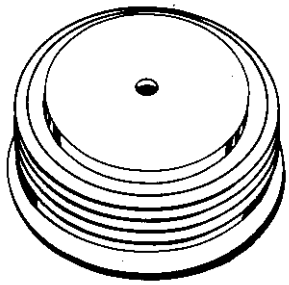
SILICON POWER

A640
40mm Rectifier Diode
2200V / 1500A

The A640 diode is ideal for rectifier circuits and is processed by multi-diffusion, utilizing 40 mm diameter silicon. It is supplied in a disk package ready to mount using commercially available heat dissipators and mechanical clamping hardware.



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

MAXIMUM ALLOWABLE RATINGS

TYPE	REPETITIVE V_{RRM}[1]	
	T_J = 0°C to +185°C	T_J = -40°C to +200°C
A640LB	2200 Volts	1900 Volts
A640LA	2100	1800
A640L	2000	1700
A640PT	1900	1600
A640PN	1800	1500
A640PS	1700	1400
A640PM	1600	1300
A640PE	1500	1200
A640PD	1400	1100
A640PC	1300	1000
A640PB	1200	900
A640PA	1100	800

Average Forward Current . . . . . 1500 Amperes, 1Φ Average
Peak One-Cycle Surge Current . . . . . 16,000 Amperes
Minimum I^2t Rating (at 8.3 msec) . . . . . 1,062,000 Ampere^2 Seconds
Maximum On-State Voltage Drop (at 1000 Amps.) . . . . . 0.935 Volts
Peak Reverse Leakage Current (T_J = 200°C, V = Rated V_{RRM}) 50mA
Maximum Thermal Resistance (Double-Side Cooling) . . . . . 0.040°C/Watt
Storage Temperature, T_{STG} . . . . . -40°C to +185°C
Operating Junction Temperature, T_J . . . . . -40°C to +185°C
Mounting Force Required . . . . . 4000 Lbs. ± 10%
17.8 KN ±10%

NOTES:

[1] Assumes a heatsink dissipation of less than 1.1°C/watt.

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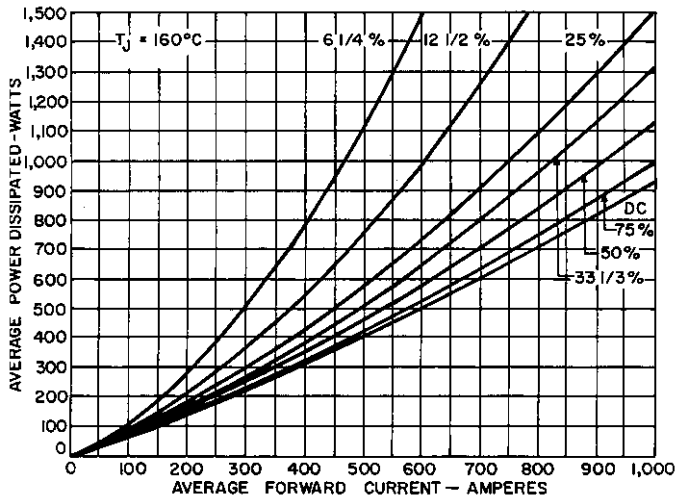
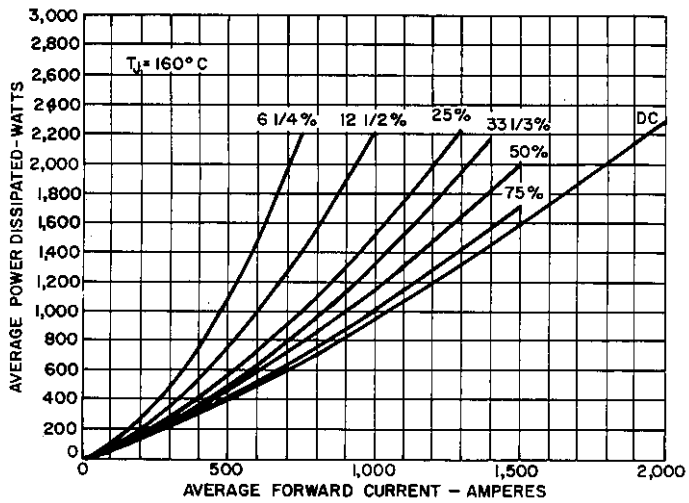
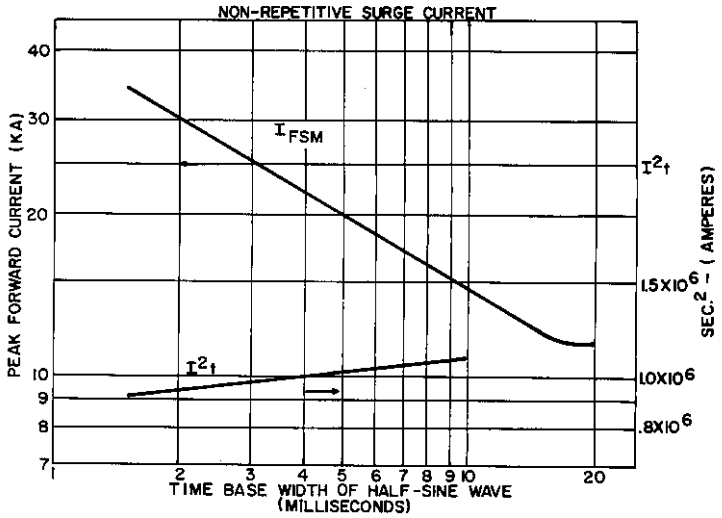


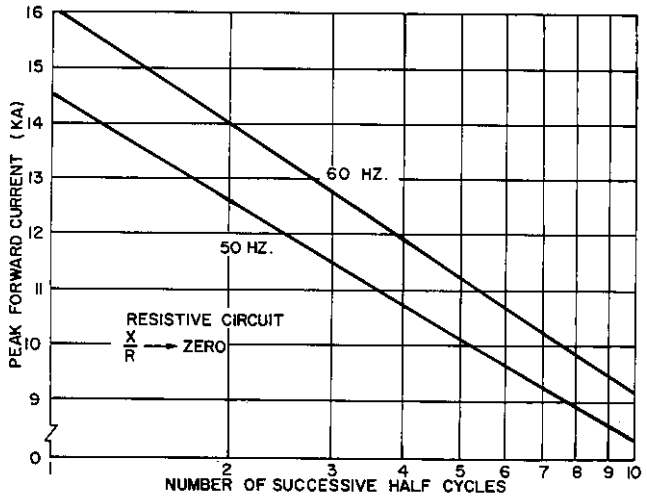
7. POWER DISSIPATION FOR RECTANGULAR CURRENT WAVEFORMS



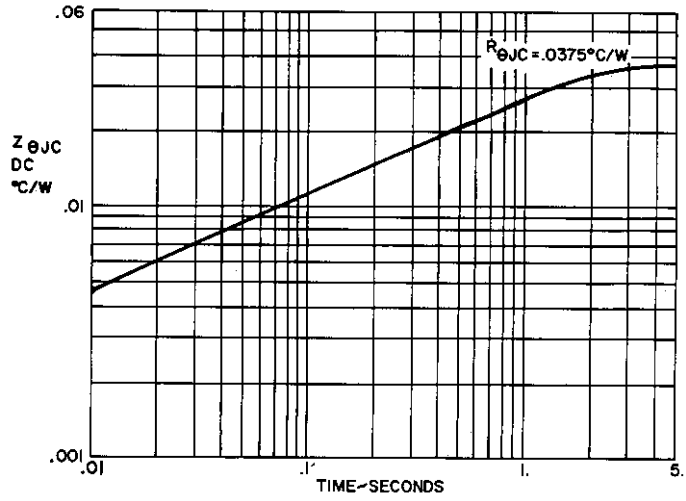
8. EXTENDED POWER DISSIPATION CURVES FOR RECTANGULAR CURRENT WAVEFORMS



9. SUBCYCLE SURGE CURRENT



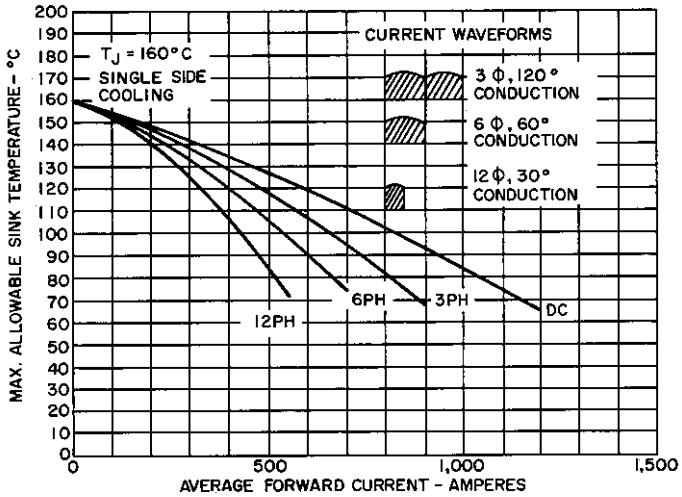
10. MULTICYCLE SURGE CURRENT



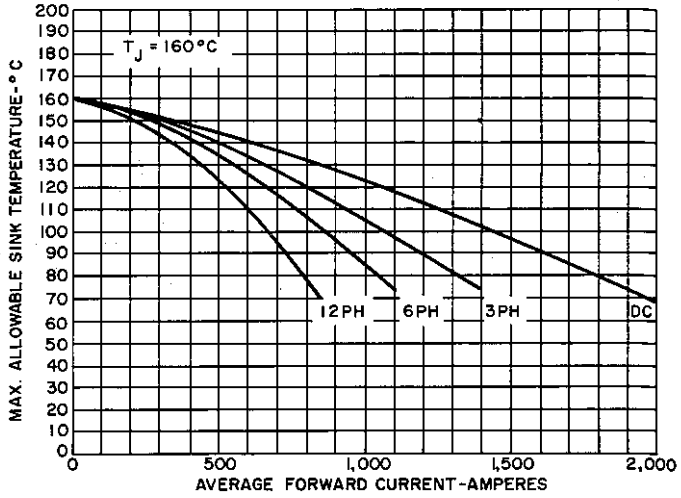
11. TRANSIENT THERMAL IMPEDANCE – JUNCTION-TO-CASE

NOTES:

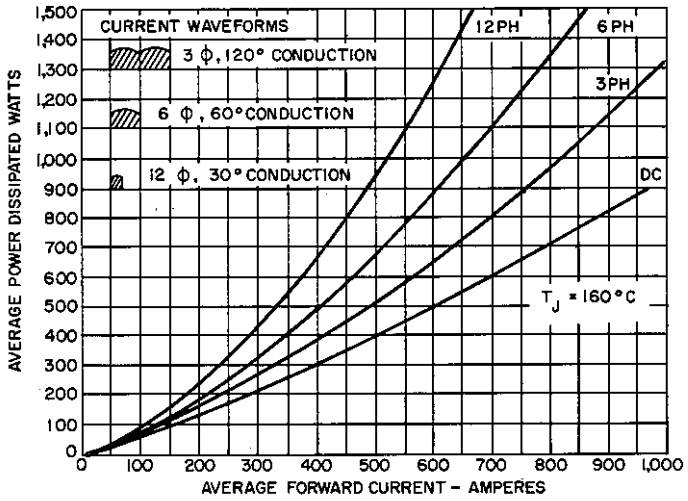
1. Add .0075°C/W to account for both case to dissipator interfaces when properly mounted; e.g., $R\theta_{JS}$ = .045°C/W.
2. DC Thermal Impedance is based on average full cycle junction temperature. Instantaneous junction temperature may be calculated using the following modifications:
   - end of conducting portion of cycle
     – 120° sq. wave add .0044°C/W along entire curve
     – 180° sq. wave add .0032°C/W along entire curve
     – 180° sine wave add .0018°C/W along entire curve
   - end of full cycle
     – any wave, subtract .0018°C/W along entire curve



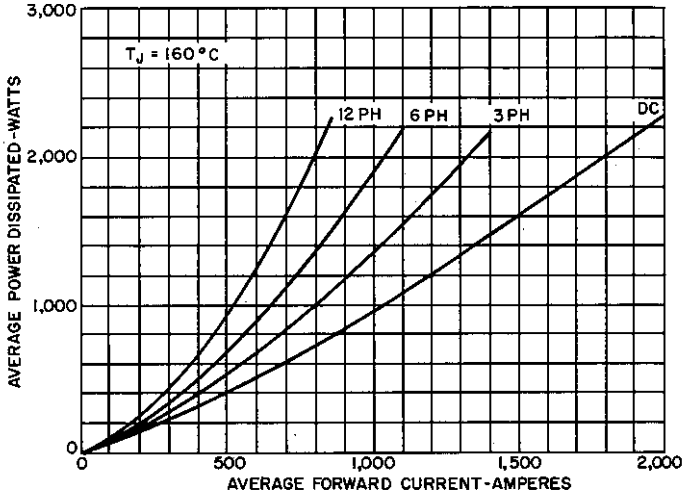
1. MAXIMUM ALLOWABLE HEAT SINK TEMPERATURE FOR SINUSOIDAL COOLING WAVEFORM – SINGLE-SIDE COOLING



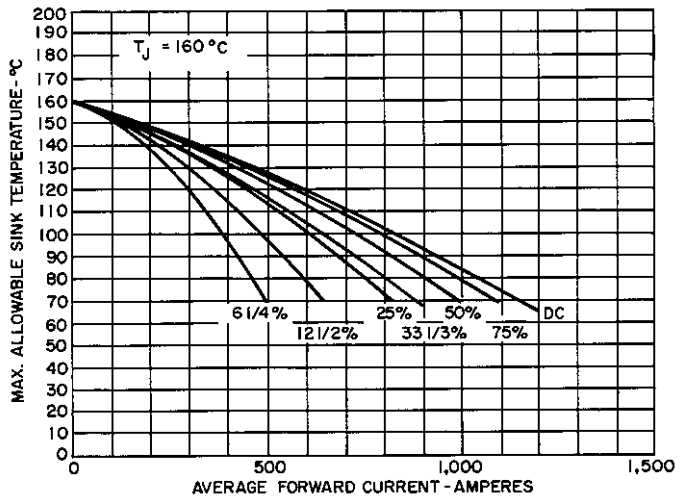
2. MAXIMUM ALLOWABLE HEAT SINK TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM – DOUBLE-SIDE COOLING



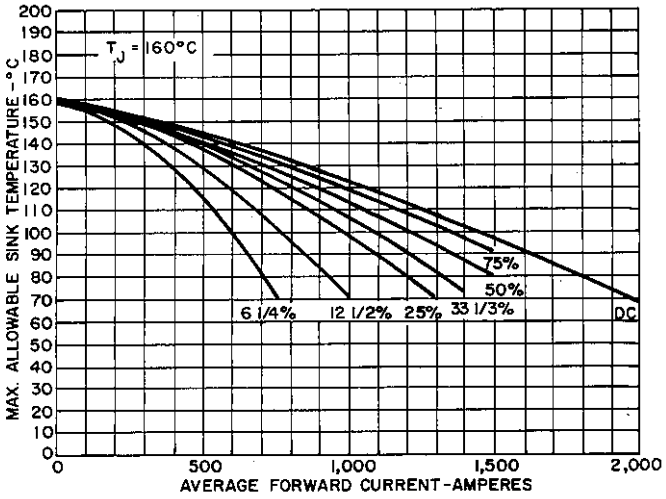
3. AVERAGE POWER DISSIPATION CURVES



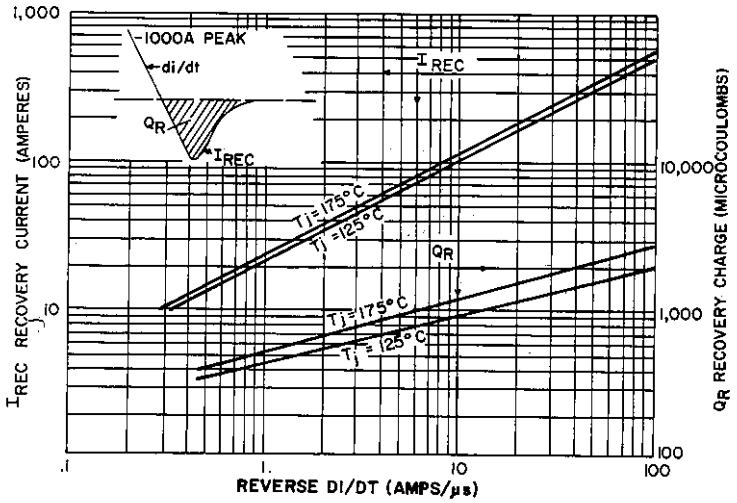
4. EXTENSED SINUSOIDAL POWER DISSIPATION CURVES



5. MAXIMUM ALLOWABLE HEAT SINK TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORMS – SINGLE-SIDE COOLING

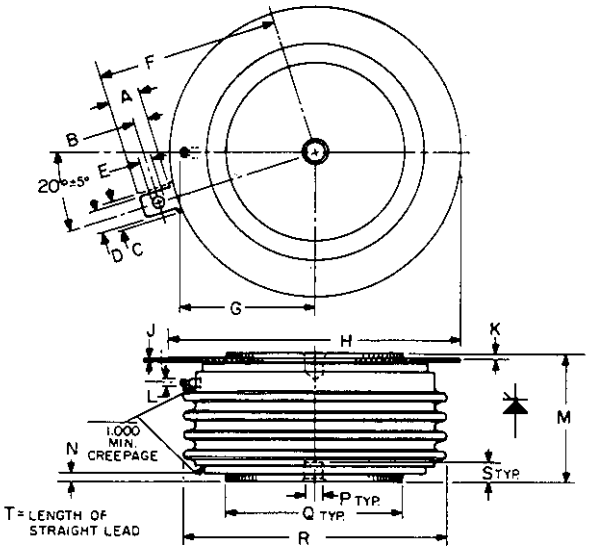


6. MAXIMUM ALLOWABLE HEAT SINK TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORMS – DOUBLE-SIDE COOLING



12. TYPICAL REVERSE RECOVERY CHARACTERISTICS

OUTLINE DRAWING



SYM	DECIMAL INCHES MIN.	MAX.	METRIC M.M. MIN.	MAX.
A	.240	.260	6.096	6.604
B	.110	.130	2.794	3.302
C	.245		6.223	
D	.186	.191	4.724	4.851
E	.060	.075	1.524	1.905
F		1.430		36.32
G		1.065		27.051
H	2.200	2.500	55.88	63.50
J	.011	.019	2.794	3.483
K	.030		.762	
L	.056	.060	1.422	1.524
M	1.00	1.07	25.40	27.18
N	.030	.096	.762	2.438
P	.13	.15	3.30	3.81
Q	1.30	1.35	33.02	34.29
R		2.150		54.61
S	.07	.08	1.78	2.03

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