

3875081 G E SOLID STATE
Silicon Controlled Rectifiers

01E 17724 D T-25-15

S2800 Series

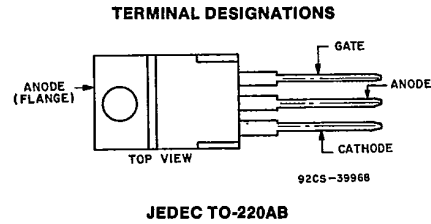
File Number **890**

10-A Silicon Controlled Rectifiers

For Power Switching, Power Control

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



The S2800 series are high voltage, medium current silicon controlled rectifiers designed for switching AC and DC currents. The types within the series differ in their voltage ratings: the voltage ratings are identified by suffix letters in the type designations.

All types utilize the JEDEC TO-220AB package.

These Thyristors feature an advanced unisurface construction with a multilayer glass passivation system for improved reliability performance at high junction operating temperatures. Their dv/dt , di/dt capability and low switching losses make them suitable for applications such as lighting, power-switching, motor speed control and crow-bars.

MAXIMUM RATINGS, Absolute-Maximum Values:

	S2800F	S2800A	S2800B	S2800C	S2800D	S2800E	S2800M	S2800S	S2800N		
V_{DRM}, V_{RRM}	50	100	200	300	400	500	600	700	800	V	
$I_{T(RMS)}$ ($T_C=100^\circ\text{C}, \theta = 180^\circ$)										10	A
I_{TSM} (for 1 full cycle)										100	A
di/dt										100	A/ μs
i^2t (at 8.3 ms)										40	A ² s
P_{GM} (for 10 μs max.)										16	W
$P_{G(AV)}$ (Averaging time 10ms max.)										0.5	W
T Storage										-65 to +150	$^\circ\text{C}$
T_J										-65 to +125	$^\circ\text{C}$
T_r (During soldering): For 10 s max. terminals and case)										250	$^\circ\text{C}$

S2800 Series

ELECTRICAL CHARACTERISTICS

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

CHARACTERISTIC	LIMITS			UNITS
	For All Types Except as Specified			
	Min.	Typ.	Max.	
I_{DROM} OR I_{ROM} $V_D = V_{DROM}$ OR $V_R = V_{RROM}$, $T_C = +125^\circ\text{C}$	—	0.1	2	mA
V_T $i_T = 30\text{ A}$, $T_C = +25^\circ\text{C}$ For other values of i_T	—	1.7	2	V
I_{GT} $V_D = 12\text{ V (DC)}$, $R_L = 30\ \Omega$ $T_C = +25^\circ\text{C}$	—	8	15	mA
V_{GT} $V_D = 12\text{ V (DC)}$, $R_L = 30\ \Omega$ $T_C = +25^\circ\text{C}$	—	0.9	1.5	V
I_{HO} $T_C = +25^\circ\text{C}$	—	10	20	mA
dv/dt $V_D = V_{DROM}$, Exponential voltage rise $T_C = +125^\circ\text{C}$ (See Fig. 11)				
S2800F	100	—	—	V/ μs
S2800A	75	—	—	
S2800B	50	—	—	
S2800C	40	—	—	
S2800D	30	—	—	
S2800E	25	—	—	
S2800M	20	—	—	
S2800S	15	—	—	
S2800N	15	—	—	
t_{gt} $V_D = V_{DROM}$, $i_T = 2\text{ A}$ $I_{GT} = 80\text{ mA}$, $0.1\ \mu\text{s}$ rise time $T_C = +25^\circ\text{C}$ (See Fig. 9)	—	1.6	2.5	μs
t_q $V_D = V_{DROM}$, $i_T = 2\text{ A}$, $t_p = 50\ \mu\text{s}$ $dv/dt = 200\text{ V}/\mu\text{s}$, $di/dt = -10\text{ A}/\mu\text{s}$ $I_{GT} = 200\text{ mA}$ at t_{ON} , $T_C = +75^\circ\text{C}$ (See Fig. 12)	—	10	35	μs
$R_{\theta JC}$	—	—	2	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	—	—	60	

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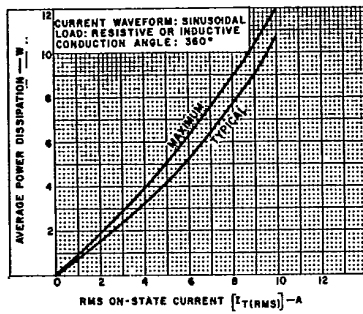


Fig. 1 — Power dissipation vs. on-state current.

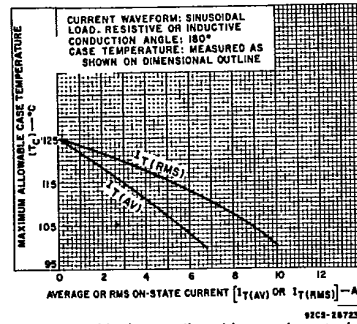


Fig. 2 — Maximum allowable case temperature vs. on-state current.

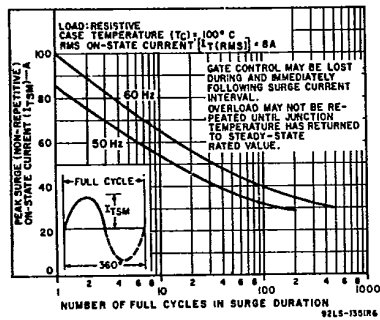


Fig. 3 — Allowable peak surge on-state current vs. surge duration.

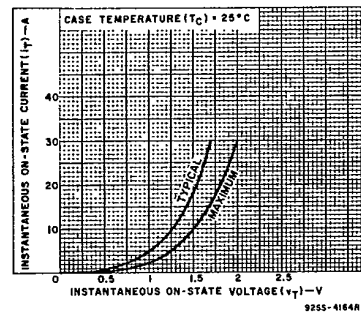


Fig. 4 — Instantaneous on-state current vs. on-state voltage.

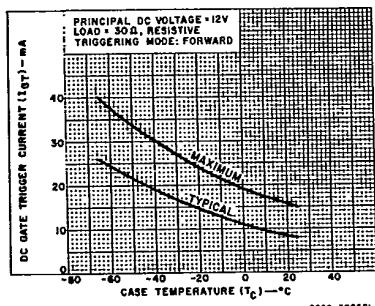


Fig. 5 — DC gate-trigger current vs. case temperature.

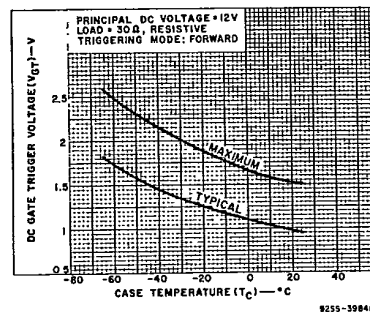


Fig. 6 — DC gate-trigger voltage vs. case temperature.

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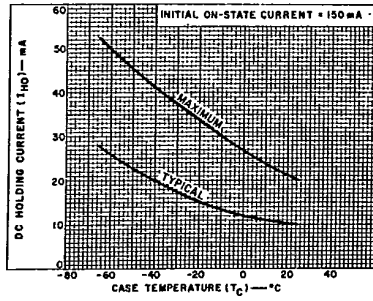


Fig. 7 — Holding current vs. case temperature.

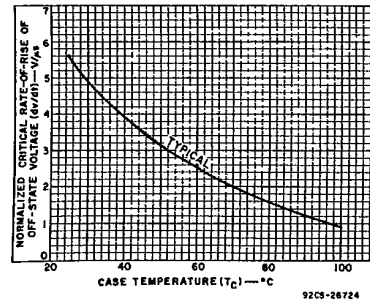


Fig. 8 — Normalized critical rate of rise of off-state voltage vs. case temperature.

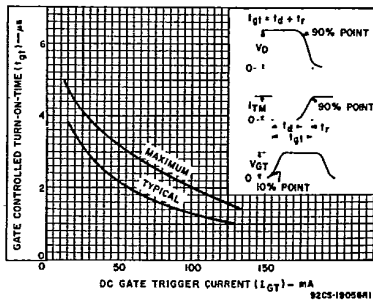


Fig. 9 — Gate-controlled turn-on time vs. gate trigger current.

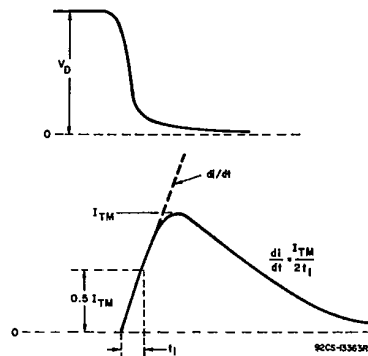


Fig. 10 — Rate of change of on-state current with time (defining di/dt).

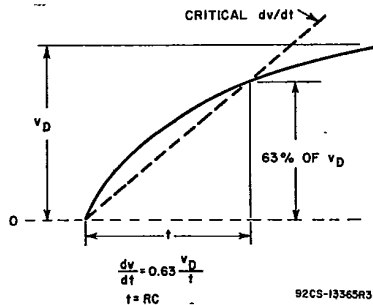


Fig. 11 — Rate of rise of off-state voltage with time (defining critical dv/dt).

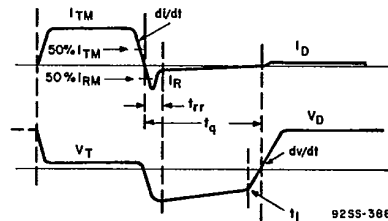


Fig. 12 — Relationship between instantaneous on-state current and voltage, showing reference points for measurement of circuit-commutated turn-off time (t_q).