4005	A114M	1N5626	A15M	A115M	
800	—	1N5062	1N4248 *	GER4006	—	1N5627	A15N	—	
1000	—	A14P <sup>1</sup>	1N4249	GER4007	—	—	—	—	
$I_{FM(surge)}$ Max. peak one cycle, non-recurrent surge current (60 Hz sine wave, 1 phase operation) @ max. rated load conditions (A)	5	50	25	30	40	125	125	110	
$I^2t$ Max. non-repetitive for 8.3 msec. (A <sup>2</sup> sec)	—	4	4	—	3.5	25	25	20	
$T_J$ Operating junction temperature range ( $^{\circ}C$ )	-65 to 150	-65 to 175 <sup>1</sup>	-65 to 160	-65 to 175	-65 to 125	-65 to 175	-65 to 175	-65 to 150	
$T_{stg}$ Storage temperature range ( $^{\circ}C$ )	-65 to 200	-65 to 175	-65 to 200	-65 to 175	-65 to 175	-65 to 200	-65 to 175	-65 to 175	
$V_{FM}$ Max. peak forward voltage drop @ rated $I_{F(AV)}$ (1 phase operation)	1.1	1.0	1.2 @ +55 $^{\circ}C$	1.1	1.1	1.0	1.0	1.0	
$t_{rr}$ Max. reverse recovery time ( $\mu$ sec)	0.3	6	5	—	0.2	5	5	0.2	
<b>PACKAGE OUTLINE NO.</b>	38	119	119	119	119	119.2	119.2	119.2	

NOTE:  
<sup>1</sup> Average forward current 1 amp. @  $T_A=90^{\circ}C$ . Junction, operating and storage temperature range -65 to +165 $^{\circ}C$ .  
 \* JAN & JANTX types available

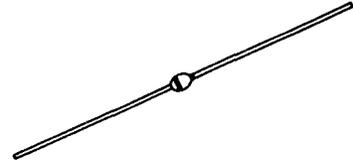
# Fast Recovery Rectifier

2.0 Amps

200-600 Volts

A114B
A114C
A114D
A114E
A114M

THE GENERAL ELECTRIC A114 IS A 2.0 AMPERE, AXIAL-LEADED, FAST RECOVERY RECTIFIER. DUAL HEATSINK CONSTRUCTION PROVIDES RIGID MECHANICAL SUPPORT FOR THE PELLET AND EXCELLENT THERMAL CHARACTERISTICS. PASSIVATION AND PROTECTION OF THE PN JUNCTION OF THE SILICON PELLETT ARE PROVIDED BY SOLID GLASS; NO ORGANIC MATERIALS ARE PRESENT WITHIN THE HERMETICALLY-SEALED PACKAGE.



absolute maximum ratings: (25°C unless otherwise specified)

	A114B	A114C	A114D	A114E	A114M	
Reverse Voltage (-65°C to +150°C, T <sub>J</sub> )						
Working Peak, V <sub>RWM</sub>	200	300	400	500	600	Volts
Repetitive Peak, V <sub>RRM</sub>	200	300	400	500	600	Volts
DC, V <sub>R</sub>	200	300	400	500	600	Volts
Average Forward Current, I <sub>o</sub>						
75°C ambient (see Rating Curves)	←----- 1.0 -----→					Amperes
25°C " "	←----- 2.0 -----→					Amperes
Peak Surge Forward Current, I <sub>FSM</sub>						
Non-rep., .0083 sec., half sine wave, Full load JEDEC method	←----- 40 -----→					Amperes
Non-rep., .001 sec., half sine wave, Full load @ +150°C, T <sub>J</sub>	←----- 85 -----→					Amperes
I <sup>2</sup> t (for fusing), RMS						
.001 to .01 seconds	←----- 3.5 -----→					Amp <sup>2</sup> secs.
Junction Temperature Range						
Operating, T <sub>J</sub>	←----- -65°C to +150°C -----→					
Storage, T <sub>STG</sub>	←----- -65°C to +175°C -----→					

Mounting: Any position. Lead temperature 290°C max. to 1/8" from body for 5 seconds max. during mounting.

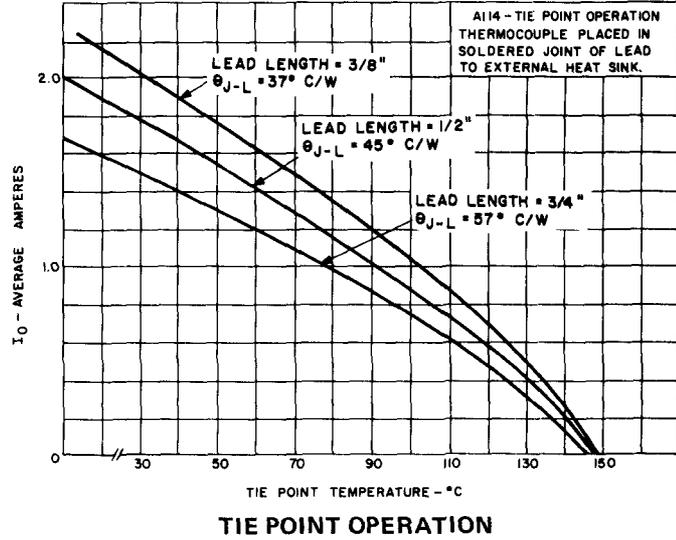
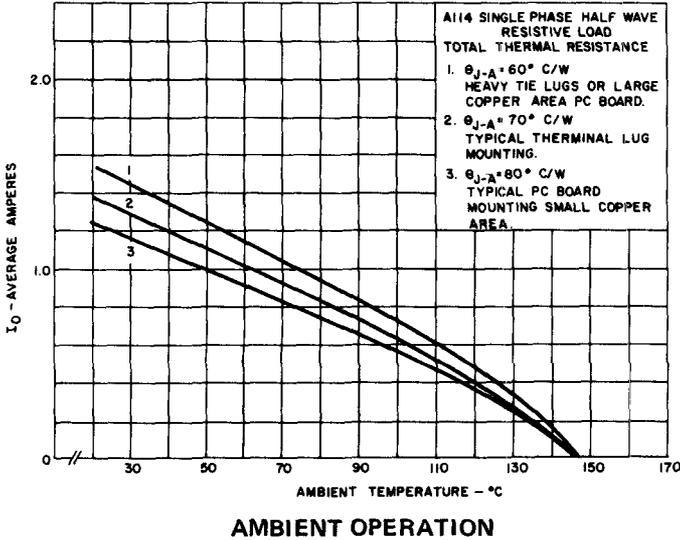
electrical characteristics: (25°C unless otherwise specified)

Maximum Forward Voltage Drop, V <sub>FM</sub>						
I <sub>FM</sub> = 1.0A, T <sub>A</sub> = +25°C	←----- 1.1 -----→					Volts
Maximum Reverse Current, I <sub>RM</sub> @ rated V <sub>RM</sub>						
T <sub>J</sub> = +25°C	5	5	5	5	5	Microamps.
T <sub>J</sub> = +150°C	300	300	300	200	200	Microamps.
Typical I <sub>RM</sub> @ 25°C	1	1	1	1	1	Microamps.
Typical Reverse Recovery Time, t <sub>rr</sub>	←----- 140 -----→					Nanosecs.
Maximum Reverse Recovery Time, t <sub>rr</sub>	←----- 200 -----→					Nanosecs.

Recovery circuit per MIL-S-19500/286C.

A114B
A114C
A114D
A114E
A114M

**CIRCUIT DESIGN INFORMATION**  
**MAXIMUM ALLOWABLE DC OUTPUT CURRENT RATINGS**  
**SINGLE PHASE, RESISTIVE AND INDUCTIVE LOADS**



**CAPACITIVE LOADS**

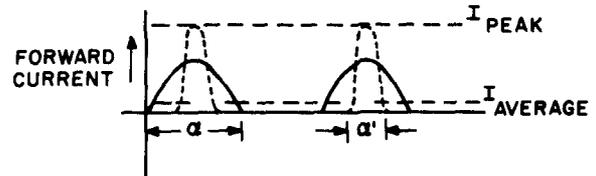
**Current Derating (capacitive load)**

Average forward current as specified under maximum ratings, page 1, and derating curves for high temperature operation, above, must be corrected for applications with capacitive loads. As the current conduction angle,  $\alpha'$ , is decreased, the peak current required to maintain the same average current increases, i.e., the peak-to-average current ratio increases from 3.14. Figure 3 gives the derating required based on this increase in peak to average current ratio for sine wave operation. For more complete information consult Application Note 200.30.

- METHOD:**
- Determine conduction angle  $\alpha'$  in degrees for particular circuit as designed.
  - Enter Figure 3 for the particular conduction angle and read corresponding percent of forward current per cell.
  - Multiply this value times average forward current for resistive load from figures 1 and 2 as given for the actual ambient or tie point temperature required.

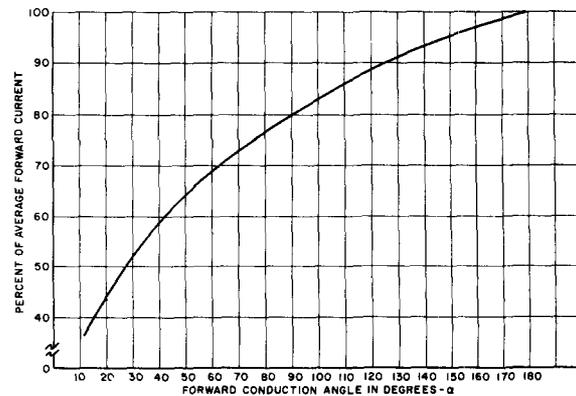
*See Typical Examples Below*

TYPICAL EXAMPLES (25°C Ambient Temperature)					
	Example No. 1	Example No. 2	Example No. 3	Example No. 4	Units
Conduction Angle ( $\alpha$ )	170	110	130	70	Degrees
Rated Average Current (Resistive Load)	1	1	1	1	Amp.
% of Average Current	0.98	0.86	0.92	0.73	%
Rated Average Current (Capacitive Load)	0.98	0.86	0.92	0.73	Amps.



- $\alpha = \text{CONDUCTION ANGLE (180}^\circ\text{)}$
- $\alpha' = \text{SHORTENED CONDUCTION ANGLE}$

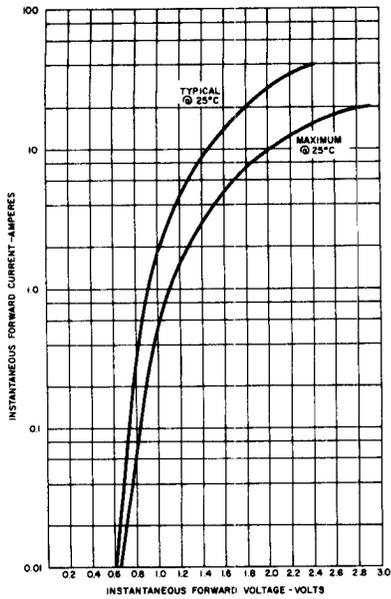
**OSCILLOSCOPE PRESENTATION**



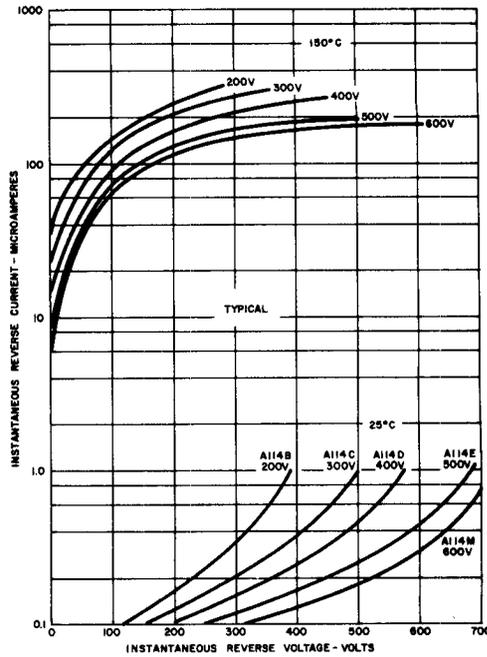
**DERATING FOR SHORTENED CONDUCTION ANGLE**

A114B
A114C
A114D
A114E
A114M

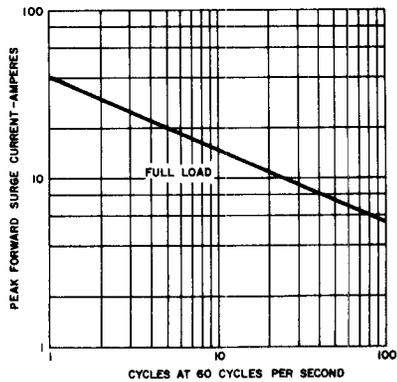
**TYPICAL CHARACTERISTICS**



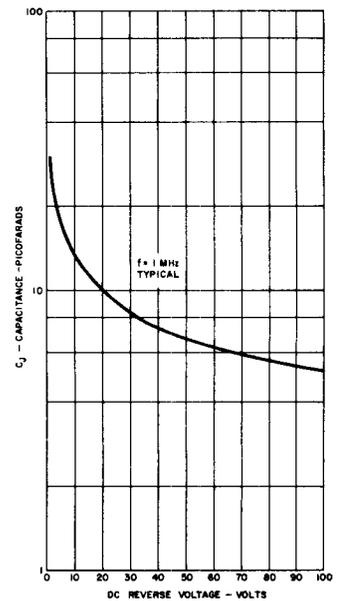
**FORWARD CHARACTERISTICS**



**REVERSE CHARACTERISTICS**

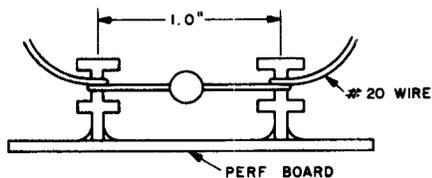


**MAXIMUM NON-REPETITIVE MULTICYCLE FORWARD SURGE CURRENT**

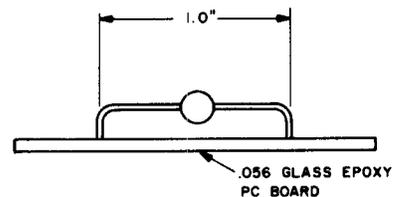


**JUNCTION CAPACITANCE**

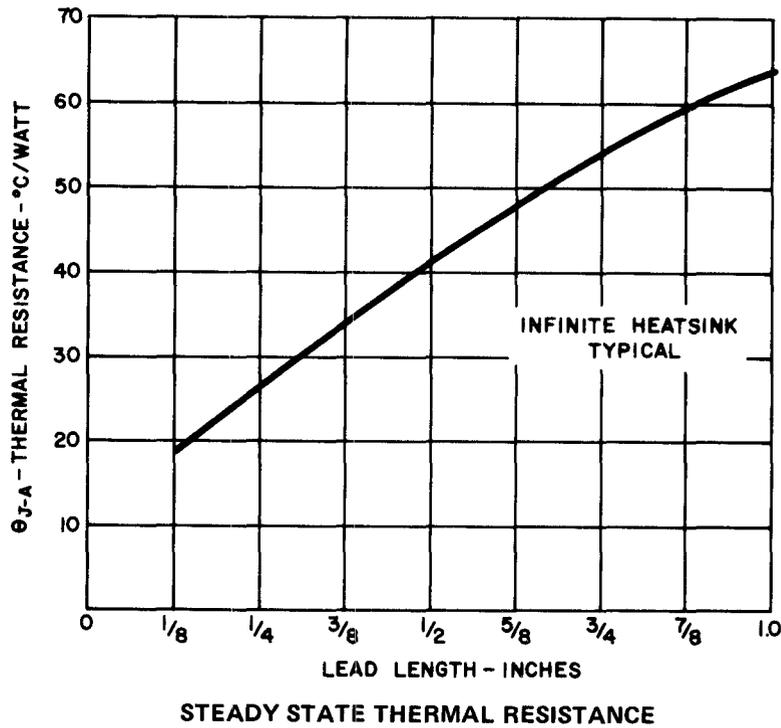
**TYPICAL TIE LUG MOUNTS**



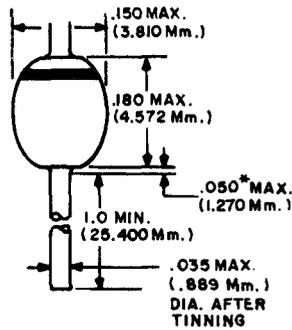
**TYPICAL PC BOARD MOUNTING**



A114B
A114C
A114D
A114E
A114M



Marking band to appear on cathode end.



ALL DIMENSIONS ARE IN INCHES AND (METRIC)  
 \*WELD AND SOLDER FLASH NOT CONTROLLED IN THIS AREA

OUTLINE DRAWING