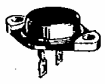
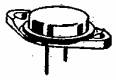
Silicon Controlled Rectifiers
Reverse Blocking Triode Thyristors

2N2574 thru 2N2578 MCR649AP 1 thru 10

SCRs
20 and 25 AMPERES RMS
25 thru 800 VOLTS



CASE 61-04
STYLE 1
2N2573 thru 2N2579



CASE 54-05
STYLE 2
MCR649AP1 thru MCR649AP10

. . . designed for industrial applications such as motor controls, heater controls, and power supplies, wherever half-wave or dc silicon gate controlled devices are needed.

- Glass Passivated Junctions for Maximum Reliability
- Center Gate Geometry for Parameter Uniformity
- High Surge Current, I_{TSM} = 260 A, for Crowbar Service

MAXIMUM RATINGS (T_J = 125°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage, Note 1 MCR649AP1 2N2574, MCR649AP2 2N2575, MCR649AP3 2N2576, MCR649AP4 2N2578, MCR649AP6 MCR649AP8 MCR649AP9 MCR649AP10	V_{DRM} or V_{RRM}	 25 50 100 200 400 600 700 800	Volts
On-State Current 2N Series MCR Series	$I_{T(RMS)}$	25 20	Amps
Circuit Fusing (t = 8.3 ms) 2N Series MCR Series	I^2t	280 235	A^2s
Peak Surge Current (Half Cycle, 60 Hz, T_J = −65° to +125°C) 2N Series MCR Series	I_{TSM}	260 235	Amps
Peak Gate Power — Forward	P_{GM}	5	Watts
Average Gate Power — Forward	$P_{G(AVG)}$	0.5	Watt
Peak Gate Current — Forward	I_{GM}	2	Amps
Peak Gate Voltage — Forward Reverse	V_{GFM} V_{GRM}	10 5	Volts
Operating Junction Temperature	T_J	−65 to +125	°C
Storage Temperature	T_{stg}	−65 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W

Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis without incurring damage. Ratings apply for zero or negative gate voltage.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}, gate open) T_J = 25°C T_J = 125°C	I_{DRM}, I_{RRM}	— —	— 0.6	10 5	μA mA
Gate Trigger Current (Continuous dc) (V_D = 7 Vdc, R_L = 100 Ω)	I_{GT}	—	—	40	mA
Gate Trigger Voltage (Continuous dc) (V_D = 7 Vdc, R_L = 100 Ω) (V_D = Rated V_{DRM}, R_L = 100 Ω, T_J = 125°C)	V_{GT}	— 0.3	0.7 —	3.5 —	Volts
Forward On Voltage (I_{TM} = 20 Adc)	V_{TM}	—	1.1	1.4	Volts
Holding Current (V_D = 7 Vdc, Gate Open)	I_H	—	10	—	mA
Turn-On Time (t_d + t_r) (I_{GT} = 50 mA, I_T = 10 A, V_D = Rated V_{DRM})	t_{gt}	—	1	—	μs
Turn-Off Time (I_T = 10 A, I_R = 10 A, dv/dt = 20 V/μs, T_J = 125°C) (V_D = Rated Voltage V_{DRM})	t_q	—	30	—	μs
Forward Voltage Application Rate (Exponential) (Gate Open, T_J = 125°C, V_D = Rated V_{DRM})	dv/dt	—	30	—	V/μs

FIGURE 1 – CURRENT DERATING

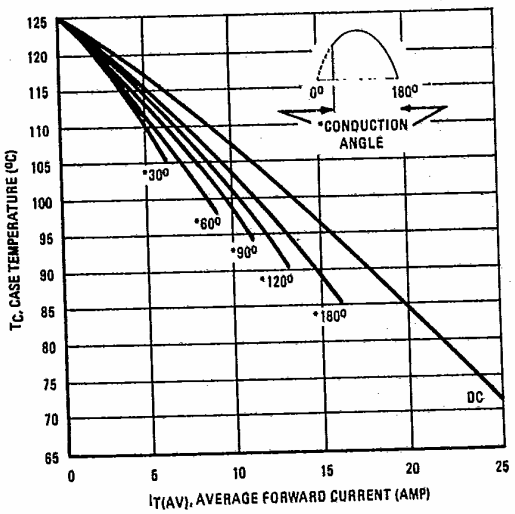


FIGURE 2 – GATE TRIGGER CHARACTERISTICS

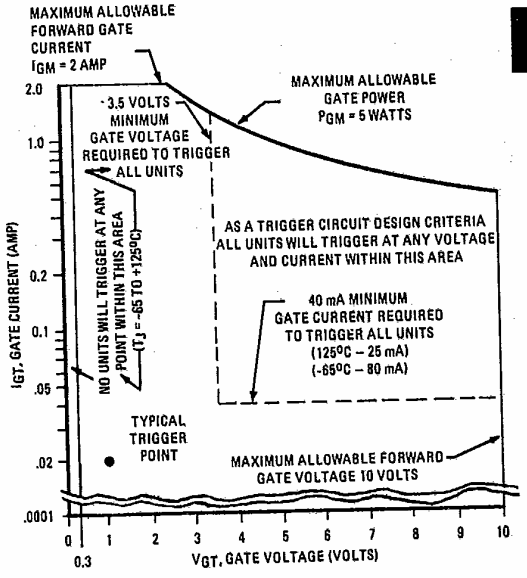


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FIGURE 3 – ON-STATE CHARACTERISTICS

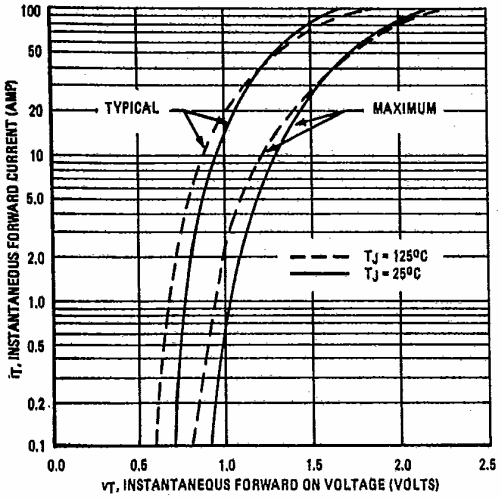

FIGURE 4 – MAXIMUM ALLOWABLE NON-RECURRENT SURGE CURRENT

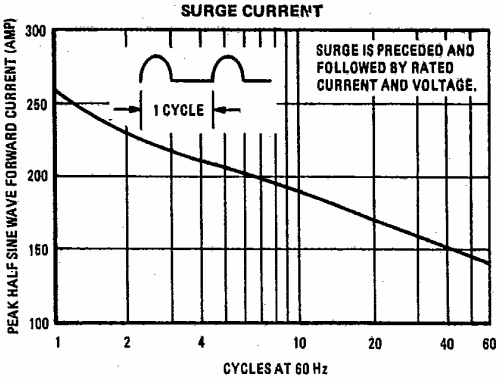

FIGURE 5 – EFFECT OF TEMPERATURE ON TYPICAL HOLDING CURRENT

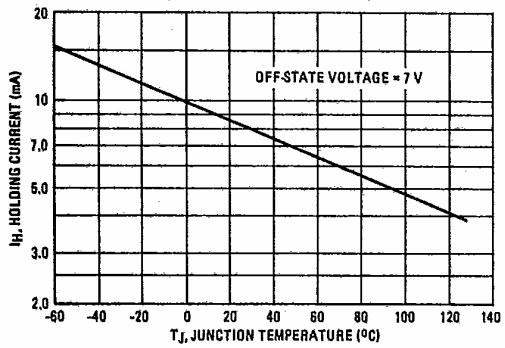

FIGURE 6 – EFFECT OF TEMPERATURE ON TYPICAL GATE CURRENT

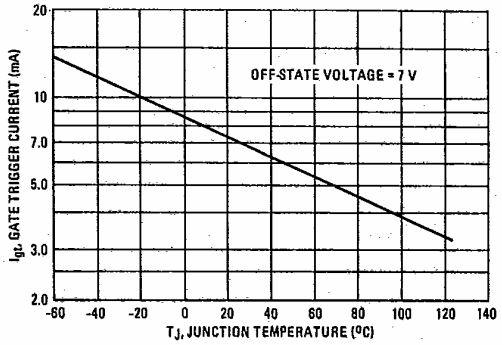

FIGURE 7 – EFFECT OF TEMPERATURE ON TYPICAL GATE VOLTAGE

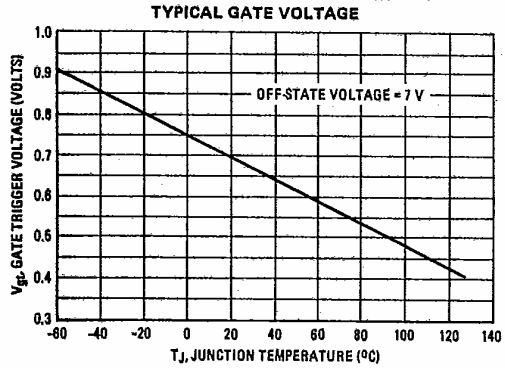

FIGURE 8 – MAXIMUM TRANSIENT THERMAL RESISTANCE JUNCTION TO CASE