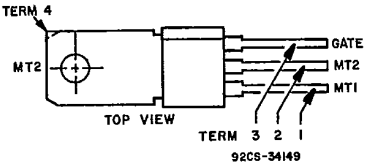
2.5-A Sensitive-Gate Silicon Triacs

For AC Power Switching

Features:

- *800V, 125 Deg. C T_J Operating*
- *High dv/dt and di/dt Capability*
- *Low Switching Losses*
- *High Pulse Current Capability*
- *Low Forward and Reverse Leakage*
- *Sipos Oxide Glass Multilayer Passivation System*
- *Advanced Unisurface Construction*
- *Precise Ion Implanted Diffusion Source*

TERMINAL DESIGNATIONS



JEDEC TO-202AB

The RCA-T2320, T2322, T2323 and T2327, series triacs are gate-controlled full-wave silicon ac switches that are designed to switch from an off-state to an on-state for either polarity of applied voltage with positive or negative gate triggering voltages. The gate sensitivity of these triacs permits the use of economical transistorized or integrated circuit control circuits and enhances their use in low-power phase-control and load-switching applications.

All types in each series utilize the JEDEC-TO-202AB (VERSATAB) plastic package.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	3mA Gate 10 mA Gate 25 mA Gate 5 mA Gate	T2320A T2322A T2323A T2327A	T2320B T2322B T2323B T2327B	T2320D T2322D T2323D T2327D	T2320E T2322E T2323E T2327E	T2320M T2322M T2323M T2327M	T2320N T2322N T2323N T2327N	
V_{DROM}▲ (Gate Open, T_J = -40 to 125°C)		100	200	400	500	600	800	
$I_{T(RMS)}$ (T_C = 95°C)		2.5						A
$I_{T(RMS)}$ (T_A = 25°C)		1						A
I_{TSM} (for 1 full cycle)		25						A
di/dt:		100						A/μs
I^2t [At T_C shown for $I_{T(RMS)}$] (Half-sine wave):								
t = 20 ms		3.4						A^2s
= 2.5 ms		1.7						A^2s
= 0.5 ms		1						A^2s
For other time values		See Fig. 5						
I_{GTM}• (For 1 μs max.)		1						A
P_{GM} (for 1 μs max.)		10						W
$P_{G(AV)}$ (Averaging time 10ms max.)		0.1						W
T Storage		-40 to 150						°C
T_J		-40 to 125						°C
T_T■:								
During soldering for 10 s maximum at distance ≥ 1/16 in. (1.58 mm) from seating plane		225						°C

▲For either polarity of main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.

•For either polarity of gate voltage (V_G) with reference to main terminal 1.

■For temperature measurement reference point, *see Dimensional Outlines.*

T2320, T2322, T2323, T2327 Series

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

CHARACTERISTIC	LIMITS For All Types Except as Specified			UNITS
	Min.	Typ.	Max.	
I_{DROM}▲: Gate open, T_J = 125°C, V_{DROM} = Max. rated value	—	0.2	0.75	mA
v_{TM}▲: i_T = 10 A (peak), T_C = 25°C T2322, T2322, T2327 series i_T = 10 A (peak), T_C = 25°C T2323 series	— —	1.7 1.7	2.2 2.6	V
I_{HO}▲: Gate open, Initial principal current = 150 mA (dc), v_D = 12 V, T_C = 25°C	—	15	30	mA
dv/dt (Commutating) ▲: v_D = V_{DROM}, $I_{T(RMS)}$ = 2.5 A, commutating di/dt = 1.33 A/ms, gate unenergized, T_C = 95°C	1	4	—	V/μs
dv/dt (Off-state) ▲: v_D = V_{DROM}, exponential voltage rise, gate open, T_C = 125°C	10	100	—	
I_{GT}▲●: (See Fig. 7) v_D = 12 V dc, R_L = 30 Ω, T_C = 25°C Mode V_{MT2} V_G I+ positive positive T2320 series T2322 series T2323 series T2327 series III– negative negative T2320 series T2322 series T2323 series T2327 series I– positive negative T2320 series T2322 series T2323 series T2327 series III+ negative positive T2320 series T2322 series T2323 series T2327 series	 — — — — — — — — — — — — — — — —	 — — — — — — — — — — — — — — — —	 3 10 25 5 3 10 25 5 3 10 40 5 3 10 40 5	mA
V_{GT}▲●: (See Fig. 8) v_D = 12 V dc, R_L = 30 Ω, T_C = 25°C v_D = V_{DROM}, R_L = 125 Ω, T_C = 125°C	— 0.15	1 —	2.2 —	V
t_{gt}: (See Fig. 11) v_D = V_{DROM}, I_G = 60 mA, t_r = 0.1 μs, i_T = 10 A (peak), T_C = 25°C	—	1.8	2.5	μs
$R_{\theta JC}$ $R_{\theta JA}$	— —	— —	8 80	°C/W

▲For either polarity of main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.
●For either polarity of gate voltage (V_G) with reference to main terminal 1.

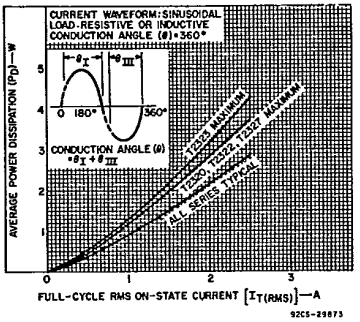


Fig. 1 — Power dissipation as a function of on-state current.

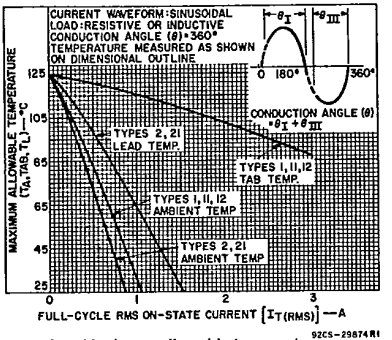


Fig. 2 — Maximum allowable temperature as a function of on-state current for T2320, T2322, and T2327.

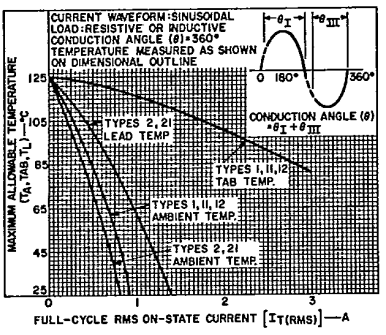


Fig. 3 — Maximum allowable temperature as as function of on-state current for T2323.

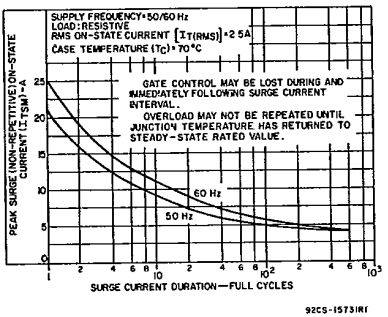


Fig. 4 — Peak surge on-state current as a function of surge-current duration.

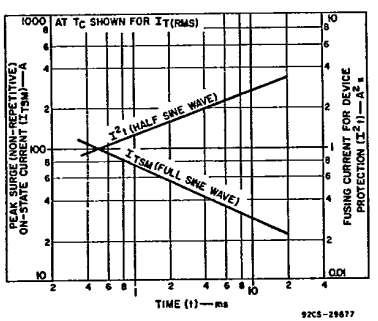


Fig. 5 — Peak surge on-state current and fusing current as a function of time.

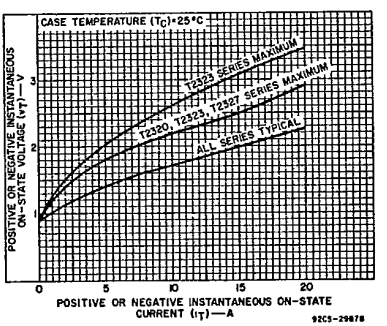


Fig. 6 — On-state current vs. on-state voltage.

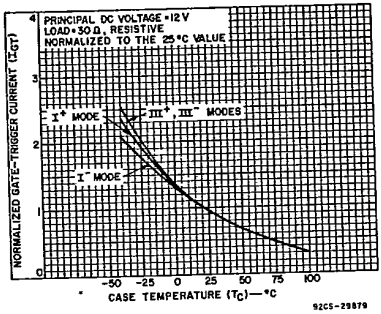


Fig. 7 — Gate-trigger current vs. case temperature.

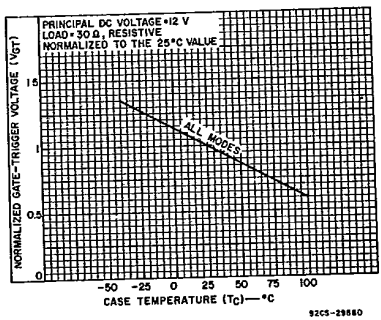
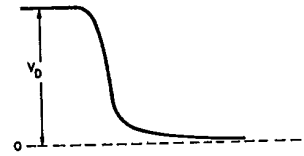


Fig. 8 — Gate-trigger voltage vs. case temperature.



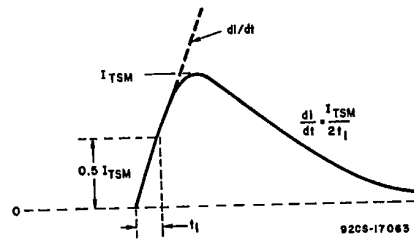


Fig. 9 — Rate-of-change of on-state current with time (defining di/dt).

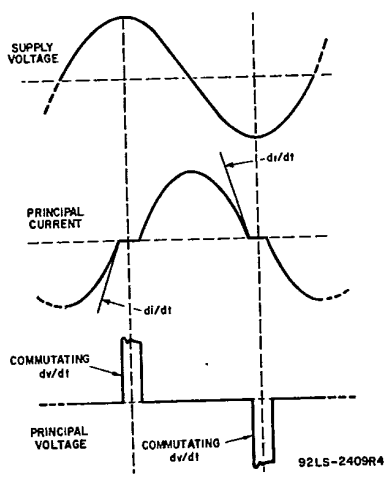


Fig. 10 — Relationship between supply voltage and principal current (inductive load) showing reference points for definition of commutating voltage (dv/dt).

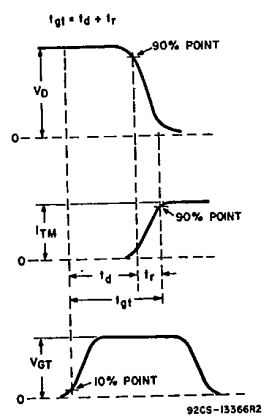


Fig. 11 — Relationship between off-state voltage, on-state current, and gate-trigger voltage showing reference points for definition of turn-on time (t_{gt}).