

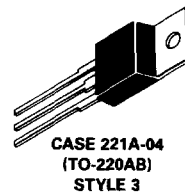
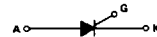
Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

... designed primarily for half-wave ac control applications, such as motor controls, heating controls and power supplies; or wherever half-wave silicon gate-controlled, solid-state devices are needed.

- Glass Passivated Junctions with Center Gate Geometry for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 800 Volts

**2N6400
thru
2N6405**

**SCRs
16 AMPERES RMS
50 thru 800 VOLTS**



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***MAXIMUM RATINGS** ($T_J = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Voltage, Note 1 (Gate Open, $T_J = 25$ to 125°C) <i>2N6400</i> <i>2N6401</i> 2N6402 <i>2N6403</i> <i>2N6404</i> <i>2N6405</i>	V_{RRM} or V_{DRM}	50 100 200 400 600 800	Volts
RMS On-State Current, $T_C = 90^\circ\text{C}$	$I_T(\text{RMS})$	16	Amps
Average On-State Current	$I_T(\text{AV})$	10	Amps
Peak Non-Repetitive Forward Surge Current (1/2 cycle, Sine Wave, 60 Hz, $T_J = 125^\circ\text{C}$)	I_{TSM}	160	Amps
Circuit Fusing ($t = 8.3$ ms)	I^2t	145	A^2s
Forward Peak Gate Power	P_{GM}	20	Watts
Forward Average Gate Power	$P_{G(\text{AV})}$	0.5	Watt
Forward Peak Gate Current	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	$^\circ\text{C}/\text{W}$

*Indicates JEDEC Registered Data.

Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

Devices listed in bold, italic are Motorola preferred devices.

2N6400 thru 2N6405

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

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Forward or Reverse Blocking Current (V _{AK} = Rated V _{DRM} or V _{RRM} , Gate Open) T _J = 25°C T _J = 125°C	I _{DRM} , I _{RRM}	— —	— —	10 2	μA mA
*Peak On-State Voltage (I _{TM} = 32 A Peak, Pulse Width ≤ 1 ms, Duty Cycle ≤ 2%)	V _{TM}	—	—	1.7	Volts
*Gate Trigger Current (Continuous dc) (V _D = 12 Vdc, R _L = 50 Ohms)	I _{GT}	—	5	30	mA
*Gate Trigger Voltage (Continuous dc) (V _D = 12 Vdc, R _L = 50 Ohms) (V _D = Rated V _{DRM} , R _L = 50 Ohms)	V _{GT}	— — 0.2	0.7 — —	1.5 2.5 —	Volts
*Holding Current (V _D = 12 Vdc, Gate Open)	I _H	— —	6 —	40 60	mA
Turn-On Time (I _{TM} = 16 A, I _{GT} = 40 mAdc, V _D = Rated V _{DRM})	t _{gt}	—	1	—	μs
Turn-Off Time (I _{TM} = 16 A, I _R = 16 A, V _D = Rated V _{DRM})	t _q	— —	15 35	— —	μs
Critical Rate-of-Rise of Off-State Voltage (V _D = Rated V _{DRM} , Exponential Waveform)	dv/dt	—	50	—	V/μs

*Indicates JEDEC Registered Data.

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FIGURE 1 - AVERAGE CURRENT DERATING

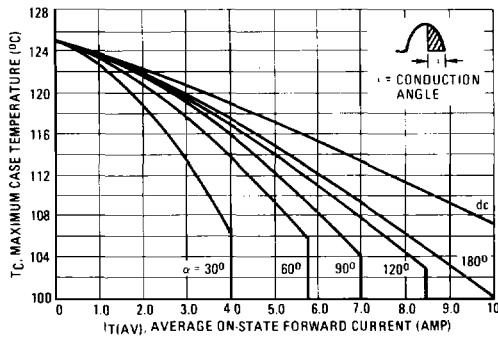
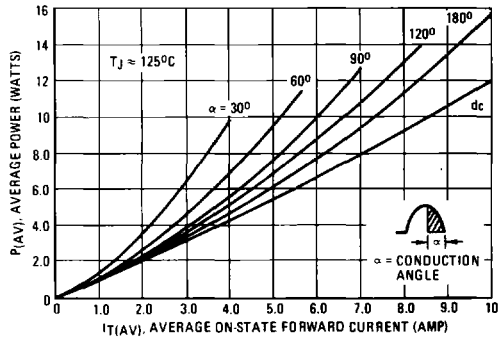


FIGURE 2 - MAXIMUM ON-STATE POWER DISSIPATION



2N6400 thru 2N6405

FIGURE 3 - ON-STATE CHARACTERISTICS

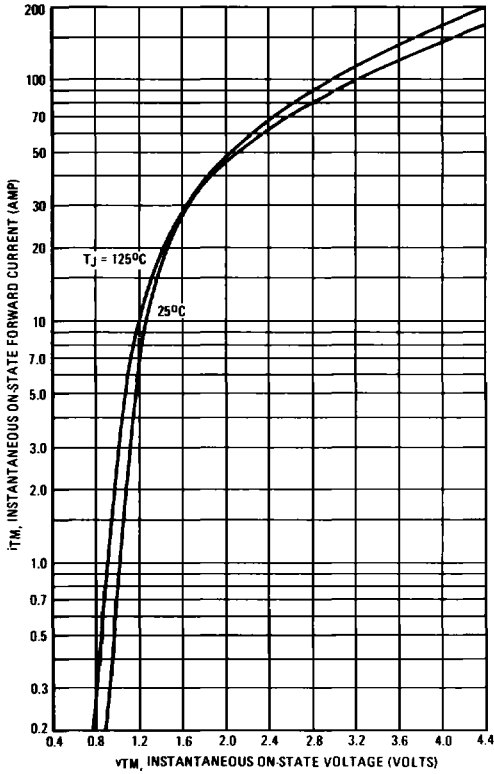


FIGURE 4 - MAXIMUM NON-REPETITIVE SURGE CURRENT

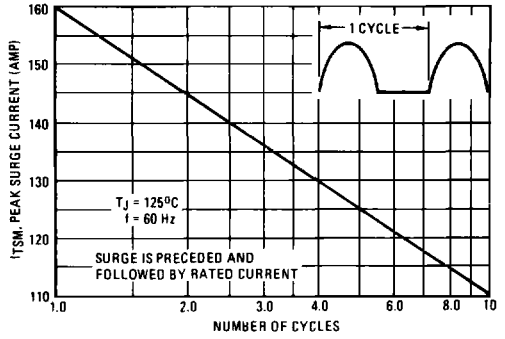
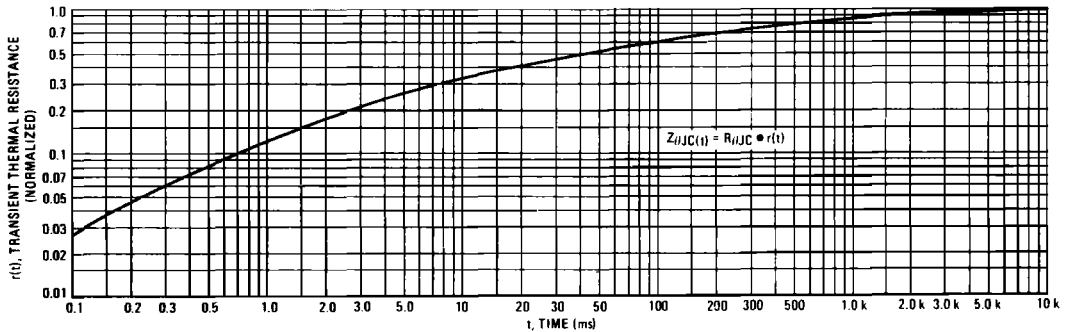


FIGURE 5 - THERMAL RESPONSE



2N6400 thru 2N6405

TYPICAL TRIGGER CHARACTERISTICS

FIGURE 6 – PULSE TRIGGER CURRENT

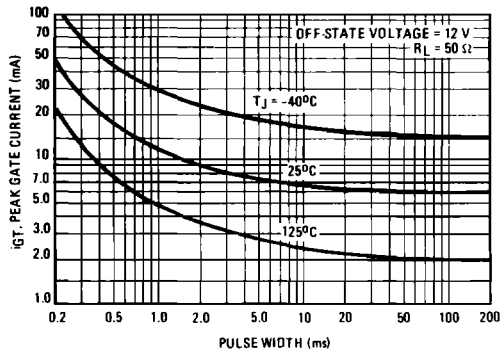


FIGURE 7 – GATE TRIGGER CURRENT

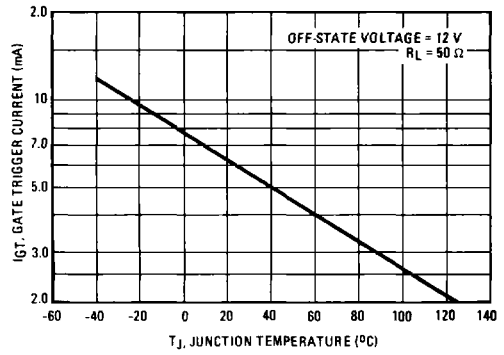


FIGURE 8 – GATE TRIGGER VOLTAGE

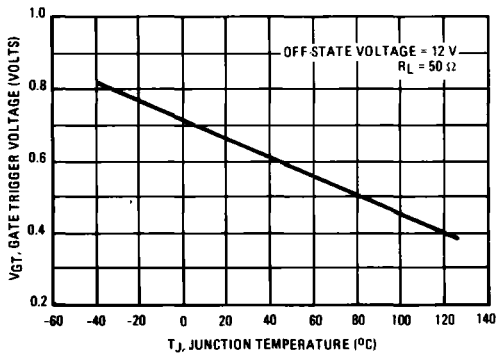


FIGURE 9 – HOLDING CURRENT

