

7294621 POWEREX INC

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T-01-23

# Silicon RECTIFIER

**A540**

**2400 Volts 1000 Amps Avg.**

The A540 Series of high power rectifier diodes feature the newly developed, multi-diffusion technology in a new General Electric pressure-mounted package.

**FEATURES:**

- High Current, High Voltage
- Pressure Contacts
- Glazed Ceramic Package with 1" Creepage Path
- Reversibility (eliminates need for special reverse polarity units)
- Hermetic Seal
- Available in Factory Assembled Heat Exchangers or Ready-to-Mount



**IMPORTANT:** Mounting instructions on the last page of the C501 specification must be followed.

**MAXIMUM ALLOWABLE RATINGS**

TYPE	REPETITIVE PEAK REVERSE VOLTAGE, $V_{RRM}$ $T_J = -40^{\circ}\text{C to } +185^{\circ}\text{C}$	NON-REPETITIVE REVERSE VOLTAGE, $V_{RSM}$ $T_J = 0^{\circ}\text{C to } +185^{\circ}\text{C}$	$V_{RRM}/V_{RSM}$ $T_J = 185^{\circ}\text{C to } 200^{\circ}\text{C}$
A540LD	2400 Volts	2500 Volts	2000 Volts
A540LC	2300	2400	1950
A540LB	2200	2300	1850
A540LA	2100	2200	1750
A540L	2000	2100	1700

Lower voltages available – consult factory.

Average Forward Current	1000 Amperes, 1 $\Phi$ Average
Peak One-Cycle Surge Current	12,000 Amperes
Minimum $I^2t$ Rating (for times $\geq 1.5$ msec)	285,000 Ampere <sup>2</sup> Seconds
Minimum $I^2t$ Rating (at 8.3 msec)	597,000 Ampere <sup>2</sup> Seconds
Maximum Forward Voltage Drop ( $T_C = 160^{\circ}\text{C}$ Case Temperature, 1000 Amps. Peak)	1.08 Volts
Peak Reverse Leakage Current ( $T_J = 200^{\circ}\text{C}$ , $V = \text{Rated } V_{RRM}$ )	35mA
Maximum Thermal Resistance, $R_{\theta JS}$ (Double-Side Cooling)	0.06 $^{\circ}\text{C/Watt}$
Storage Temperature, $T_{STG}$	-40 $^{\circ}\text{C to } +200^{\circ}\text{C}$
Operating Junction Temperature, $T_J$	-40 $^{\circ}\text{C to } +200^{\circ}\text{C}$
Mounting Force Required	2200 Lbs. $\pm 10\%$ 9.8 KN $\pm 10\%$

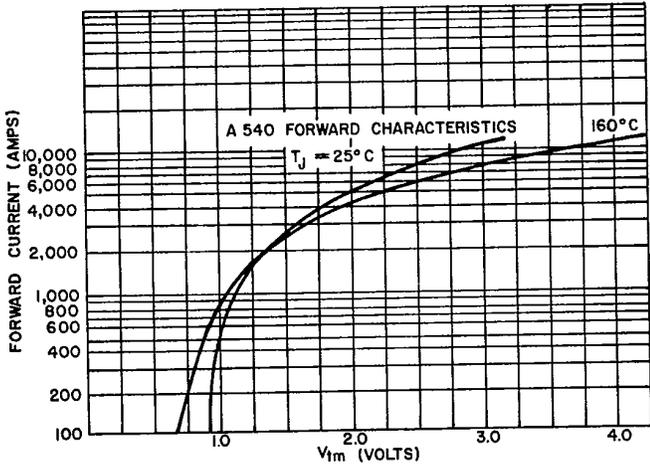
**NOTES:**

- 1 Assumes a heatsink thermal resistance of less than 1.1 $^{\circ}\text{C/watt}$ .
- 2 Non-recurrent voltage and current ratings, as contrasted to repetitive 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 work.

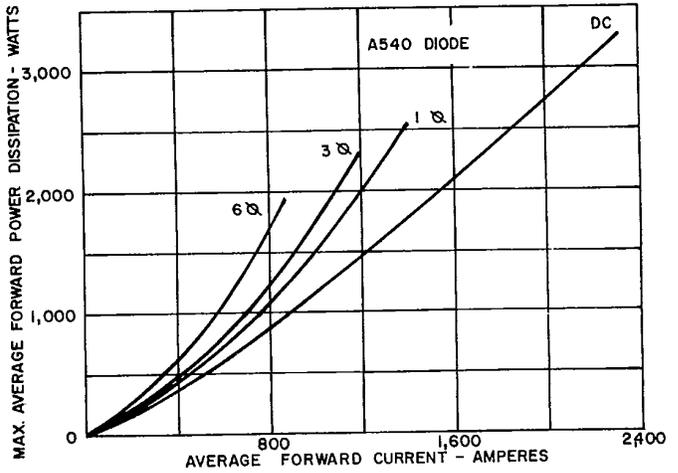
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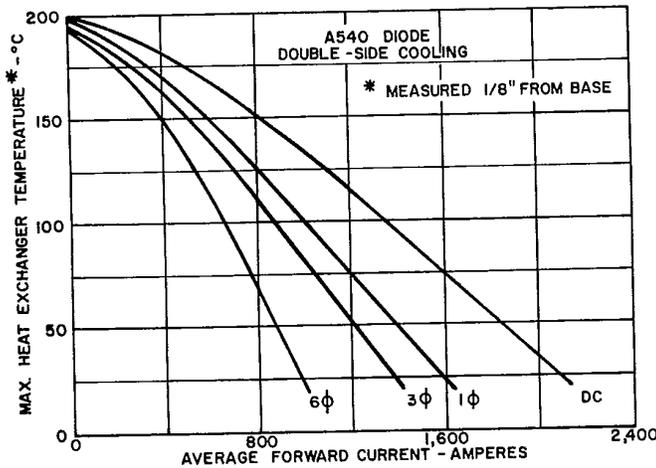
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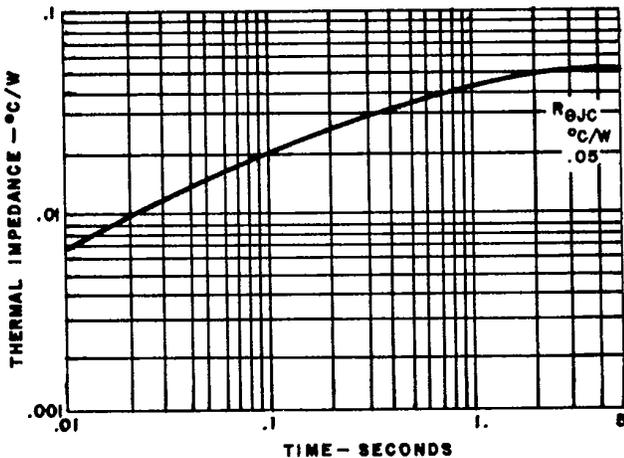
1. MAXIMUM ON-STATE CHARACTERISTICS



2. AVERAGE FORWARD POWER DISSIPATION VERSUS AVERAGE FORWARD CURRENT



3. MAXIMUM HEAT EXCHANGER TEMPERATURE VERSUS AVERAGE FORWARD CURRENT FOR DOUBLE-SIDE COOLING

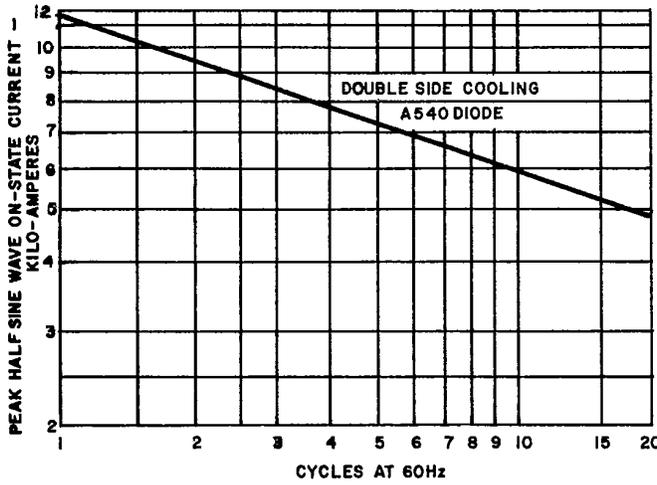


4. TRANSIENT THERMAL IMPEDANCE - JUNCTION-TO-CASE

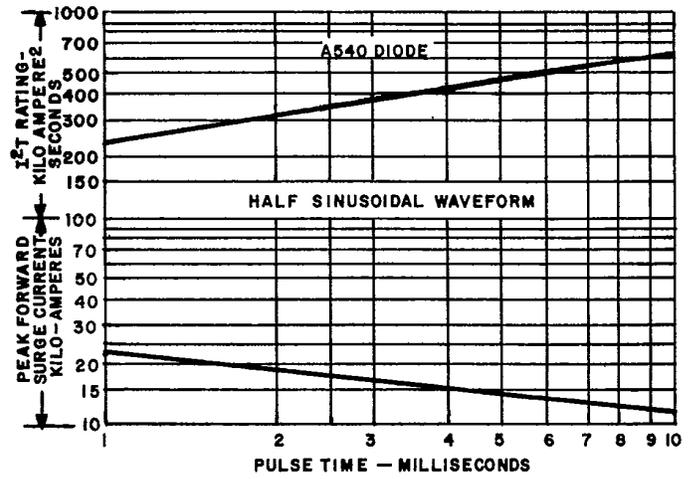
NOTES:

1. Power "D" adds .01°C/W to account for both case to dissipator interfaces, when properly mounted; e.g.,  $R_{\theta JS} = .06^\circ\text{C/W}$ . See Mounting Instructions.
2. DC Thermal Impedance is based on average full cycle junction temperature. Instantaneous junction temperature may be calculated using the following modifications.
  - end of conducting portion of cycle
    - 120° sq. wave add .0065°C/W along entire curve
    - 180° sq. wave add .0047°C/W along entire curve
    - 180° sine wave add .0026°C/W along entire curve
  - end of full cycle
    - any wave, subtract .0026°C/W along entire curve

**A540**

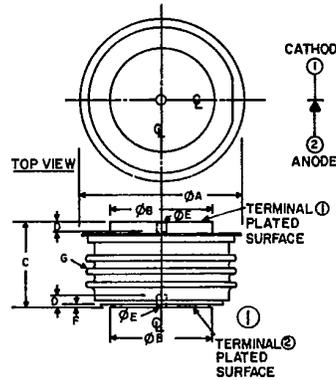


5. MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS



6. SUBCYCLE PEAK SURGE FORWARD CURRENT AND  $I^2t$  RATING FOLLOWING RATED LOAD CONDITIONS

OUTLINE DRAWING



NOTE:  
1. GLAZED CERAMIC INSULATOR  
WITH 1.00 INCH MIN. SURFACE  
CREEPPAGE (25.40mm)

SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN	MAX	MIN	MAX	
ΦA	—	2.000	—	50.80	
ΦB	1.240	1.260	31.50	32.00	
C	1.000	1.060	25.40	26.92	
D	.080	—	2.03	—	
ΦE	0.136	0.146	3.45	3.71	
F	.034	—	0.86	—	
G	—	—	—	—	1

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