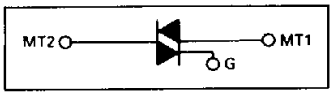
Triacs
Silicon Bidirectional Thyristors

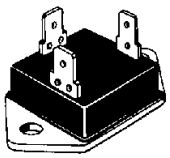
MAC625 Series
MAC635 Series

ISOLATED TRIACs
THYRISTORS
25/35 AMPERES RMS
200–600 VOLTS

. . . designed primarily for full-wave ac control applications, such as solid-state relays, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. Triac type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

- Blocking Voltage to 600 Volts
- TO-3 Isolated Mounting
- High Isolation Voltage — 2.5 kV rms
- High Commutating dv/dt — 6 V/μs Min
- UL Recognized — File # E69369





CASE 383-01
STYLE 1

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

Rating		Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 (T_J = −40 to +125°C, 1/2 Sine Wave 50 to 60 Hz, Gate Open)	MAC625-4/635-4 MAC625-6/635-6 MAC625-8/635-8	V_{DRM}	 200 400 600	Volts
Peak Gate Voltage		V_{GM}	10	Volts
On-State RMS Current (T_C = +75°C, Full Cycle Sine Wave 50 to 60 Hz) Note 2 (T_C = 58°C)	MAC625 Series MAC635 Series	$I_{T(RMS)}$	 25 35	Amps
Peak Nonrepetitive Surge Current (One Full Cycle, 60 Hz, T_C = +75°C preceded and followed by rated current)	MAC625 Series MAC635 Series	I_{TSM}	250 330	Amps
Peak Gate Power (T_C = +75°C, Pulse Width = 2 μs)		P_{GM}	10	Watts
Average Gate Power (T_C = +75°C, t = 8.3 ms)		$P_{G(AV)}$	1	Watt
Peak Gate Current		I_{GM}	3	Amps
RMS Isolation Voltage (T_A = 25°C, Relative Humidity ≤ 20%)		$V_{(ISO)}$	2500	Volts
Operating Junction Temperature		T_J	−40 to +125	°C
Storage Temperature Range		T_{stg}	−40 to +125	°C
Circuit Fusing (t = 8.3 ms)	MAC625 Series MAC635 Series	I^2t	260 350	A^2s

Notes 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
2 The case temperature reference point for all T_C measurements is a point on the center lead of the package as close as possible to the plastic body

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 Blocking Current (Either Direction) (V_D = Rated V_{DRM}, Gate Open)	I_{DRM}	—	—	10	μA
Peak On-State Voltage (Either Direction) (I_{TM} = 1.4 $I_{T(RMS)}$)	V_{TM}	—	—	1.4	Volts
Peak Gate Trigger Current (Main Terminal Voltage = 16 Vdc, I_T = 1 A) MT2(+), G(+) MT2(+), G(−) MT2(−), G(−) MT2(−), G(+)	I_{GT}	 — — — —	 — — — —	 50 50 50 —	mA
Peak Gate Trigger Voltage (Main Terminal Voltage = 6 Vdc, I_T = 1 A Minimum Gate Pulse Width = 2 μs) MT2(+), G(+) MT2(+), G(−) MT2(−), G(−) MT2(−), G(+)	V_{GT}	 — — — —	 — — — —	 3 3 3 —	Volts
Gate Non-Trigger Voltage (Main Terminal Voltage = 1/2 Rated V_{DRM}, R_L = 10 kΩ, T_J = 125°C)	V_{GD}	0.2	—	—	Volts
Holding Current (Either Direction)	I_H	—	30	—	mA
Turn-On Time (V_D = 1/2 Rated V_{DRM}, I_{TM} = Rated I_T, I_{GT} = 100 mA)	t_{gt}	—	—	10	μs
Critical Rate of Rise of Commutation Voltage (V_D = 2/3 Rated V_{DRM}, T_J = 125°C) MAC625: I_{TM} = 35.4 A, di/dt = 12.7 A/ms MAC635: I_{TM} = 49.5 A, di/dt = 17.8 A/ms	dv/dt(c)	6	—	—	V/μs
Critical Rate of Rise of Off-State Voltage (V_D = 2/3 Rated V_{DRM}, Exponential Voltage Rise, Gate Open, T_J = 125°C)	dv/dt	100	—	—	V/μs

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TYPICAL CHARACTERISTICS

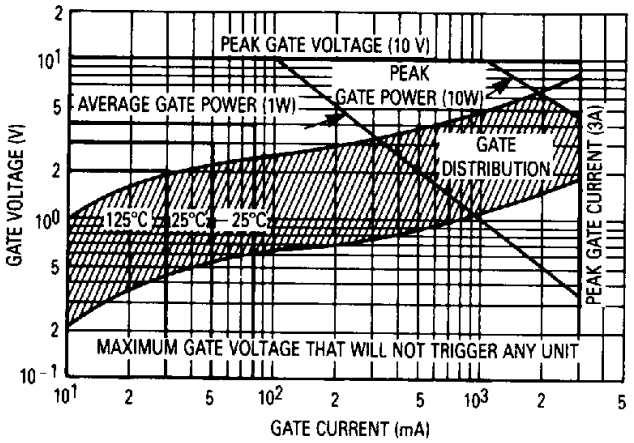

Figure 1. Gate Characteristics

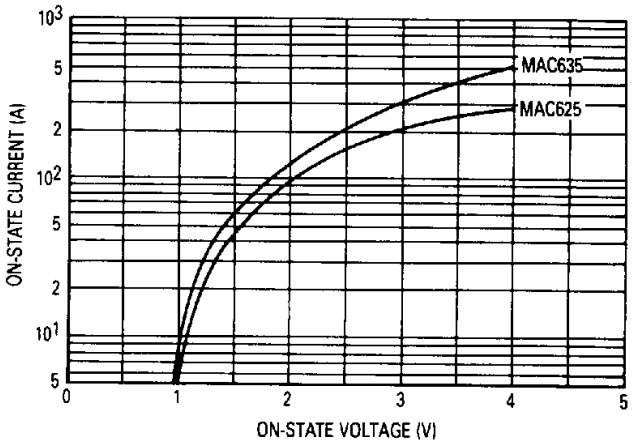

Figure 2. On-State Voltage

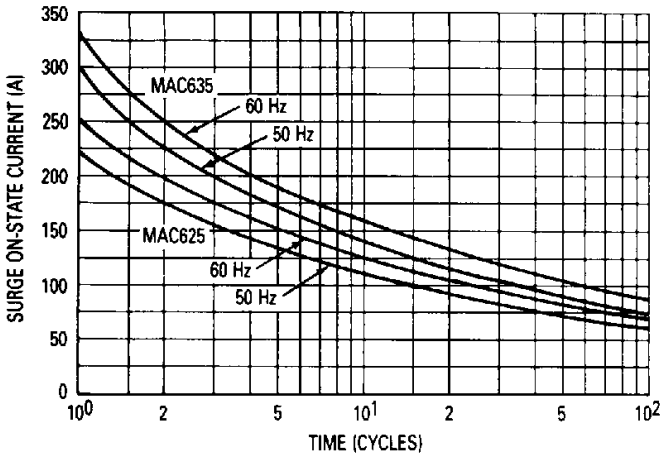

Figure 3. Surge On-State Current Rating (Non-Repetitive)

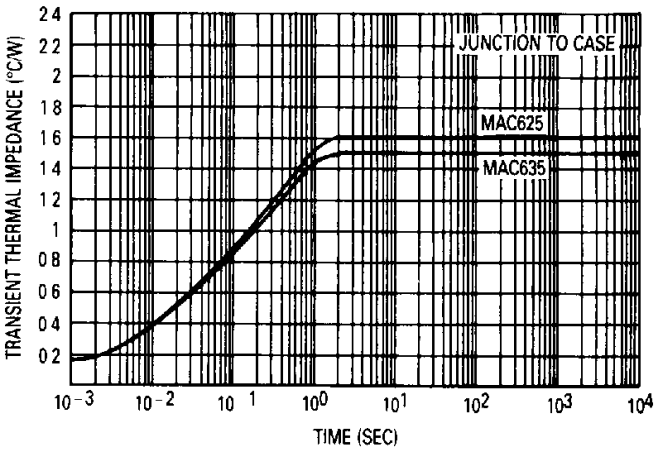

Figure 4. Transient Thermal Impedance

RMS On-State Current versus Maximum Power Dissipation

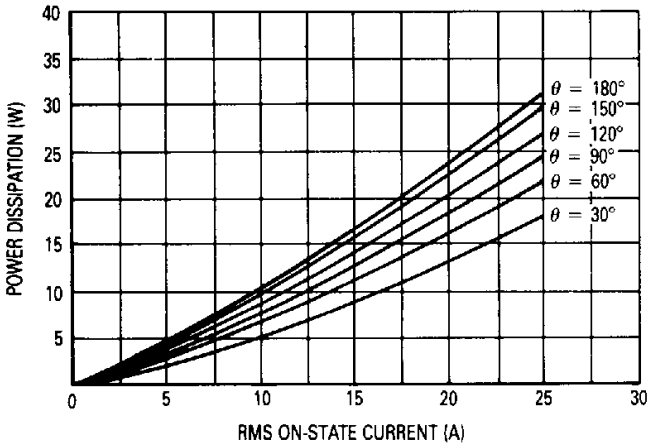

Figure 5. MAC625

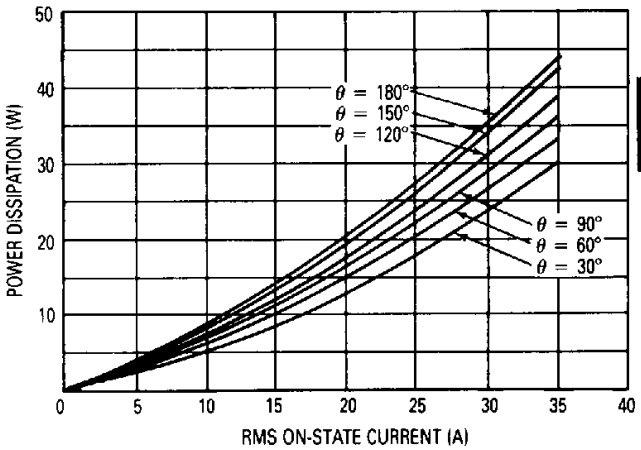

Figure 6. MAC635

RMS On-State Current versus Allowable Case Temperature

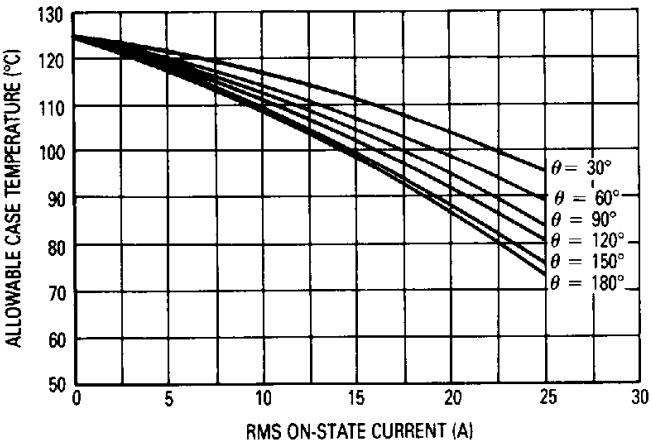

Figure 7. MAC625

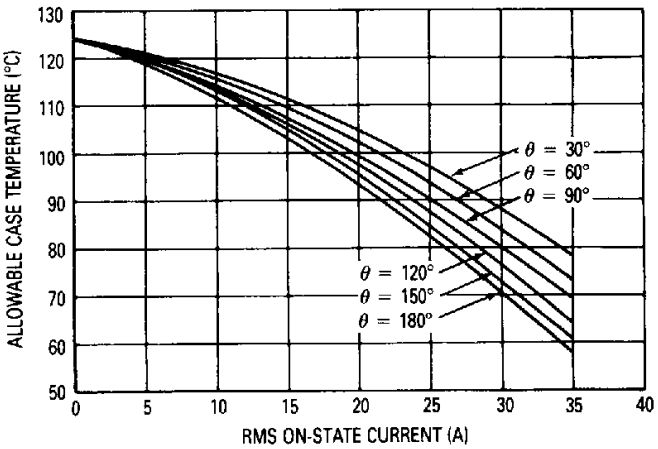

Figure 8. MAC635

Ambient Temperature versus RMS On-State Current

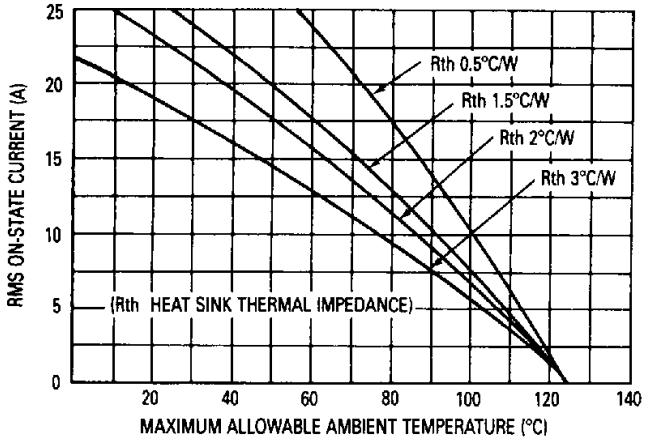

Figure 9. MAC625

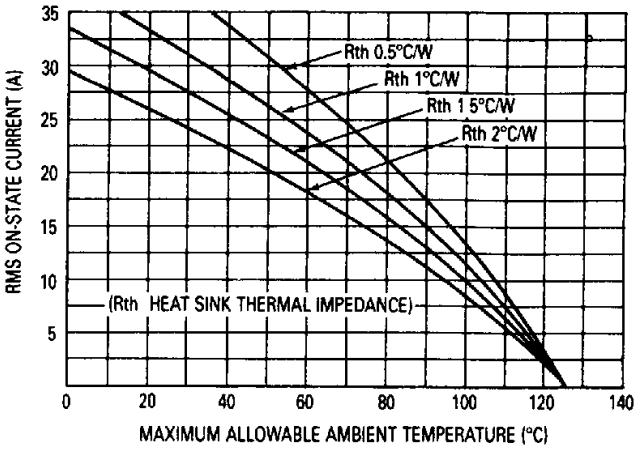

Figure 10. MAC635

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