Triacs
Bidirectional Triode Thyristors

SC250
SC250( )3
SC251

TRIACs
15 AMPERES RMS
200 thru 600 VOLTS

. . . designed primarily for industrial and military applications for the control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems; or wherever full-wave, silicon gate controlled solid-state devices are needed.

- All Diffused and Glass Passivated Junctions for Greater Stability
- Pressfit, Stud and Isolated Stud Packages
- Gate Triggering Guaranteed In All 3 Quadrants

MAXIMUM RATINGS

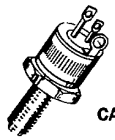
Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage SC251B, SC250B, SC250B3 SC251D, SC250D, SC250D3 SC251M, SC250M, SC250M3 SC251N, SC250N	V_{DRM}	 200 400 600 800	Volts
RMS On-State Current	$I_{T(RMS)}$	15	Amps
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz)	I_{TSM}	100	Amps
Circuit Fusing Considerations t = 1 ms t = 8.3 ms	I^2t	 20 41.5	A^2s
Peak Gate Power	P_{GM}	10	Watts
Average Gate Power	$P_{G(AV)}$	0.5	Watt
Peak Gate Power (Pulse Width = 10 μs)	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	−40 to +115	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C
Stud Torque	—	30	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case SC250, SC251 SC250( )3	$R_{\theta JC}$	 2 2.3	°C/W

CASE 174-04
(TO-203)
STYLE 3
SC251
PRESS FIT

CASE 175-03
STYLE 3
SC250
STUD



CASE 235-03
STYLE 2
SC250( )3
ISOLATED STUD

3

ELECTRICAL CHARACTERISTICS (T_C = +25°C unless otherwise noted. Values apply for either polarity of Main Terminal 2 Characteristics referenced to Main Terminal 1.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}, gate open) T_C = 25°C	I_{DRM}, I_{RRM}	—	—	10	μA
T_C = +115°C		—	—	0.5	mA
Peak On-State Voltage (I_{TM} = 21 A, Pulse Width = 1 ms, Duty Cycle ≤ 2%)	V_{TM}	—	—	1.65	Volts
Critical Rate of Rise of Off-State Voltage (Rated V_{DRM}, Gate Open-Circuited, Exponential Waveform) T_C = +115°C	dv/dt	100	—	—	V/μs
Critical Rate-of-Rise of Commutating Off-State Voltage, Note 1 ($I_{T(RMS)}$ = Rated RMS On-State Current, V_D = V_{DRM}) (Gate Open-Circuited, Commutating di/dt = 8 A/ms)	dv/dt(c)				V/μs
SC250, SC251 T_C = +84°C		4	—	—	
SC250( )3 T_C = +78°C		4	—	—	
DC Gate Trigger Current (Continuous dc) (V_D = 12 Vdc)	I_{GT}				mAdc
MT2(+), G(+); MT2(−), G(−); R_L = 100 Ohms		—	—	50	
MT2(+), G(−); R_L = 50 Ohms		—	—	50	
DC Gate Trigger Current (Continuous dc) (V_D = 12 Vdc, T_C = −40°C)	I_{GT}				mAdc
MT2(+), G(+); MT2(−), G(−); R_L = 50 Ohms		—	—	80	
MT2(+), G(−); R_L = 25 Ohms		—	—	80	
DC Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc)	V_{GT}				Vdc
MT2(+), G(+); MT2(−), G(−); R_L = 100 Ohms		—	—	2.5	
MT2(+), G(−); R_L = 50 Ohms		—	—	2.5	
DC Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc, T_C = −40°C)	V_{GT}				Vdc
MT2(+), G(+); MT2(−), G(−); R_L = 50 Ohms		—	—	3.5	
MT2(+), G(−); R_L = 25 Ohms		—	—	3.5	
DC Gate Non-Trigger Voltage (V_D = Rated V_{DRM}, R_L = 1K Ohms, T_C = 115°C) All Trigger Modes	V_{GD}	0.20	—	—	Vdc
Holding Current (V_D = 24 Vdc, Peak Initiating Current = 0.5 A, Pulse Width = 0.1 to 10 ms, Gate Trigger) (Source = 7 V, 20 Ohms) T_C = +25°C	I_H	—	—	50	mAdc
T_C = −40°C		—	—	100	
Latching Current (V_D = 24 Vdc, Gate Trigger Source = 15 V, 100 Ohms, Pulse Width = 50 μs, 5 μs Maximum Rise and Fall Times)	I_L				mAdc
MT2(+), G(+); MT2(−), G(−); MT2(+), G(−) T_C = 25°C		—	—	100	
MT2(+), G(+); MT2(−), G(−); MT2(+), G(−) T_C = −40°C		—	—	200	

FIGURE 1 – CURRENT DERATING

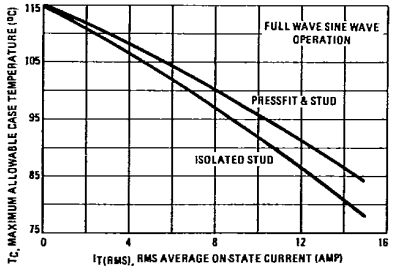


FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION