查询S7412M供应商 捷多邦，专业PCB打样工厂，24小时加急出货

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M File Number **724**

35-A Silicon Controlled Rectifiers

For Inverter Applications

Features:

- *Fast turn-off time — 10 μs max.*
- *High di/dt and dv/dt capability*
- *Low thermal resistance*

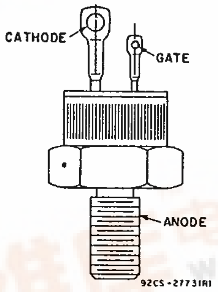
RCA-2N3654 to 2N3658, inclusive, and the S7412M* are all-diffused silicon controlled rectifiers (reverse-blocking triode thyristors) intended for high-speed switching applications such as power inverters, switching regulators, and high-current pulse applications. They feature fast turn-off, high dv/dt, and high di/dt characteristics and may be used at frequencies up to 25 kHz.

The 2N3654 to 2N3658 have forward and reverse off-state voltage ratings of 50, 100, 200, 300, and 400 volts, respectively. Type S7412M has a forward and reverse off-state voltage rating of 600 volts.

These SCR's employ a hermetic JEDEC TO-208AA package.

*Formerly RCA Type No. S7432M.

TERMINAL DESIGNATIONS



JEDEC TO-208AA

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	2N3654	2N3655	2N3656	2N3657	2N3658	S7412M	
*V_{RSOM}†	75	150	300	400	500	700	V
V_{DSOM}†	75	150	300	400	500	700	V
*V_{RROM}†	50	100	200	300	400	600	V
*V_{DROM}†	50	100	200	300	400	600	V
$I_{T(RMS)}$ ($T_C = 40°C$, $\theta = 180°$)	35						A
*$I_{T(AV)}$ ($T_C = 40°C$, $\theta = 180°$)	25						A
*I_{TSM}: For one full cycle of applied principal voltage 60-Hz (Rectangular wave-pw = 5 ms, t_r = 50 μs), $T_C = 40°C$	180						A
*di/dt: $V_D = V_{DROM}$, I_{GT} = 200 mA, t_r = 0.1 μs (See Fig. 15)	400						A/μs
I^2t: T_J = -65 to 120°C, t = 1 to 8.3 ms	165						A2s
*P_{GM}■: Peak (forward or reverse) for 10μs maximum, See Fig. 7)	40						W
*$P_{G(AV)}$■: Averaging time = 10 ms maximum	1						W
*T_{stg}•	-65 to 150						°C
*T_C•	-65 to 120						°C
T_T: During soldering for 10 s maximum (terminal and case)	225						°C
τ_S: Recommended	35						in-lbf
	0.4						kgf-m
Maximum (DO NOT EXCEED)	50						in-lbf
	0.57						kgf-m

* In accordance with JEDEC registration data format (JS-14, RDF-1) filed for the JEDEC (2N series) types.
† These values do not apply if there is a positive gate signal. Gate must be open or negatively biased.
■ Any product of gate current and gate voltage which results in a gate power less than the maximum is permitted.
• For temperature measurement reference point, see Dimensional Outline.

找PDF 维库一下 pdf.dzsc.com

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M

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_{DOM} or I_{ROM}:				
$V_D = V_{DROM}$ or $V_R = V_{RROM}$, T_C = 120°C				
2N3654, 2N3655, 2N3656, S7412M	–	2	6*	mA
2N3657	–	2	5.5*	
2N3658	–	2	4*	
v_T:				
i_T = 25 A (peak), T_C = 25°C	–	1.5	2.05*	V
i_{HO}:				
T_C = 25°C	–	75	150	mA
T_C = –65°C	–	150	350*	
* dv/dt:				
$V_D = V_{DROM}$, exponential voltage rise, T_C = 120°C (See Fig. 16)	200	–	–	V/µs
I_{GT}:				
V_D = 6 V (dc), R_L = 4 Ω, T_C = 25°C	–	80	180	mA
V_D = 6 V (dc), R_L = 2 Ω, T_C = –65°C	–	150	500*	
V_{GT}:				
V_D = 6 V (dc), R_L = 4 Ω, T_C = 25°C	–	1.5	3	V
* V_D = 6 V (dc), R_L = 200 Ω, T_C = 120°C	0.25	–	–	
V_D = 6 V (dc), R_L = 2 Ω, T_C = –65°C	–	2	4.5*	
* tq:				
Rectangular Pulse				
$V_{DX} = V_{DROM}$, i_T = 10 A, pulse duration = 50 µs, dv/dt = 200 V/µs, –di/dt = 5 A/µs, I_{GT} = 200 mA at turn-on, V_{RX} = 15 V minimum, V_{GK} = 0 V at turn-off, T_C = 120°C (See Figs. 17 & 18)	–	–	10	µs
Sinusoidal Pulse				
$V_{DX} = V_{DROM}$, i_T = 100 A, pulse duration = 2 µs, dv/dt = 200 V/µs, V_{RX} = 30 V minimum, V_{GK} = 0 at turn-off, T_C = 115°C (See Figs. 19 & 20)	–	–	10	
$R_{\theta JC}$	–	0.85	1.7*	°C/W

* In accordance with JEDEC registration data format (JS-14, RDF-1) filed for the JEDEC (2N series) types.

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M

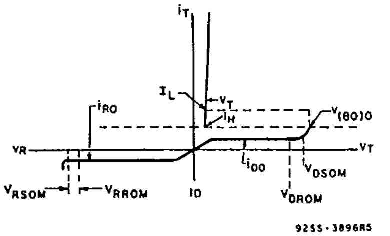


Fig. 1 – Principal voltage-current characteristic.

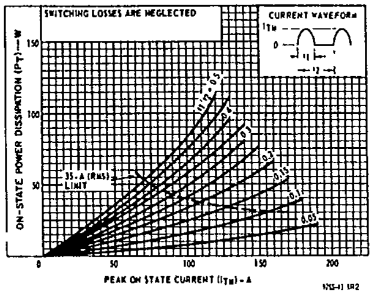


Fig. 2 – Power dissipation vs. peak on-state current.

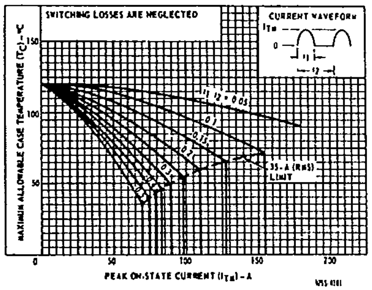


Fig. 3 – Maximum allowable case-temperature vs. peak on-state current.

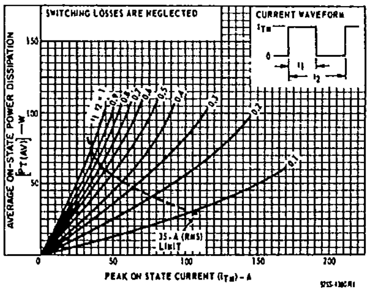


Fig. 4 – Power dissipation vs. peak on-state current.

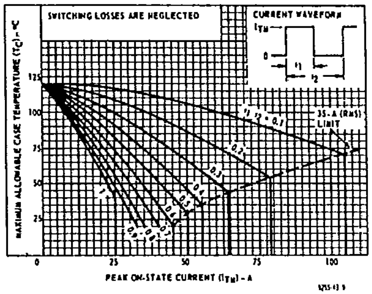


Fig. 5 – Maximum allowable case-temperature vs. peak on-state current.

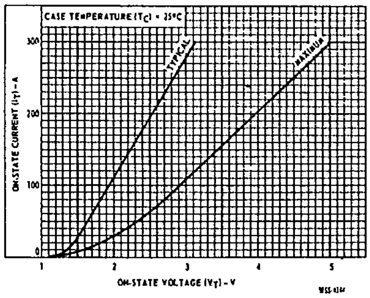


Fig. 6 – Variation of on-state with on-state voltage.

1223 C-14

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M

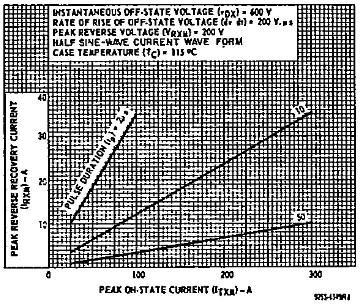


Fig. 7 — Typical variation of peak reverse-recovery current with peak on-state current (half-sine-wave pulse).

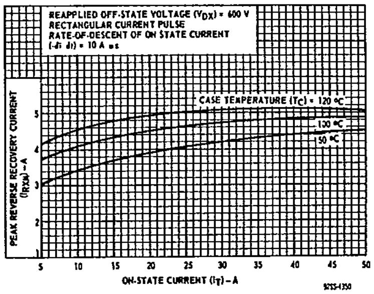


Fig. 8 — Typical variation of peak reverse-recovery current with on-state current (rectangular pulse).

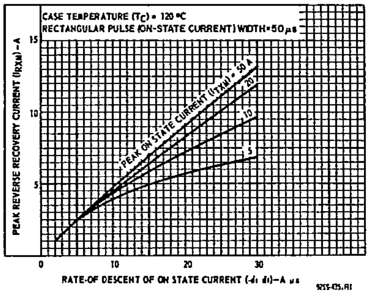


Fig. 9 — Typical variation of peak reverse-recovery current with rate-of-descent of on-state current (rectangular pulse).

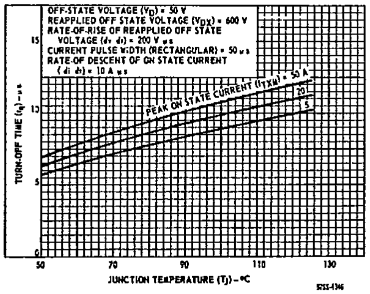


Fig. 10 — Typical variation of turn-off time with junction temperature (rectangular pulse).

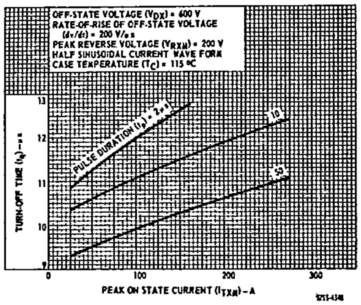


Fig. 11 — Typical variation of turn-off time with peak on-state current (half-sine-wave pulse).

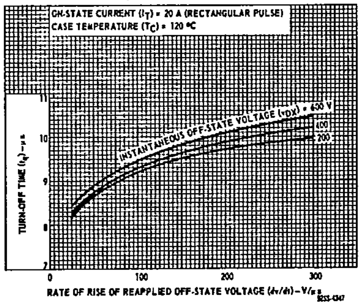


Fig. 12 — Typical variation of turn-off time with rate-of-rise of reapplied off-state voltage (rectangular pulse).

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M

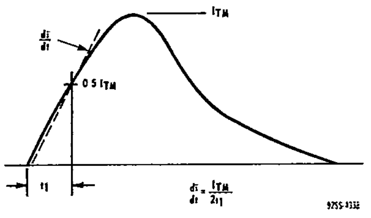


Fig. 13 — Rate-of-change of on-state current with time (defining di/dt).

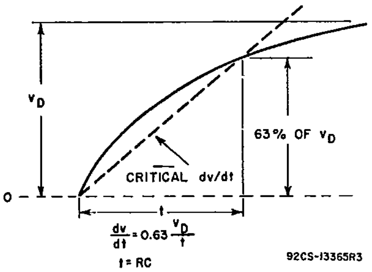


Fig. 14 — Rate-of-rise of off-state voltage with time (defining dv/dt).

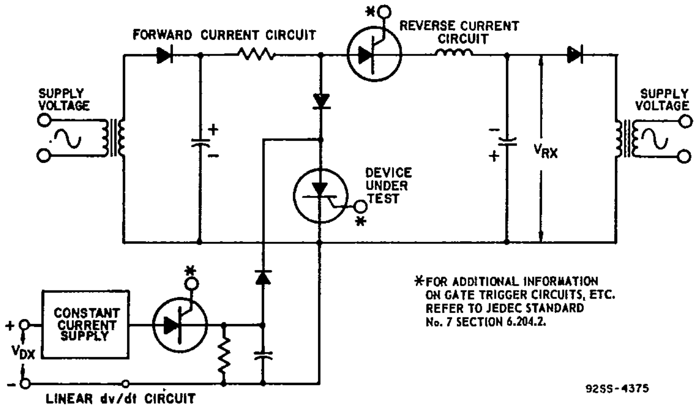


Fig. 15 — Circuit used to measure turn-off time (t_q), rectangular pulse.

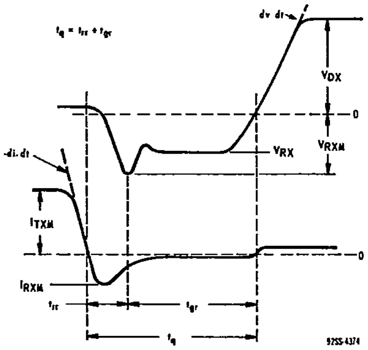


Fig. 16 — Relationship between off-state voltage, reverse voltage, on-state current, and reverse current showing reference points defining turn-off time (t_q), rectangular pulse.

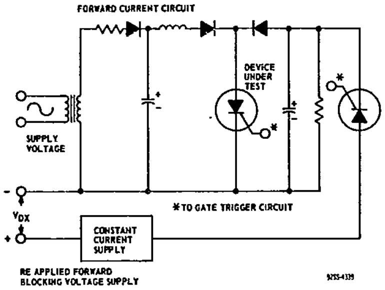


Fig. 17 — Circuit used to measure turn-off time (t_q), half-sine-wave pulse.

2N3654, 2N3655, 2N3656, 2N3657, 2N3658, S7412M

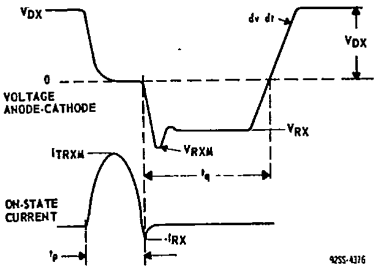


Fig. 18 — Relationship between off-state voltage, reverse voltage, on-state current, and reverse current showing reference points for specification of turn-off (t_q), half-sine-wave pulse.

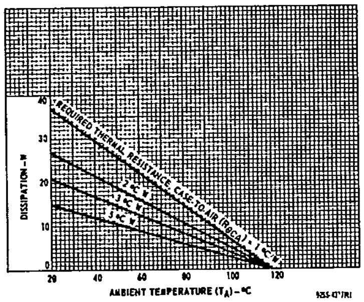


Fig. 19 — Heat sink guidance.