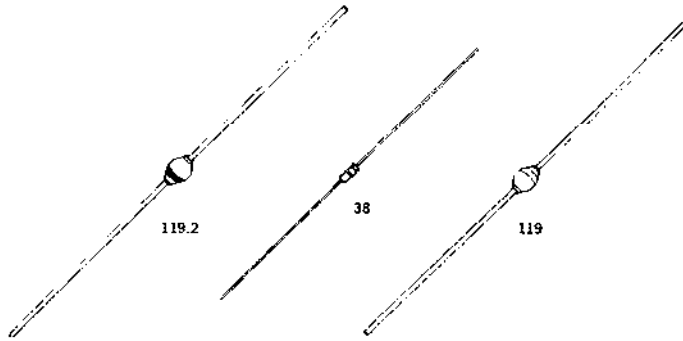


RECTIFIERS

THE INDUSTRY'S BROADEST LINE OF POWER RECTIFIERS—.25 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
SPECIFICATIONS									
$I_{FM(AV)}$	(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 †	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 ² sec)	—	4	4	—	3.5	25	25	20
T_J	Operating junction temperature range ($^{\circ}C$)	-65 to 150	-65 to 175	-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 $I_{FM(AV)}$ (1 phase operation)	1.1	1.0	1.2 @ +55 $^{\circ}C$	1.1	1.1	1.0	1.0	1.0
t_r	Max. reverse recovery time (μ sec)	0.3	6	5	—	0.2	5	5	0.2
PACKAGE OUTLINE NO.		38	119	119	119	119	119.2	119.2	119.2

NOTE:
 † 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

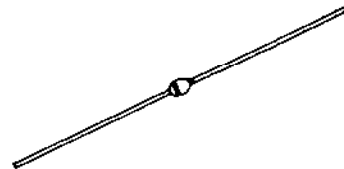
Passivated Rectifier

TRANSIENT VOLTAGE PROTECTED
2.5 Amps 200-1000 Volts

A14 SERIES
1N5059
1N5060
1N5061
1N5062
A14P

THE GENERAL ELECTRIC A14 IS A 2.5 AMPERE RATED, AXIAL-LEADED GENERAL PURPOSE RECTIFIER. DUAL HEATSINK CONSTRUCTION PROVIDES RIGID MECHANICAL SUPPORT FOR THE PELLET AND EXCELLENT THERMAL CHARACTERISTICS. PASSIVATION AND PROTECTION OF THE SILICON PELLETS PN JUNCTION ARE PROVIDED BY SOLID GLASS; NO ORGANIC MATERIALS ARE PRESENT WITHIN THE HERMETICALLY SEALED PACKAGE.

The A14 is "Transient-Voltage Protected." This device will dissipate up to 1000 watts in the reverse direction without damage. Voltage Transients generated by household or industrial power lines are dissipated.



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

	1N5059 (A14B)	1N5060 (A14D)	1N5061 (A14M)	1N5062 (A14N)	A14P	
*Reverse Voltage (−65°C to +175°C, T _J) (−65°C to +165°C for 1N5062 and A14P)						
Working Peak, V _{RWM}	200	400	600	800	1000	Volts
DC, V _R	200	400	600	800	1000	Volts
*Average Forward Current, I _O	←—————→					Amp
*100°C Ambient (90°C for 1N5062 and A14P)	←—————→					Amp
25°C Ambient (See Rating Curves)	←—————→					Amp
*Peak Surge Forward Current, I _{FSM}	←—————→					Amps
Non-repetitive, .0083 sec., half sine wave,	←—————→					Amps
Full Load JEDEC Method	←—————→					Amps
No Load (25°C Case)	←—————→					Amps
Peak Surge Forward Current, I _{FSM}	←—————→					Amps
Non-repetitive, .001 sec., half sine wave,	←—————→					Amps
Full Load	←—————→					Amps
No Load (25°C Case)	←—————→					Amps
*Junction Operating and Storage	← -65 to +175 —————→ -65 to +165 →					°C
Temperature Range, T _J & T _{STG}	←—————→					Amps ² sec.
I ² t, RMS (for fusing), .001 to .01 sec.	←—————→					Volts
Maximum Avalanche Voltage	←—————→					Volts
Peak Non-repetitive Reverse Power Rating, P _{RRM}	←—————→					Watts
20 μsec., half sine wave, at Max. T _J	←—————→					Watts
*100 μsec., JEDEC	←—————→					Watts

*Mounting: Any position. Lead Temperature 290°C maximum to 1/8 inch from body for 5 seconds maximum during mounting.

electrical characteristics: (25°C unless otherwise specified)

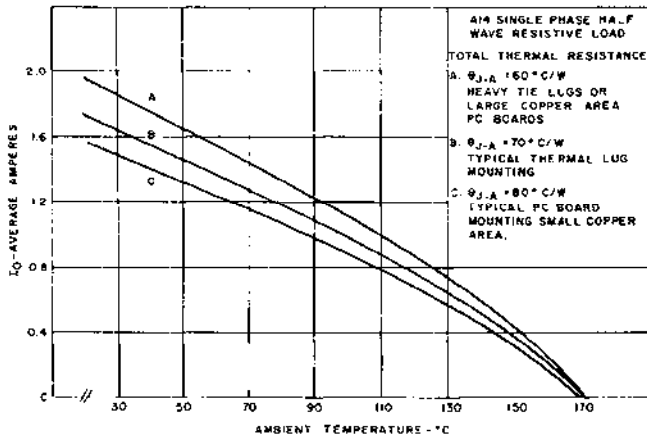
*Maximum Forward Voltage Drop, V _F , 1A, T _J = 75°C	←—————→					Volts
Maximum Reverse Current, I _R , at Rated V _{RRM} :	←—————→					μA
T _J = 25°C	←—————→					μA
*T _J = 165°C	←—————→					μA
*T _J = 175°C	300	300	200	200	—	μA
Typical Reverse Current, I _R , at Rated V _{RRM}	←—————→					μA
Typical Reverse Current, I _U	←—————→					μA
T _J = 25°C	0.2	0.2	0.3	0.5	0.5	μA
T _J = 100°C	20	20	20	30	30	μA
Typical Reverse Recovery Time, T _{RR}	←—————→					μsec.
Maximum Reverse Recovery Time, T _{RR}	←—————→					μsec.

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

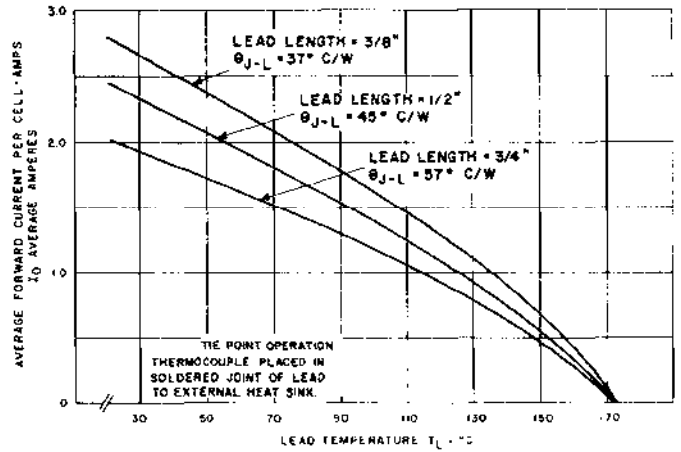
*JEDEC Registered data.

1N5059
1N5060
1N5061
1N5062
A14P

MAXIMUM ALLOWABLE DC OUTPUT CURRENT RATINGS
SINGLE PHASE
600 VOLTS & BELOW

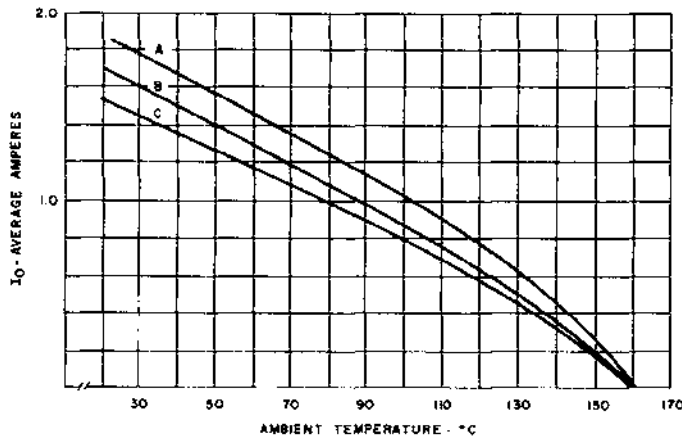


AMBIENT OPERATION

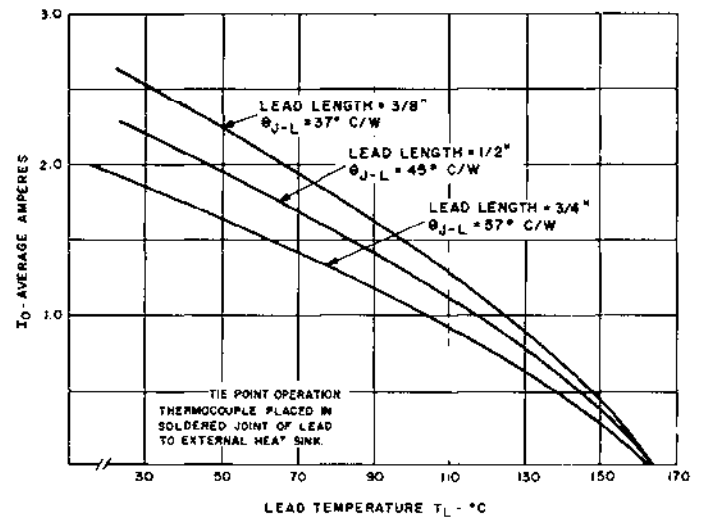


TIE POINT OPERATION

RESISTIVE OR INDUCTIVE LOAD
800 AND 1000 VOLTS

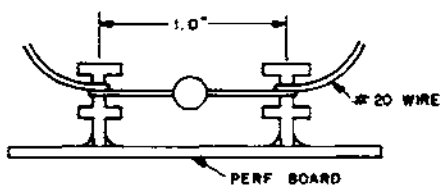


AMBIENT OPERATION

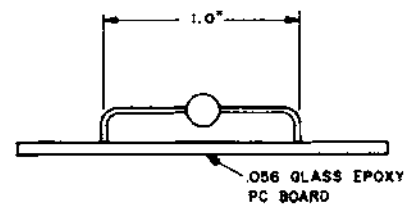


TIE POINT OPERATION

TYPICAL TIE LUG MOUNTS

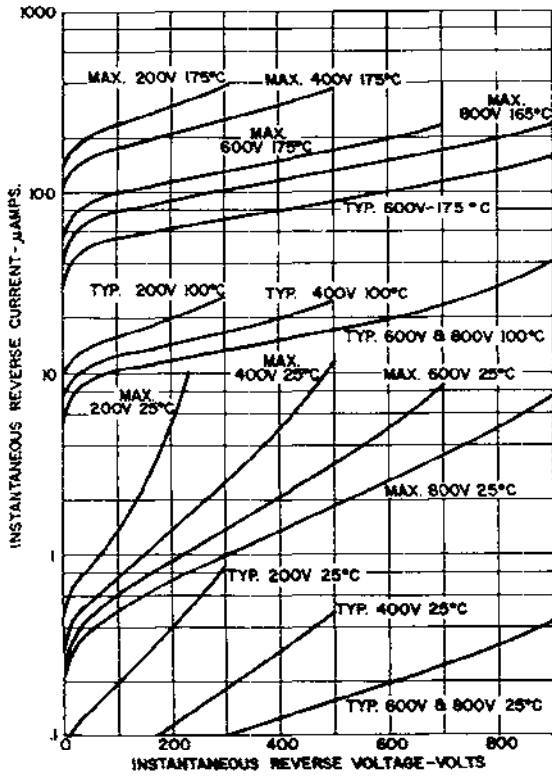


TYPICAL PC BOARD MOUNTING

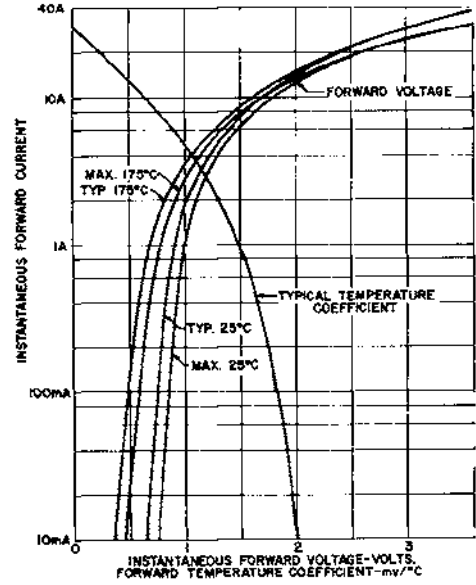


1N5059
1N5060
1N5061
1N5062
A14P

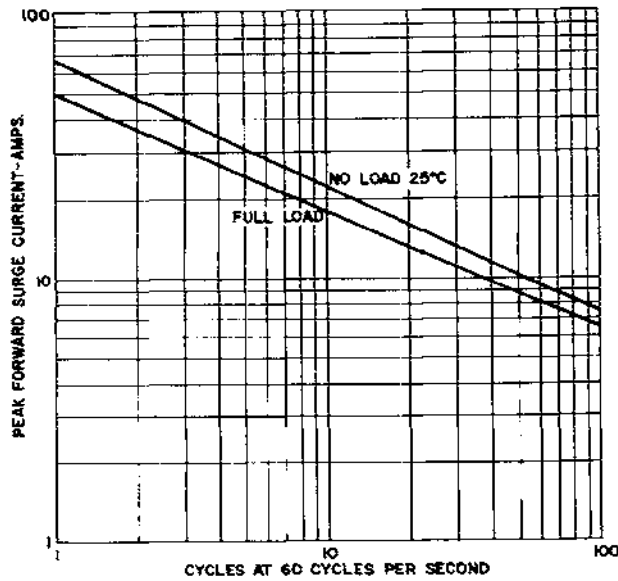
TYPICAL CHARACTERISTICS



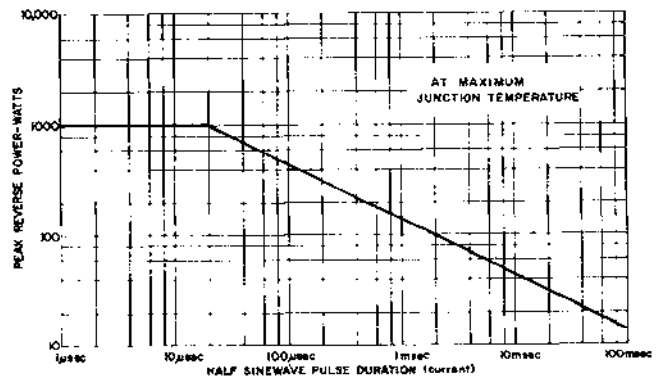
REVERSE CHARACTERISTICS AT SELECTED JUNCTION TEMPERATURES



FORWARD CHARACTERISTICS



MAXIMUM NON-REPETITIVE MULTICYCLE FORWARD SURGE CURRENT



MAXIMUM NON-REPETITIVE AVALANCHE SURGE POWER

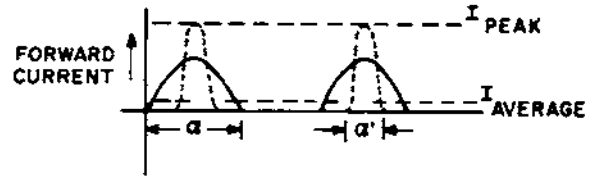
CAPACITIVE LOADS

1N5059
1N5060
1N5061
1N5062
A14P

Current Derating (capacitive load)

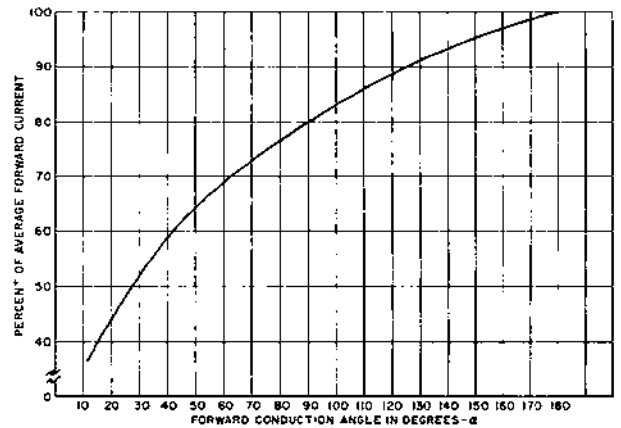
Average forward current as specified under MAXIMUM RATINGS page 1 and derating curves for high temperature operation page 2, must be corrected for applications with capacitive loads. As the current conduction angle, α' , is decreased, the peak current required to maintain the same average current increases, i.e., the peak-to-average current ratio increases from 3.14. Figure 9 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 200.80.

- METHOD:**
1. Determine conduction angle α' in degrees for particular circuit as designed.
 2. Enter Figure 9 for the particular conduction angle and read corresponding percent of forward current per cell.
 3. Multiply this value times average forward current for resistive load from figures on page 2 as given for the actual ambient or tiepoint temperature required.



α = CONDUCTION ANGLE (180°)
 α' = SHORTENED CONDUCTION ANGLE

OSCILLOSCOPE PRESENTATION



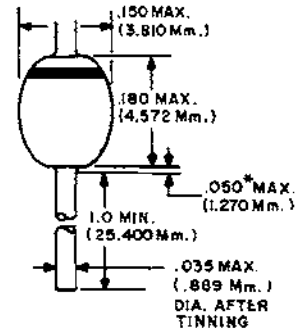
9. DERATING FOR SHORTENED CONDUCTION ANGLE

TYPICAL EXAMPLES (25°C Ambient Temperature)					
	Example No. 1	Example No. 2	Example No. 3	Example No. 4	Units
Input Voltage	100	100	300	300	Volts
D.C. (Average) Output Voltage	34	75	180	270	Volts
Surge Resistor	1	1	3.5	3.5	Ohms
Load Current	0.5	0.5	0.5	0.5	Amps.
Input Filter Capacitance	30	100	30	100	μF.
Conduction Angle	170	70	90	50	Degrees
Rated Average Current (Resistive Load)	1	1	1	1	Amp.
Rated Average Current (Capacitive Load)	0.98	0.73	0.80	0.65	Amp.

INTERNAL CONSTRUCTION

1. Dual heatsink design for maximum heat dissipation under both surge and continuous duty. No fragile "whiskers" or S leads with their potential trouble spots.
2. Glass Package. No internal cavity to act as potential source of moisture or contamination on junction. Temperature coefficient of the glass is matched with the internal parts.
3. Diffused silicon junction passivated surface.

Marking band to appear on cathode end.



OUTLINE DRAWING

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

TYPICAL APPLICATIONS

- | | |
|--|--|
| <ul style="list-style-type: none"> ● FREE-WHEELING RECTIFIERS ● TIME DELAY CIRCUITS ● POWER LOGIC CIRCUITS ● ARC SUPPRESSION ● BATTERY CHARGERS ● TV DAMPER DIODES | <ul style="list-style-type: none"> ● TV AND RADIO POWER SUPPLIES ● COMMUNICATION EQUIPMENT ● S.C.R. TRIGGER CIRCUITS ● SMALL PORTABLE APPLIANCES ● GENERAL PURPOSE POWER SUPPLIES ● LOW LEVEL LIMITERS |
|--|--|