

3875081 G E SOLID STATE
Silicon Controlled Rectifiers

01E 17666 D

T-2.5-15
File Number 96

2N681-2N692

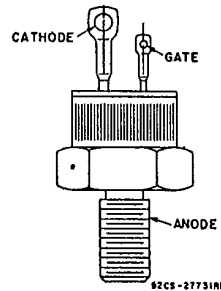
25-A Silicon Controlled Rectifiers

For Power-Control and Power-Switching Application

Features:

- High di/dt capability
- Low on-state voltage at high current levels
- Low thermal resistance

The RCA2N681-2N692 are all-diffused silicon controlled rectifiers (reverse-blocking triode thyristors) 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. These SCR's employ a hermetic JEDEC TO-208AA package.

TERMINAL DESIGNATIONS

JEDEC TO-208AA

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N681	2N682	2N683	2N684	2N685	2N686	2N687	2N688	2N689	2N690	2N691	2N692	
$V_{RSO(4)}$	35	75	150	225	300	350	400	500	600	720	840	960	V
$V_{RSM(4)}$	25	50	100	150	200	250	300	400	500	600	700	800	V
$V_{RSM(4)}$	25	50	100	150	200	250	300	400	500	600	700	800	V
$I_{TSM(4)}$ ($\theta = 180^\circ$): $T_C = 65^\circ \text{C}$							25						A
$I_{TSM(4)}$ ($\theta = 180^\circ$): $T_C = 65^\circ \text{C}$							16						A
I_{STW} : For one full cycle of applied principal voltage													
60Hz							150						A
50Hz							140						A
For more than one full cycle of applied principal voltage ..							See Fig. 2						
di/dt:													
$V_D = V_{RSM(4)}$, $I_{GT} = 200 \text{ mA}$, $t_r = 0.5 \mu\text{s}$							200						A/ μs
$I^2 t$ [at T_C shown for $I_{TSM(4)}$]:													A ² s
$t = 10 \text{ ms}$							100						A ² s
$t = 1 \text{ ms}$							46						W
$P_{GM(4)}$							5						W
$P_{GM(4)}$							0.5						W
I_{GM}							2						A
V_{GM}							10						V
$V_{GM(4)}$							5						V
T_{STG}							-65 to 150						$^\circ\text{C}$
T_C							-65 to 125						$^\circ\text{C}$
T_T													
During soldering for 10 s maximum (terminal and case) ..							225						$^\circ\text{C}$
r_a : Recommended							35						in-lb
.....							0.4						kgf-m
Maximum (DO NOT EXCEED)							50						in-lb
.....							0.57						kgf-m

*In accordance with JEDEC registration data

ΔThese values do not apply if there is a positive gate signal. Gate must be open or negatively biased

ΔAt $I_{TSM(4)} = 25 \text{ A}$ and $T_C = 65^\circ \text{C}$

■Any product gate current and gate voltage which results in gate power less than the maximum is permitted.

■For temperature measurement reference point, see Dimensional Outline.

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01E 17667

D) T-25-15

Silicon Controlled Rectifiers

2N681-2N692

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

CHARACTERISTIC	LIMITS			UNITS
	2N681-2N690			
	MIN.	TYP.	MAX.	
* I_{DROM} or I_{RROM} $V_D = V_{DROM}$ or $V_R = V_{RROM}$, $T_C = 125^\circ\text{C}$: 2N681, 2N682, 2N683, 2N684 2N685 2N686 2N687 2N688 2N689 2N690 2N691 2N692	—	—	6.5 6 5.5 5 4 3 2.5 2.25 2	mA
* V_T : $I_T = 50\text{ A (peak)}$, $T_C = 25^\circ\text{C}$	—	—	2	V
$V_T(\text{AV})$: $I_T = I_T(\text{RMS})$, $T_C = 65^\circ\text{C}$	—	—	0.86	V
i_{HO} : $T_C = 125^\circ\text{C}$	—	15	—	mA
I_{GT} : $T_C = 125^\circ$ $V_D = 12\text{ V (dc)}$, $R_L = 50\Omega$, $T_C = -65^\circ\text{C}$	— —	— —	25 80*	mA
V_{GT} : $V_D = 12\text{ V (dc)}$, $R_L = 50\Omega$, $T_C = -65$ to 125°C $= 125^\circ$	— 0.25	— —	3 —	V
$R_{\theta JC}$	—	—	2	$^\circ\text{C/W}$

*In accordance with JEDEC registration data.

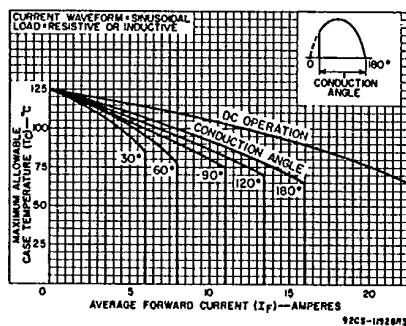


Fig. 1 — Maximum allowable case temperature vs. on-state current for 2N681-2N692.

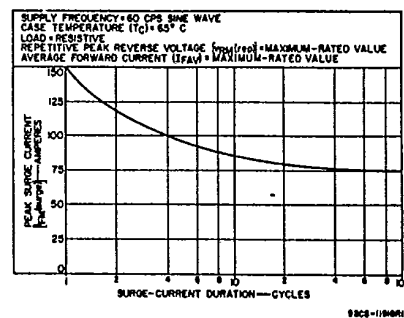


Fig. 2 — Peak surge on-state current vs. surge duration for 2N681-2N692.

3875081 G E SOLID STATE

01E 17668

DT-25-15

Silicon Controlled Rectifiers

2N681-2N692

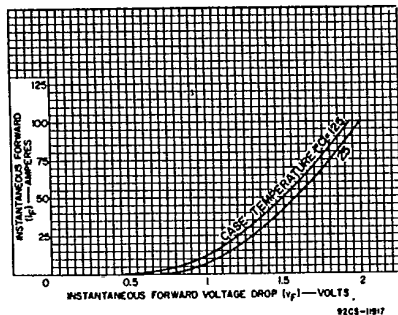


Fig. 3 — Typical on-state current vs. instantaneous on-state voltage for 2N681-2N692.

