SILICON POWER

C600
40mm Thyristor
1200V / 900A

The C600 is specifically designed for phase control applications and processed by multidiffusion, untilizing 40mm diameter silicon and a unique pilot gate. It is supplied in a disk package ready to mount using commercially available heat dissipators and mechanical clamping hardware.

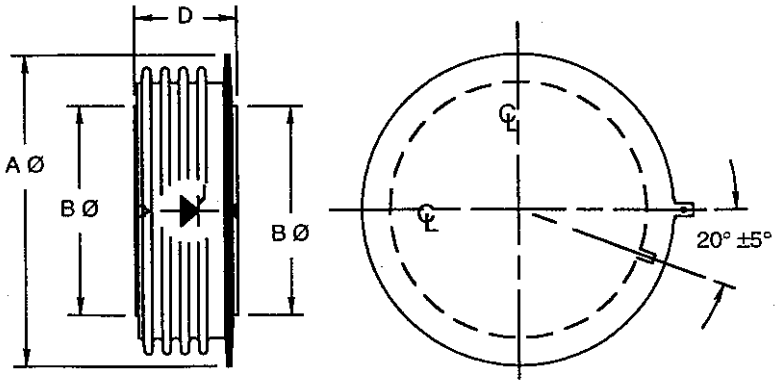
MAXIMUM ALLOWABLE RATINGS

Type	V_{DRM}/V_{RRM} Repetitive T_J = -40°C to + 125°C	V_{DRM}/V_{RSM} Repetitive T_J = 0°C to + 125°C	Transient Peak Reverse Voltage (Non-Recurrent < 5 Millisec.), V_{RSM} T_J = -40°C to + 125°C
C600E	500 Volts	600 Volts	600 Volts
C600M	600	700	700
C600S	700	800	800
C600N	800	900	900
C600T	900	1000	1000
C600P	1000	1100	1100
C600PA	1100	1200	1200
C600PB	1200	1300	1300

Average Forward Current, On-State . . . . . Depends on conduction angle
Peak One-Cycle Surge ON-state Current, I_{TSM} . . . . . 13000 amperes
Maximum Rate of Rise of Anode Current Turn-on Interval
(Switching Rates ≦ 400 Hz.) . . . . . Switch From ≦ 600 V . . . . . 150 A/usec
See Recommended Load Line Fig. 11 Switch From ≦ 1000V . . . . . 125 A/usec

I^2t (for fusing) (at 8.3 milliseconds) . . . . . 700,000 ampere² seconds
Peak Gate Power Dissipation, P_{GM} . . . . . 40 Watts
Average Gate Power Dissipation, $P_{G(AV)}$ . . . . . 5 Watts
Peak Reverse Gate Voltage, V_{GRM} . . . . . 5 Volts
Storage and Operating Temperature, T_{STG} & T_J . . . . . Refer Above
Mounting Force Required . . . . . 4000 lbs. ± 10%

A Ø = 2.30 in (58.0 mm)
B Ø = 1.35 in (34.3 mm)
D = 1.04 in (26.4 mm)



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CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Peak Reverse and Forward Blocking Current	I_{DRM} and I_{RRM}	——	10	15	mA	T_J=+25°C, V = V_{DRM} = V_{RRM}
Peak Reverse and ON-state Blocking Current	I_{DRM} and I_{RRM}	—	15	35	mA	T_J = +125°C, V = V_{DRM} = V_{RRM}
Effective Thermal Resistance (DC), $R_{\Theta JS}$ (See Note)	DC	—	—	.041	°C/watt	Junction to Sink Double Side Cooled
	1Ø			.045		
	3Ø	—	—	.048		
	6Ø	—	—	.056		
Critical Exponential Rate of Rise of Forward Blocking Voltage (Higher values may cause device switching)	dv/dt	500	—	—	V/usec	T_J = +125°C, V_{DRM} = .67 Rated Gate open.
Holding Current	I_H	—	100	250	mAdc	T_C = +25°C, Anode supply = 20Vdc. Initial forward current=500 amps.
Latching Current	I_L	—	1.0	—	Adc	T_C = +25°C, Anode voltage=24Vdc. Load resistance 12 ohms max.
Delay Time	t_d	—	1.5	—	usec	Switching from 15 volts, 30 ohms 25 - 125 °C, 0.5 usec Rise Time
Gate Pulse Width Necessary to Trigger		—	—	10	usec	See Figure 11
Gate Trigger Current See Fig #11	I_{GT}	—	—	—	mAdc	T_C = 25°C, V_D = 10 VDC, R_L = 3 Ohms
			80	150		
		5.0	—	—		T_C = +125°C, V_D = .5 x Rated R_L = 1000 Ohms
Gate Trigger Voltage See Fig#11	V_{GT}	—	2.6	4.5	Vdc	T_C = 0°C, to +125°C, V_D = 10 VDC, R_L = 3 Ohms
		0.5	—	—		T_C = 125°C, V_D = .5 x Rated, R_L = 1000 Ohms
Peak On-Voltage	V_{FM}	—	—	1.50	Volts	T_C = + 125°C, I_T = 2200 Amp Peak Duty Cycle ≦ 0.01%
Circuit Commutated Turn-Off Time	t_q	—	300	350	usec	T_C = +125°C, I_T = 450A, V_R = 75 volts min., V_{DRM} (reapplied) = ½ Rated, Rate of rise of reapplied forward blocking voltage = .25V/usec linear, Gate bias = open during turn-off interval, Duty cycle ≦ 0.01%

NOTE: T_C = Sink Temperature (measured ⅛ inch from base of SCR.)

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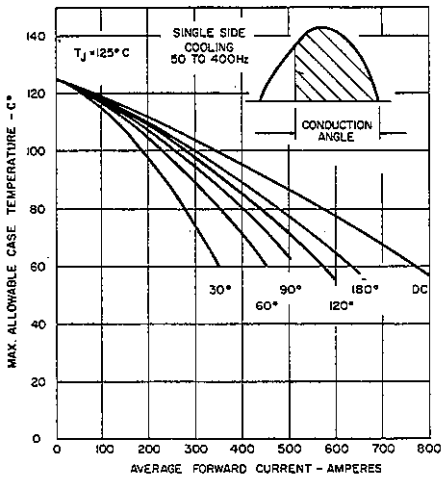
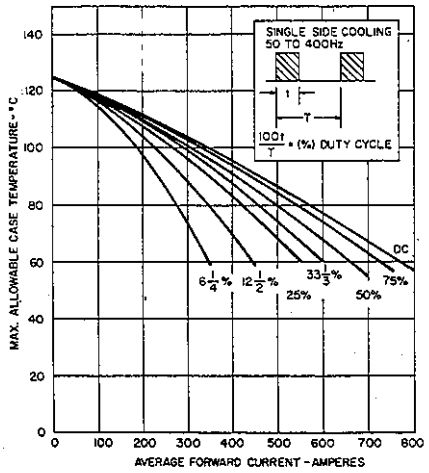
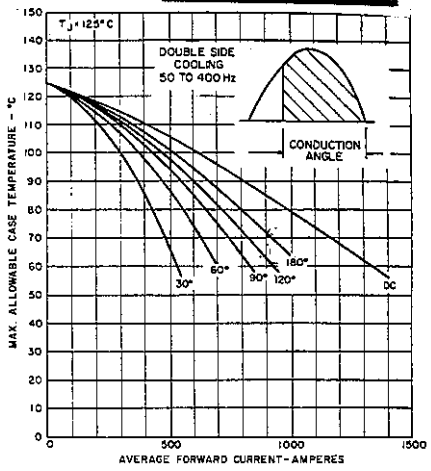


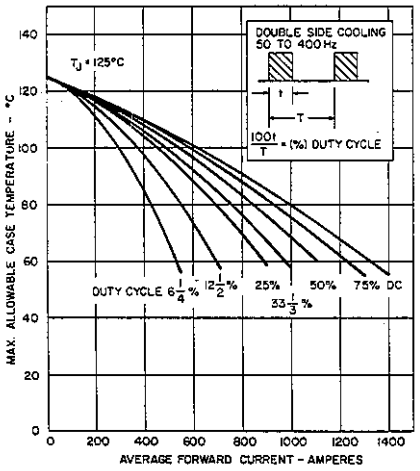
1. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM —SINGLE-SIDE COOLED



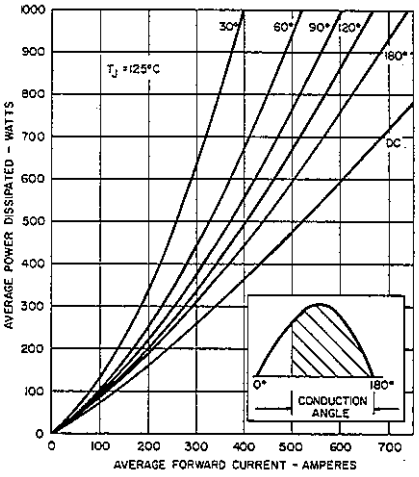
2. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORM —SINGLE-SIDE COOLED



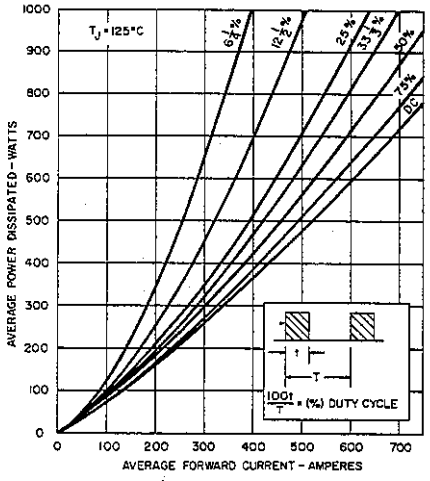
3. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM —DOUBLE-SIDE COOLED



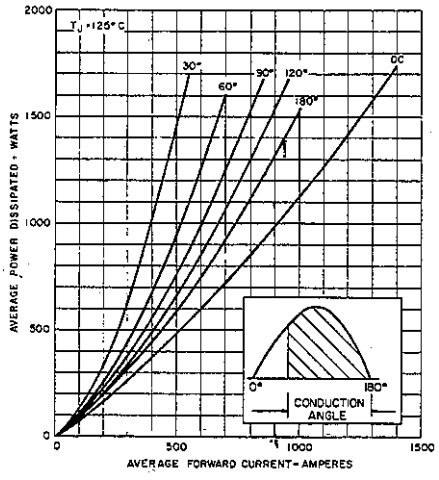
4. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORM —DOUBLE-SIDE COOLED



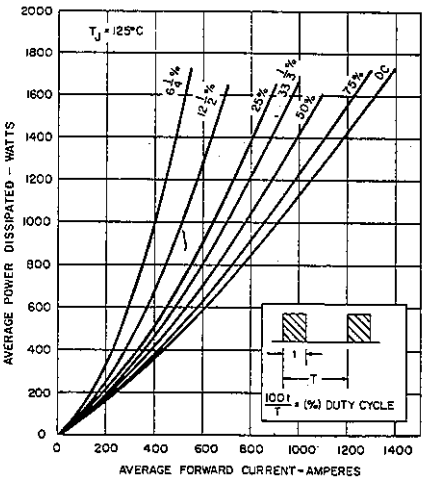
5. AVERAGE FORWARD POWER DISSIPATION FOR SINUSOIDAL CURRENT WAVEFORM



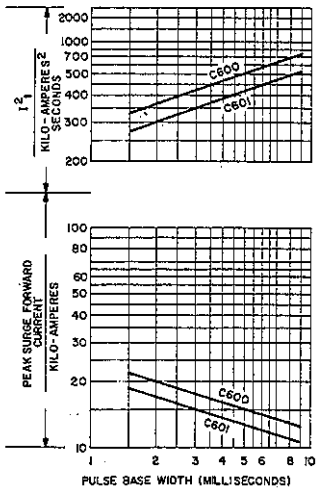
6. AVERAGE FORWARD POWER DISSIPATION FOR RECTANGULAR CURRENT WAVEFORM



7. EXTENDED FORWARD POWER DISSIPATION FOR SINUSOIDAL CURRENT WAVEFORM



8. EXTENDED FORWARD POWER DISSIPATION FOR RECTANGULAR CURRENT WAVEFORM



9. SUB-CYCLE SURGE AND I^2t RATING FOLLOWING RATED LOAD CONDITIONS

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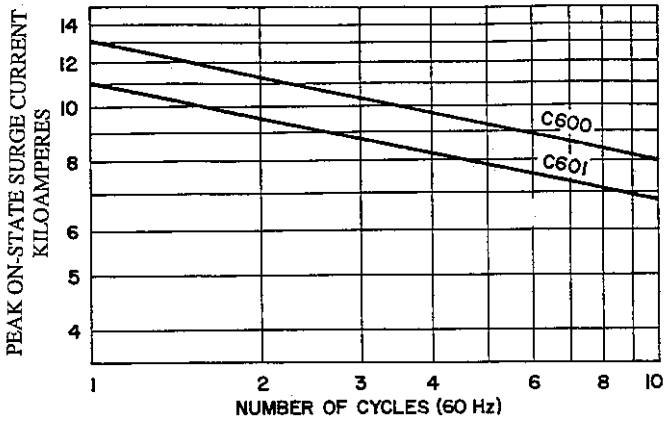
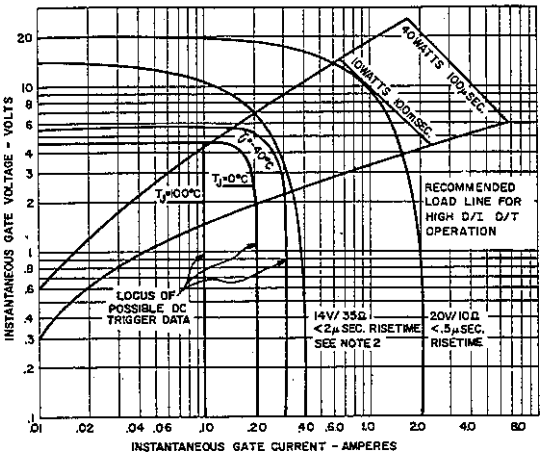
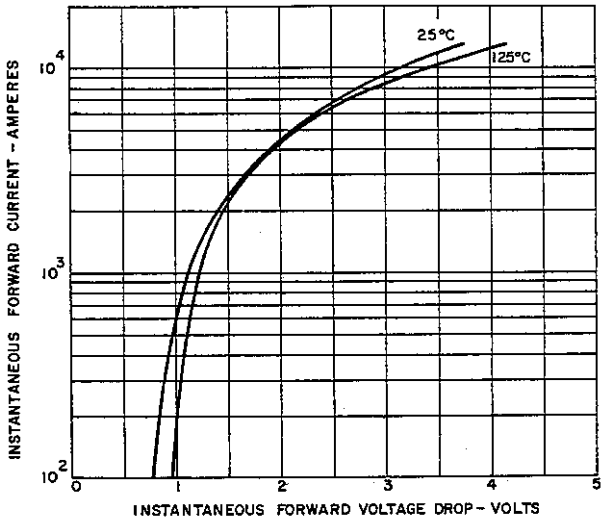


10. MAXIMUM ALLOWABLE SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS

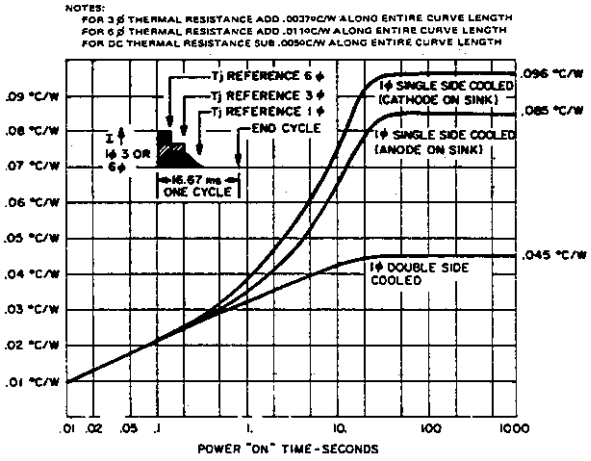


NOTES:
(1) NON TRIGGER DATA ±5mA, ±.2V AT 125°C, 1/2 PFV
(2) 14V/35Ω LOAD LINE NOT RECOMMENDED FOR OPERATION BELOW 0°C

11. GATE TRIGGERING CHARACTERISTICS



12. FORWARD CONDUCTION CHARACTERISTIC, ON-STATE



13. **Transient thermal impedance—junction to sink.**

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