

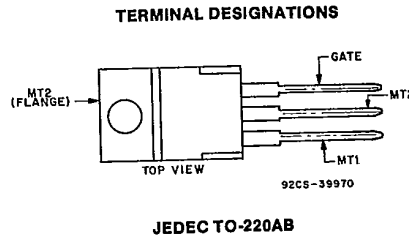
File Number 1314

T2800, T2802 Series

High Voltage, 8-A Silicon Triacs
For Power-Control and Power-Switching Applications

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
- Silicon Oxide Glass Multilayer Passivation System
- Advanced Unisurface Construction
- Precise Ion Implanted Diffusion Source



These RCA triacs are gate-controlled full-wave silicon switches utilizing a plastic case with three leads to facilitate mounting on printed-circuit boards. They are intended for the control of ac loads in such applications as motor controls, light dimmers, heating controls, and power-switching systems.

These devices 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 T2802 series triacs are characterized for I⁺, III⁻ gate-triggering modes only and should suit a wide range of applications that employ diac or anode on/off triggering.

All series employ the plastic JEDEC TO-220AB package. The plastic package design provides not only ease of mounting but also low thermal impedance, which allows operation at high case temperatures and permits reduced heat-sink size.

MAXIMUM RATINGS, Absolute-Maximum Values:

	T2800A	T2800B	T2800C	T2800D	T2800E	T2800M	T2800N	
	T2802A	T2802B	T2802C	T2802D	T2802E	T2802M	T2802N	
V _{DROM} * (Gate Open, T _J = -65 to 125°C)	100	200	300	400	500	600	800	V
I _{T(RMS)} : T _C = 105°C	8							A
I _{TSM} (For one cycle of applied principal voltage):								A
60 Hz (sinusoidal), T _C = 105°C	100							A
50 Hz (sinusoidal), T _C = 105°C	85							A
For more than one cycle	See Figs. 2							
di/dt: V _D = V _{DROM} , I _G = 200 mA, t _r = 0.1 μs	70							A/μs
i ² t (At T _C shown for I _{T(RMS)}):								A ² s
t = 20 ms	55							A ² s
= 2.5 ms	28							A ² s
= 0.5 ms	16							A ² s
I _{GTM†}	4							A
P _{GM} : (for 1 μs max., I _{GTM} ≤ 4 A)	16							W
P _{G(AV)}	0.35							W
T _{sig}	-65 to 150							°C
T _C	-65 to 125							°C
T _T During soldering for 10 s max. (terminals and case)	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.

Triacs

T2800, T2802 Series

ELECTRICAL CHARACTERISTICS

At Maximum Ratings Unless Otherwise Specified, and at Indicated Temperature

CHARACTERISTIC	SYMBOL	LIMITS			UNITS
		For All Types Unless Otherwise Specified			
		Min.	Typ.	Max.	
Peak Off-State Current: [*] Gate open, $T_J = 125^\circ\text{C}$, $V_{\text{DROM}} = \text{Max. rated value}$	I_{DROM}	—	0.1	2	mA
Maximum On-State Voltage: [*] (See Fig. 4) For $i_T = 30\text{ A (peak)}$, $T_C = 25^\circ\text{C}$	V_{TM}	—	1.7	2	V
DC Holding Current: [*] Gate open, Initial principal current = 150 mA (dc), $V_D = 12\text{ V}$, $T_C = 25^\circ\text{C}$, T2800 series T2802 series For other case temperatures	I_{HO}	— —	15 20	30 60	mA
Critical Rate-of-Rise of Commutation Voltage: [†] For $V_D = V_{\text{DROM}}$, $I_{\text{T(RMS)}} = 8\text{ A}$, commutating $di/dt = 4.3\text{ A/ms}$, gate unenergized, $T_C = 105^\circ\text{C}$	dv/dt	4	10	—	V/ μs
Critical Rate-of-Rise of Off-State Voltage: [*] For $V_D = V_{\text{DROM}}$, exponential voltage rise, and gate open, $T_C = 125^\circ\text{C}$ T2800B, T2802B	dv/dt	100	300	—	V/ μs
T2800C, T2802C		85	275	—	
T2800D, T2802D		75	250	—	
T2800E, T2802E		65	225	—	
T2800M, T2802M		60	200	—	
T2800N, T2802N		40	100	—	
DC Gate-Trigger Current: ^{* ‡} For $V_D = 12\text{ V (dc)}$, $R_L = 30\ \Omega$, $T_C = 25^\circ\text{C}$ Mode V_{MT2} V_G I+ positive positive T2800 series T2802 series III- negative negative T2800 series T2802 series I- positive negative T2800 series only IIi+ negative positive T2800 series only For other case temperatures	I_{GT}	— — — —	10 25 15 25	25 50 25 50	mA
— —		20 30	60 60		
DC Gate-Trigger Voltage: ^{* ‡} For $V_D = 12\text{ V (dc)}$, $R_L = 30\ \Omega$, $T_C = 25^\circ\text{C}$	V_{GT}	—	1.25	2.5	V
For other case temperatures		See Fig. 8 & 9			
For $V_D = V_{\text{DROM}}$, $R_L = 125\ \Omega$, $T_C = 125^\circ\text{C}$		0.2	—	—	
Gate-Controlled Turn-On Time: For $V_D = V_{\text{DROM}}$, $I_{\text{GT}} = 80\text{ mA}$, $t_r = 0.1\ \mu\text{s}$, $i_T = 10\text{ A (peak)}$, $T_C = 25^\circ\text{C}$	t_{gt}	—	1.6	2.5	μs
Thermal Resistance: Junction-to-Case	R_{JC}	—	—	2.2	$^\circ\text{C/W}$
Junction-to-Ambient	R_{JA}	—	—	60	

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

[†]Variants of these devices having dv/dt characteristics selected specifically for inductive loads are available on special order; for additional information, contact your RCA Representative or your RCA Distributor.

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

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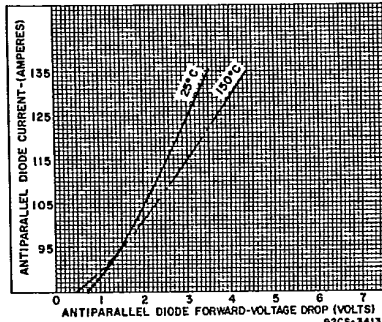


Fig. 1 — Maximum allowable case temperature vs. on-state current.

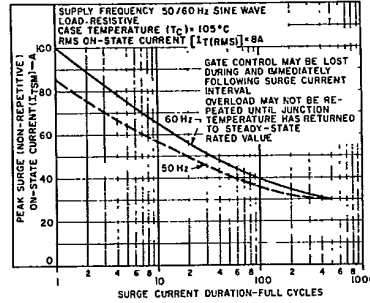


Fig. 2 — Peak surge on-state current vs. surge current duration for T2800, T2802 series.

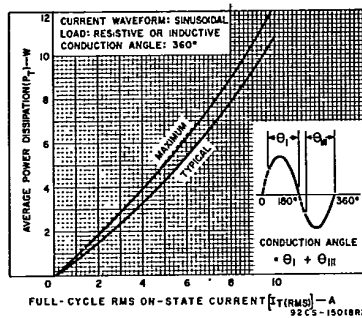


Fig. 3 — Power dissipation vs. on-state current for T2800, T2802 series.

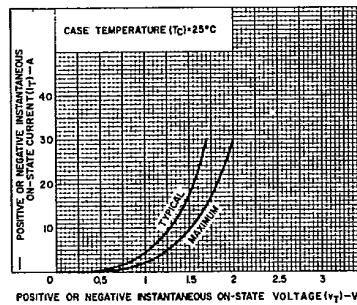


Fig. 4 — On-state current vs. on-state voltage for T2800, T2802 series.

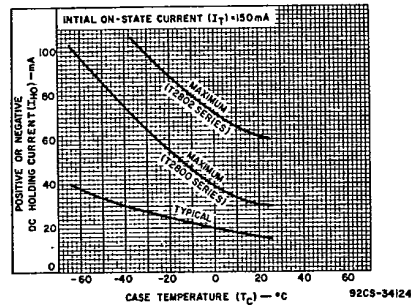


Fig. 5 — DC holding current vs. case temperature for T2800, T2802.

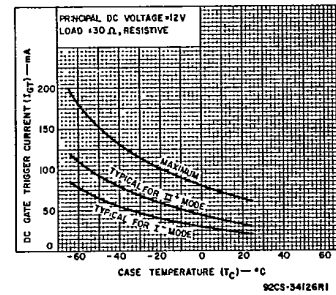


Fig. 6 — DC gate-trigger current (for I+ and III+ triggering modes) vs. case temperature for T2800, T2802 series.

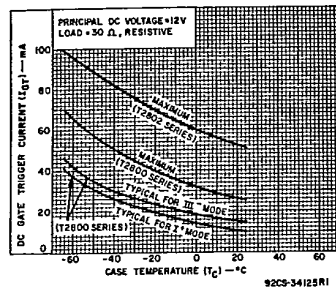


Fig. 7 — DC gate-trigger current (for I+ and III+ triggering modes) vs. case temperature for T2800, T2802 series.

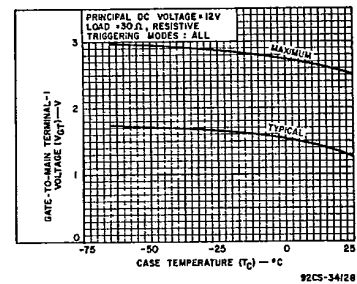


Fig. 8 — DC gate-trigger voltage vs. case temperature for T2800, T2802 series.