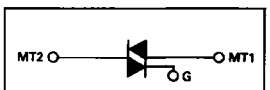
SC141
SC146

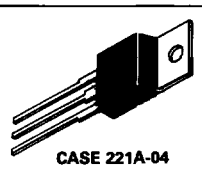
Triacs
Bidirectional Triode Thyristors

. . . designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies.

- Triggering Specified in Three Quadrants
- Blocking Voltage to 800 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability

TRIACs
6 and 10 AMPERES RMS
200 thru 800 VOLTS





CASE 221A-04
(TO-220AB)
STYLE 4

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MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

Rating		Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 (Gate Open, T_J = 25 to 125°C)		V_{DRM}		Volts
	B		200	
SC141	D		400	
SC146	M		600	
	N		800	
RMS On-State Current (T_C = 80°C)		$I_{T(RMS)}$		Amps
	SC141		6	
	SC146		10	
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz)		I_{TSM}		Amps
	SC141		80	
	SC146		120	
Circuit Fusing Considerations (t = 8.3 ms)		I^2t		A^2s
	SC141		26.5	
	SC146		60	
Peak Gate Power (Pulse Width = 10 μs)		P_{GM}	10	Watts
Average Gate Power (T_C = +80°C, t = 8.3 ms)		$P_{G(AV)}$	0.5	Watt
Peak Gate Current (Pulse Width = 10 μs)		I_{GM}	3.5	Amps
Peak Gate Voltage		V_{GM}	10	Volts
Operating Junction Temperature Range		T_J	−40 to +125	°C
Storage Temperature Range		T_{stg}	−40 to +125	°C

Note 1. V_{DRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$		°C/W
SC141		2.2	
SC146		1.5	

ELECTRICAL CHARACTERISTICS (T_C = 25°C, Either Polarity of MT2 to MT1 Voltage unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak Blocking Current		I_{DRM}				
(V_D = Rated V_{DRM}, Gate Open)	T_C = 25°C		—	—	10	μA
	T_C = 100°C		—	—	0.5	mA
Peak On-State Voltage		V_{TM}				Volts
(Pulse Width ≤ 1 ms, Duty Cycle ≤ 2%)						
SC141 I_{TM} = 8.5 A Peak			—	—	1.83	
SC146 I_{TM} = 14 A Peak			—	—	1.65	
Critical Rate-of-Rise of Off-State Voltage		dv/dt	—	50	—	V/μs
(V_D = Rated V_{DRM}, Gate Open-Circuited,						
Exponential Waveform)	T_C = 100°C					
Critical Rate-of-Rise of Commutating Off-State Voltage (1)		dv/dt(c)				V/μs
($I_{T(RMS)}$ = Rated $I_{T(RMS)}$, V_D = Rated V_{DRM},						
Gate Open-Circuited	T_C = 80°C					
SC141 Commutating di/dt = 3.0 A/ms			4	—	—	
SC146 Commutating di/dt = 5.1 A/ms			4	—	—	
DC Gate Trigger Current (Continuous dc)		I_{GT}				mAdc
(V_D = 12 Vdc)						
Trigger Mode						
MT2(+), G(+); MT2(−), G(−); R_L = 100 Ohms			—	—	50	
MT2(+), G(−); R_L = 50 Ohms			—	—	50	
MT2(+), G(+); MT2(−), G(−); R_L = 50 Ohms	T_C = −40°C		—	—	80	
MT2(+), G(−); R_L = 25 Ohms	T_C = −40°C		—	—	80	
DC Gate Trigger Voltage (Continuous dc)		V_{GT}				Vdc
(V_D = 12 Vdc, Trigger Mode)						
MT2(+), G(+); MT2(−), G(−); R_L = 100 Ohms			—	—	2.5	
MT2(+), G(−); R_L = 50 Ohms			—	—	2.5	
MT2(+), G(+); MT2(−), G(−); R_L = 50 Ohms	T_C = −40°C		—	—	3.5	
MT2(+), G(−); R_L = 25 Ohms	T_C = −40°C		—	—	3.5	
(V_D = Rated V_{DRM}; R_L = 1000 Ohms)	All Polarities					
	T_C = 100°C		0.2	—	—	
Holding Current		I_H				mAdc
(V_D = 24 Vdc, I_T = 0.5 A,						
Pulse Width = 1 ms, Duty Cycle ≤ 2%,						
Gate Trigger Source = 7 V, 20 Ohms)	T_C = 25°C		—	—	50	
	T_C = −40°C		—	—	100	
Latching Current		I_L				mAdc
(V_D = 24 Vdc)						
(Gate Trigger Source = 15 V, 100 Ohms, Trigger Mode)						
MT2(+), G(+); MT2(−), G(−)			—	—	100	
MT2(+), G(−)			—	—	200	
MT2(+), G(+); MT2(−), G(−)	T_C = −40°C		—	—	200	
MT2(+), G(−)	T_C = −40°C		—	—	400	

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FIGURE 1 – RMS CURRENT DERATING

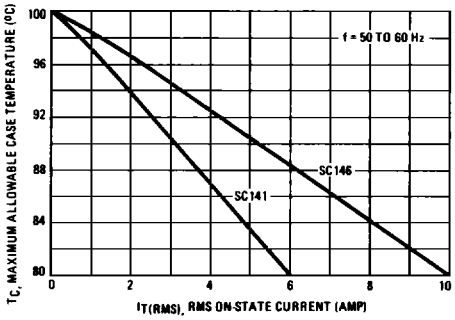
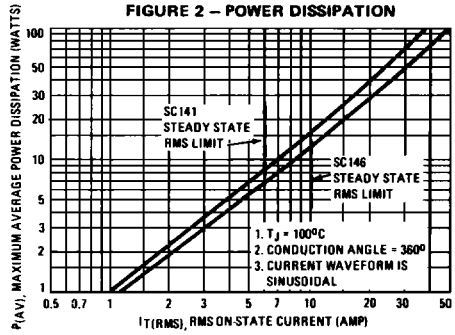


FIGURE 2 – POWER DISSIPATION



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