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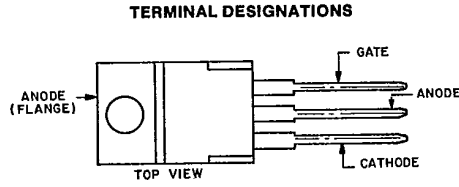
C122 Series

8-A Silicon Controlled Rectifiers

For Power Switching, Power Control

Features:

- High dv/dt capability
- Glass-passivated chip
- Shorted-emitter gate-cathode construction
- Low thermal resistance



JEDEC TO-220AB

The RCA-C122 series types are medium-power silicon controlled rectifiers designed for switching ac and dc currents. These devices can switch from the off-state to the on-state when both the anode and gate voltages are positive. Negative anode voltages make these devices revert to the blocking state regardless of gate-voltage polarity.

The TO-220AB package provides easy package mounting and low thermal resistance, allowing operation at high case temperatures and permitting reduced heat-sink size. These SCR's can be used in lighting and motorspeed controls and power-switching systems.

MAXIMUM RATINGS, Absolute-Maximum Values:

	C122F	C122A	C122B	C122C	C122D	C122E	C122M	
V_{RRM}, V_{DRM}	50	100	200	300	400	500	600	V
$I_{T(RMS)}$ ($T_C = 75^\circ C, \theta = 180^\circ$)	8							A
I_{TSM}								
For one full cycle of applied principal voltage								A
400-Hz	200							A
60-Hz	100							A
50-Hz	85							A
For more than one full cycle of applied principal voltage	See Fig. 3							
di/dt								
$V_D = V_{DRM}$ $I_{GT} = 80 \text{ mA}, t_r = 0.5 \mu s$	100							A/ μs
t^2								
$T_J = -65 \text{ to } 100^\circ C,$ $t = 1 \text{ to } 8.3 \text{ ms}$	40							A ² s
P_{GM} * (for 10 μs max.)	16							W
$P_{G(AV)}$ * (averaging time = 10 ms max.)	0.5							W
T_{sig}	-65 to +150							$^\circ C$
T_C	-65 to +100							$^\circ C$
T_T								
During soldering for 10 s maximum (terminal and case)	250							$^\circ C$

Δ These values do not apply if there is a positive gate signal. Gate must be open or negatively biased.
 * Any values of peak gate current or peak gate voltage which result in equal or lower power are permissible.

Silicon Controlled Rectifiers

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ELECTRICAL CHARACTERISTICS

At Maximum Ratings Unless Otherwise Specified and at Indicated Case Temperature (T_C)

CHARACTERISTIC	LIMITS			UNITS
	FOR ALL TYPES Except as Specified			
	Min.	Typ.	Max.	
I _{DOM} or I _{ROM} V _D = V _{DROM} or V _R = V _{RROM} , T _C = +100°C	-	0.1	0.5	mA
v _T i _T = 16 A, T _C = +25°C For other values of i _T	-	1.45	1.83	V
I _{GT} V _D = 12 V (DC), R _L = 30 Ω T _C = +25°C	-	10	15	mA
V _{GT} V _D = 12 V (DC), R _L = 30 Ω T _C = +25°C	-	1.0	1.5	V
i _{HO} T _C = +25°C	-	20	30	mA
dv/dt V _D = V _{DROM} Exponential voltage rise T _C = +100°C (See Fig. 12)	10	100	-	V/μs
t _{gt} V _D = V _{DROM} , i _T = 4.5 A, i _T = 2 A I _{GT} = 80 mA, 0.1 μs rise time T _C = +25°C (See Fig. 10)	-	1.6	2.5	μs
t _g V _D = V _{DROM} , i _T = 2 A, t _p = 50 μs dv/dt = 200 V/μs, di/dt = -10 A/μs I _{GT} = 200 mA at t _{ON} , T _C = +75°C (See Fig. 13)	-	10	35	μs
R _{θJC}	-	-	1.8	°C/W
R _{θJA}	-	-	75	°C/W

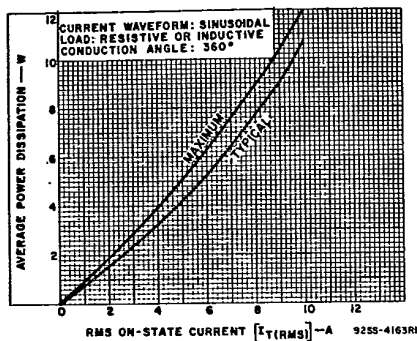


Fig. 1 — Power dissipation vs. on-state current.

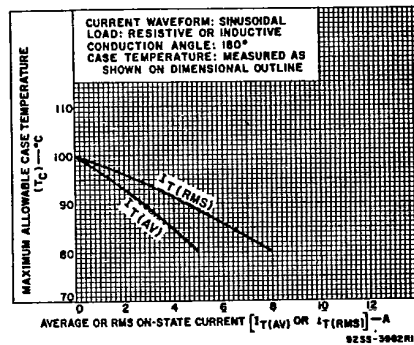


Fig. 2 — Maximum allowable case temperature vs. on-state current.

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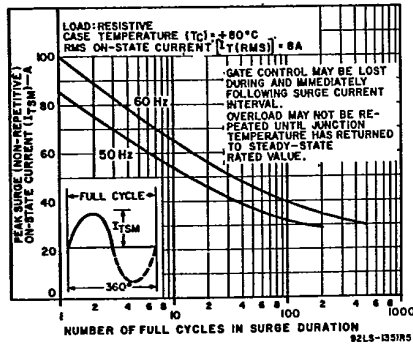


Fig. 3 — Allowable peak surge on-state current vs. surge duration.

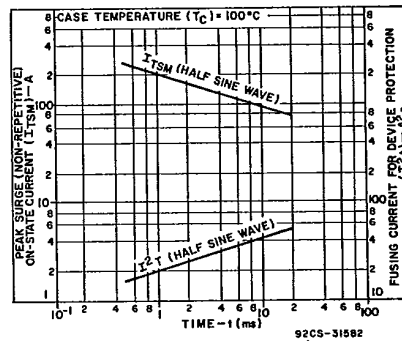


Fig. 4 — Peak surge on-state current and fusing current as a function of time.

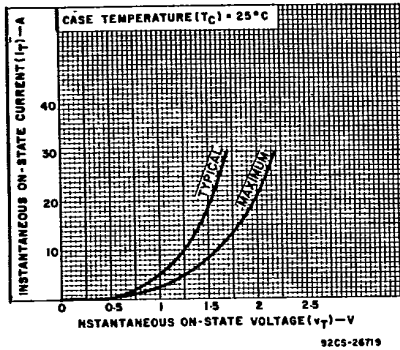


Fig. 5 — Instantaneous on-state current vs. on-state voltage.

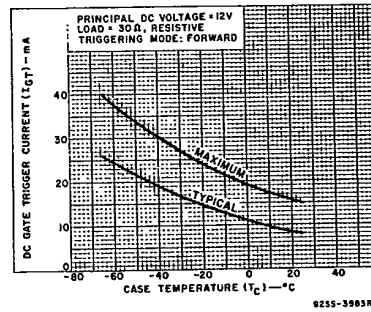


Fig. 6 — DC gate-trigger current vs. case temperature.

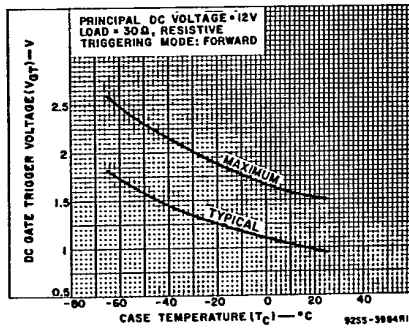


Fig. 7 — DC gate-trigger voltage vs. case temperature.

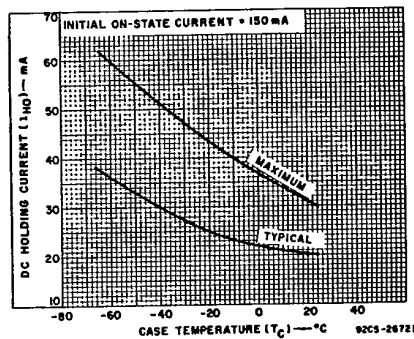


Fig. 8 — Holding current vs. case temperature.

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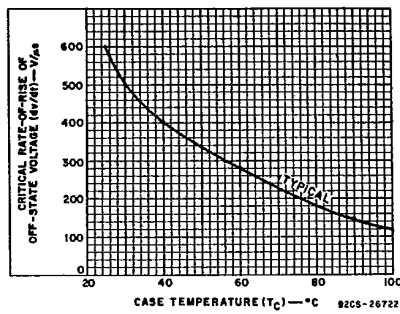


Fig. 9 — Critical rate of rise of off-state voltage vs. case temperature.

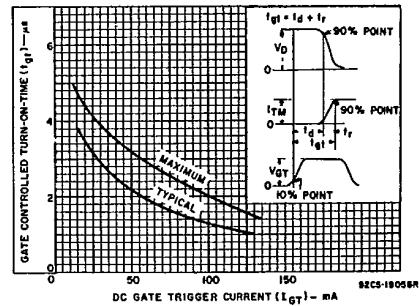


Fig. 10 — Gate-controlled turn-on time vs. gate trigger current.

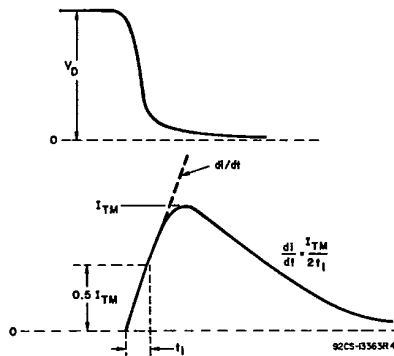


Fig. 11 — Rate of change of on-state current with time (defining dI/dt).

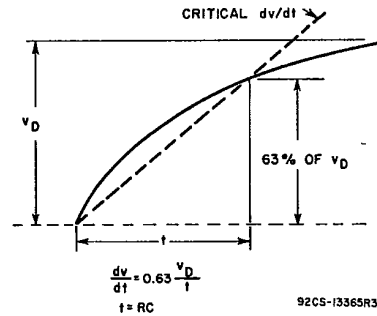


Fig. 12 — Rate of rise of off-state voltage with time (defining critical dV/dt).

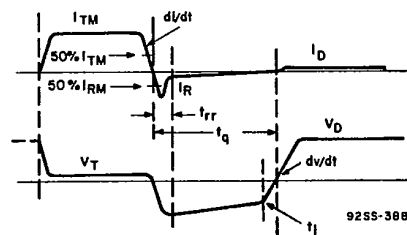


Fig. 13 — Relationship between instantaneous on-state current and voltage, showing reference points for measurement of circuit-commutated turn-off time (t_q).