

NOT RECOMMENDED FOR NEW DESIGNS

MOTOROLA SC (DIODES/OPTO) 25E D ■ 6367255 0080897 T ■ T-25-15

Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

... 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

**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**

MAXIMUM RATINGS ($T_J = 125^\circ\text{C}$ 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)	I^2t	280 235	A^2s
Peak Surge Current (Half Cycle, 60 Hz, $T_J = -65^\circ$ to $+125^\circ\text{C}$)	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 $+125$	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to $+150$	$^\circ\text{C}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$

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.

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ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM} , gate open) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DRM}, I_{RRM}	—	— 0.8	10 5	μA mA
Gate Trigger Current (Continuous dc) ($V_D = 7\text{ Vdc}$, $R_L = 100\ \Omega$)	I_{GT}	—	—	40	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 7\text{ Vdc}$, $R_L = 100\ \Omega$) ($V_D = \text{Rated } V_{DRM}$, $R_L = 100\ \Omega$, $T_J = 125^\circ\text{C}$)	V_{GT}	— 0.3	0.7 —	3.5 —	Volts
Forward On Voltage ($I_{TM} = 20\text{ Adc}$)	V_{TM}	—	1.1	1.4	Volts
Holding Current ($V_D = 7\text{ Vdc}$, Gate Open)	I_H	—	10	—	mA
Turn-On Time ($t_d + t_r$) ($I_{GT} = 50\text{ mA}$, $I_T = 10\text{ A}$, $V_D = \text{Rated } V_{DRM}$)	t_{gt}	—	1	—	μs
Turn-Off Time ($I_T = 10\text{ A}$, $I_R = 10\text{ A}$, $dv/dt = 20\text{ V}/\mu\text{s}$, $T_J = 125^\circ\text{C}$) ($V_D = \text{Rated Voltage } V_{DRM}$)	t_q	—	30	—	μs
Forward Voltage Application Rate (Exponential) (Gate Open, $T_J = 125^\circ\text{C}$, $V_D = \text{Rated } V_{DRM}$)	dv/dt	—	30	—	$\text{V}/\mu\text{s}$

FIGURE 1 — CURRENT DERATING

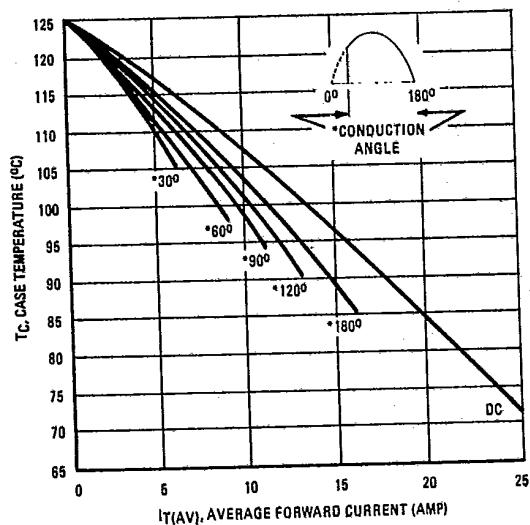
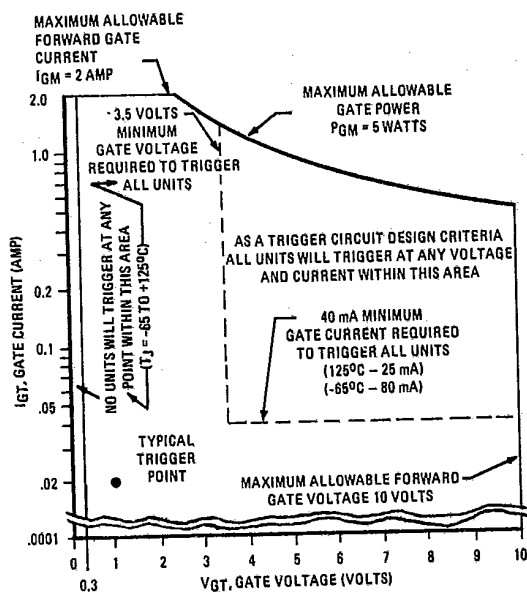


FIGURE 2 — GATE TRIGGER CHARACTERISTICS



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FIGURE 3 — ON-STATE CHARACTERISTICS

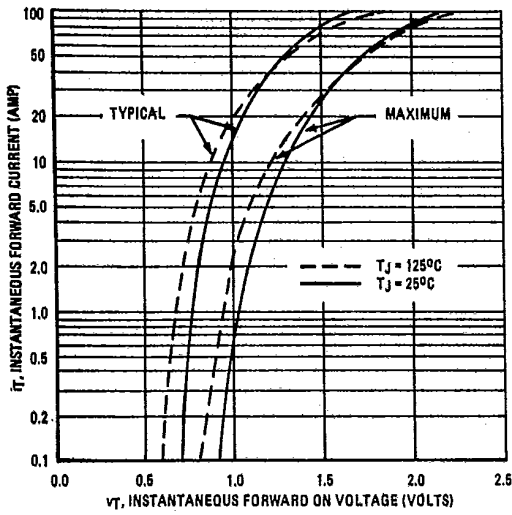


FIGURE 4 — MAXIMUM ALLOWABLE NON-RECURRENT SURGE CURRENT

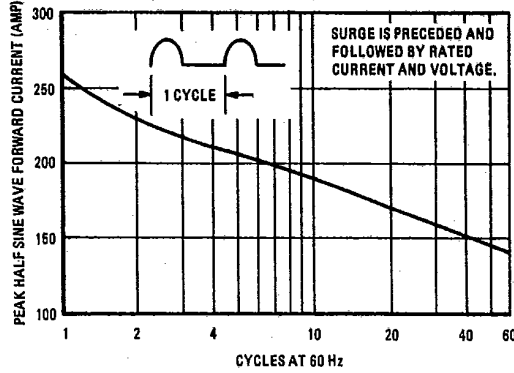


FIGURE 5 — EFFECT OF TEMPERATURE ON TYPICAL HOLDING CURRENT

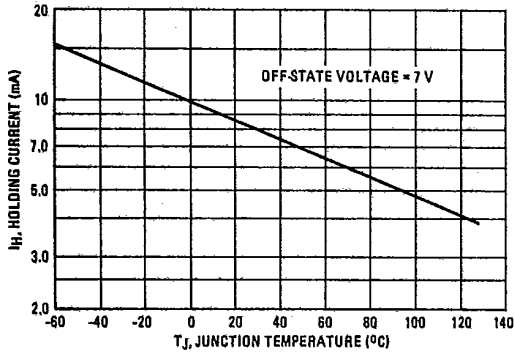


FIGURE 6 — EFFECT OF TEMPERATURE ON TYPICAL GATE CURRENT

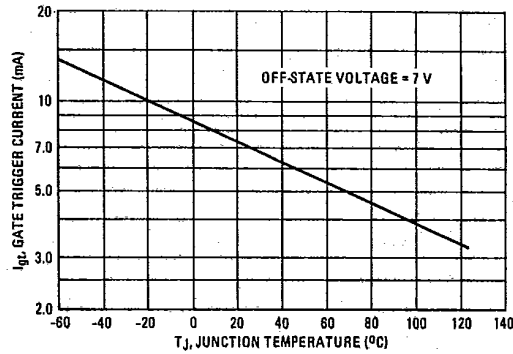


FIGURE 7 — EFFECT OF TEMPERATURE ON TYPICAL GATE VOLTAGE

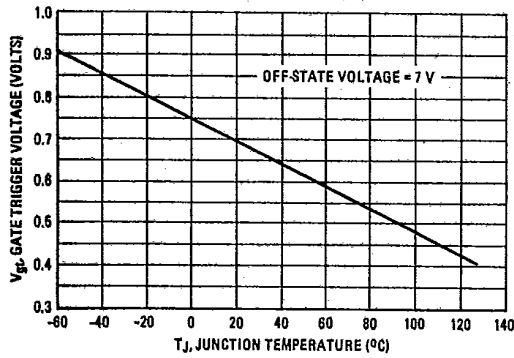


FIGURE 8 — MAXIMUM TRANSIENT THERMAL RESISTANCE JUNCTION TO CASE

