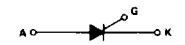
Silicon Controlled Rectifiers
Reverse Blocking Triode Thyristors

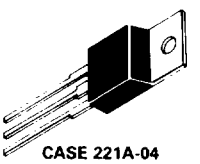
2N6400 thru 2N6405

SCRs
16 AMPERES RMS
50 thru 800 VOLTS

. . . 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





CASE 221A-04
(TO-220AB)
STYLE 3

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***MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Voltage	V_{RRM}		Volts
2N6400	or	50	
2N6401	V_{DRM}	100	
2N6402		200	
2N6403		400	
2N6404		600	
2N6405		800	
RMS On-State Current, T_C = 90°C	$I_{T(RMS)}$	16	Amps
Average On-State Current	$I_{T(AV)}$	10	Amps
Peak Non-Repetitive Forward Surge Current (1/2 cycle, Sine Wave, 60 Hz, T_J = 125°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	$P_{G(AV)}$	0.5	Watt

*Indicates JEDEC Registered Data.

(cont.)

***MAXIMUM RATINGS — continued**

Rating	Symbol	Value	Unit
Forward Peak Gate Current	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−40 to +150	°C

THERMAL CHARACTERISTICS

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

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})	T_J = 25°C	I_{DRM}, I_{RRM}	—	—	10	μA
	T_J = 125°C		—	—	2	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_{GT}				Volts
(V_D = 12 Vdc, R_L = 50 Ohms)	T_C = 25°C		—	0.7	1.5	
	T_C = −40°C		—	—	2.5	
(V_D = Rated V_{DRM}, R_L = 50 Ohms)	T_C = +125°C		0.2	—	—	
*Holding Current	T_C = 25°C	I_H	—	6	40	mA
(V_D = 12 Vdc)	*T_C = −40°C		—	—	60	
Turn-On Time (I_{TM} = 16 A, I_{GT} = 40 mAdc, V_D = Rated V_{DRM})		t_{gt}	—	1	—	μs
Turn-Off Time		t_q				μs
(I_{TM} = 16 A, I_R = 16 A, V_D = Rated V_{DRM})	T_C = 25°C		—	15	—	
	T_J = +125°C		—	35	—	
Critical Rate-of-Rise of Off-State Voltage (V_D = Rated V_{DRM}, Exponential Waveform)	T_J = +125°C	dv/dt	—	50	—	V/μs

*Indicates JEDEC Registered Data.

FIGURE 1 – AVERAGE CURRENT DERATING

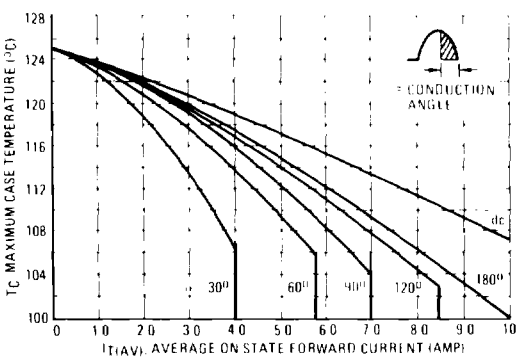

FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION

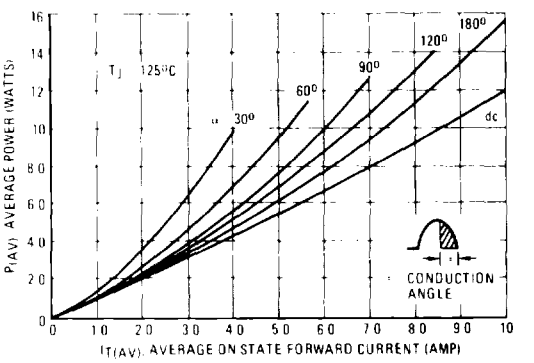

FIGURE 3 – ON-STATE CHARACTERISTICS

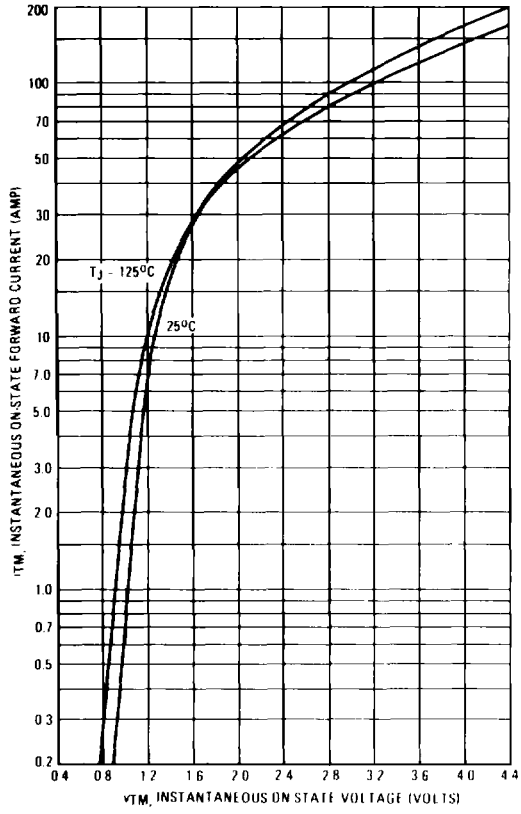

FIGURE 4 – MAXIMUM NON-REPETITIVE SURGE CURRENT

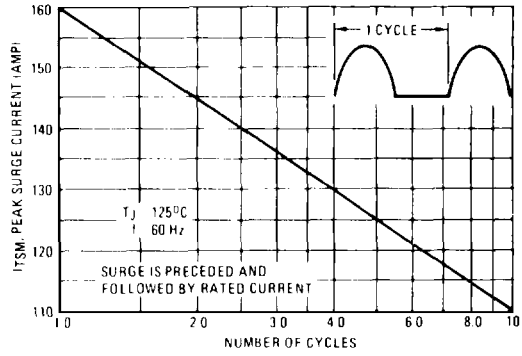

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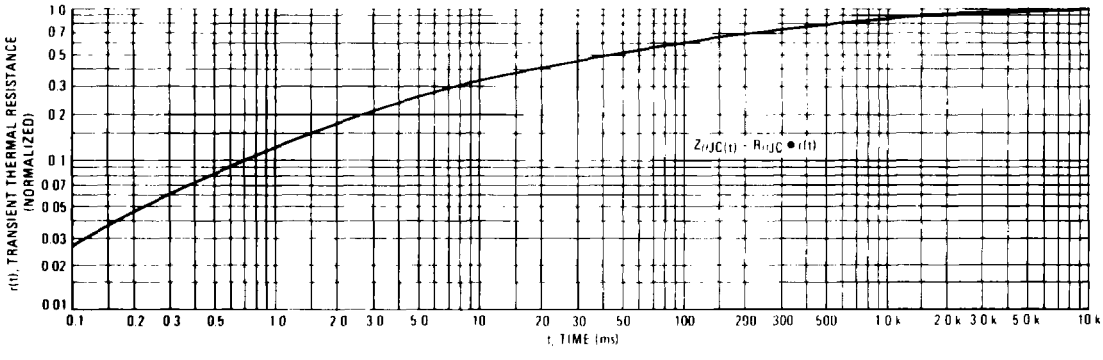
FIGURE 5 – THERMAL RESPONSE



TYPICAL TRIGGER CHARACTERISTICS

FIGURE 6 – PULSE TRIGGER CURRENT

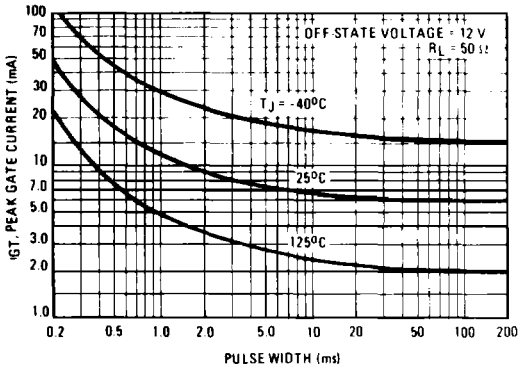


FIGURE 7 – GATE TRIGGER CURRENT

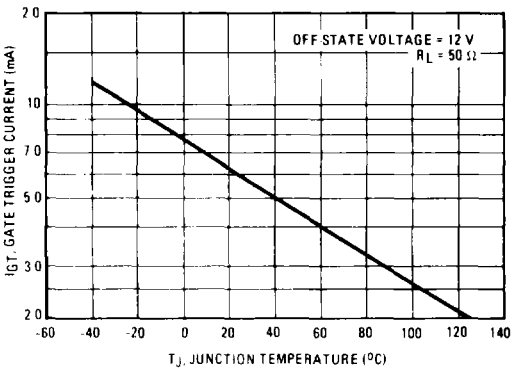


FIGURE 8 – GATE TRIGGER VOLTAGE

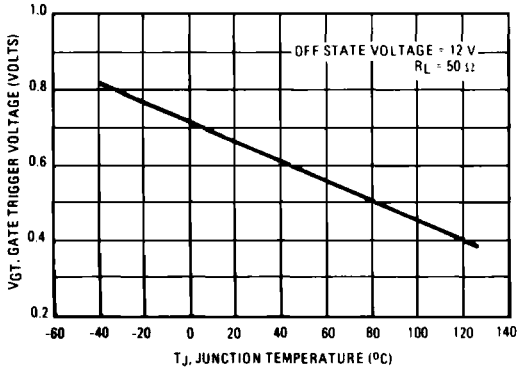
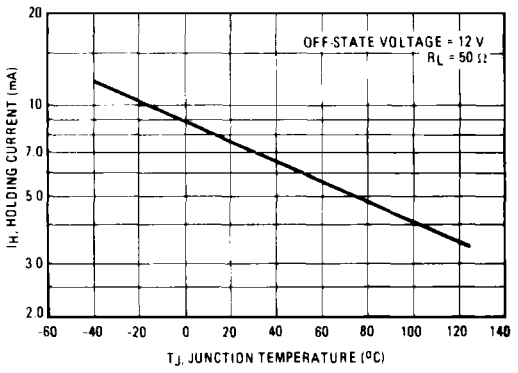


FIGURE 9 – HOLDING CURRENT



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