

T-25-15

Triacs

Silicon Bidirectional Thyristors

... designed primarily for industrial and military applications for the fullwave control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems.

- All Diffused and Glass Passivated Junctions for Greater Stability
- Pressfit and Stud Packages
- Gate Triggering Guaranteed In All 4 Quadrants

MAC245 SC246

TRIAC
10 AMPERES RMS
200 thru 800 VOLTS



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage (1) $T_C = -40^\circ\text{C to } +100^\circ\text{C}$ SC246B, MAC245B SC246D, MAC245D SC246M, MAC245M SC246N, MAC245N	V _{DRM}	200 400 600 800	Volts
RMS On-State Current	I _{T(RMS)}	10	Amps
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz)	I _{TSM}	100	Amps
Circuit Fusing Considerations $t = 1 \text{ ms}$ $t = 8.3 \text{ ms}$	I ² t	20 41.5	A ² s
Peak Gate Power	P _{GM}	10	Watts
Average Gate Power	P _{G(AV)}	0.5	Watt
Operating Junction Temperature Range	T _J	-40 to +100	°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	R _{θJC}	2	°C/W

(1) Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.



CASE 174-04
(TO-203AA)
STYLE 3
SC246
PRESS FIT



CASE 263-04
STYLE 2
MAC245
STUD

3

MAC245 • SC246

T-25-15

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Off-State Current (1) Rated V_{DRM} = Peak Off-State Voltage, Gate Open-Circuited $T_C = +25^\circ\text{C}$ $T_C = +115^\circ\text{C}$	I_{DRM}	— —	— —	0.1 0.5	mA
Peak On-State Voltage (1) $I_{TM} = 14\text{ A}$ Peak, Pulse Width = 1 ms, Duty Cycle $\leq 2\%$, $T_C = +25^\circ\text{C}$	V_{TM}	—	—	1.65	Volts
Critical Rate of Rise of Off-State Voltage (1) Rated V_{DRM} , Gate Open-Circuited, Exponential Waveform $T_C = +100^\circ\text{C}$	dv/dt	—	50	—	Volts/ μs
Critical Rate-of-Rise of Commutating Off-State Voltage (1) $I_T(\text{RMS})$ = Rated RMS On-State Current V_{DRM} = Rated Peak Off-State Voltage, Gate Open-Circuited, Commutating $di/dt = 5.4\text{ A/ms}$ $T_C = +78.5^\circ\text{C}$	$dv/dt(C)$	4	—	—	Volts/ μs
DC Gate Trigger Current (2) $V_D = 12\text{ Vdc}$ Trigger Mode MT2(+), Gate(+), $R_L = 100\text{ Ohms}$ MT2(-), Gate(-), $R_L = 100\text{ Ohms}$ MT2(+), Gate(-), $R_L = 50\text{ Ohms}$ MT2(+), Gate(+), $R_L = 50\text{ Ohms}$, $T_C = -40^\circ\text{C}$ MT2(-), Gate(-), $R_L = 50\text{ Ohms}$, $T_C = -40^\circ\text{C}$ MT2(+), Gate(-), $R_L = 25\text{ Ohms}$, $T_C = -40^\circ\text{C}$	I_{GT}	— — — — — —	— — — — — —	50 50 50 80 80 80	mAdc
DC Gate Trigger Voltage (2) $V_D = 12\text{ Vdc}$ Trigger Mode MT2(+), Gate(+), $R_L = 100\text{ Ohms}$ MT2(-), Gate(-), $R_L = 100\text{ Ohms}$ MT2(+), Gate(-), $R_L = 50\text{ Ohms}$ MT2(+), Gate(+), $R_L = 50\text{ Ohms}$, $T_C = -40^\circ\text{C}$ MT2(-), Gate(-), $R_L = 50\text{ Ohms}$, $T_C = -40^\circ\text{C}$ MT2(+), Gate(-), $R_L = 25\text{ Ohms}$, $T_C = -40^\circ\text{C}$ MT2(+), Gate(+), $R_L = 1000\text{ Ohms}$, $T_C = +100^\circ\text{C}$ (2,3) MT2(-), Gate(-), $R_L = 1000\text{ Ohms}$, $T_C = +100^\circ\text{C}$ (2,3) MT2(+), Gate(-), $R_L = 1000\text{ Ohms}$, $T_C = +100^\circ\text{C}$ (2,3) MT2(-), Gate(+), $R_L = 1000\text{ Ohms}$, $T_C = +100^\circ\text{C}$ (2,3)	V_{GT}	— — — — — — — 0.2 0.2 0.2 0.2	— — — — — — — — — — — —	2.5 2.5 2.5 3.5 3.5 3.5 — — — — — —	Vdc
Holding Current (1) Main Terminal Voltage = 24 Vdc, Peak Initiating Current = 0.5 A, Pulse Width = 0.1 to 10 ms Gate Trigger Source = 7 V, 20 Ohms $T_C = +25^\circ\text{C}$ $T_C = -40^\circ\text{C}$	I_H	— —	— —	50 100	mAdc
Latching Current (2) Main Terminal Source Voltage = 24 Vdc, Gate Trigger Source = 15 V, 100 Ohms, Pulse Width = 50 μs , Rise and Fall Times Maximum = 5 μs Trigger Mode MT2(+), Gate(+) MT2(-), Gate(-) MT2(+), Gate(-) MT2(+), Gate(+), $T_C = -40^\circ\text{C}$ MT2(-), Gate(-), $T_C = -40^\circ\text{C}$ MT2(+), Gate(-), $T_C = -40^\circ\text{C}$	I_L	— — — — — —	— — — — — —	100 100 200 200 200 400	mAdc

NOTES:

- Values apply for either polarity of Main Terminal 2 characteristics referenced to Main Terminal 1.
- Main Terminal 1 is the reference terminal.
- With V_D equal to rated off-state voltage.