

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|---------------------|-------------------|----------------------|
| Peak repetitive off-state voltage⁽¹⁾ ($T_J = -40$ to $+110^\circ\text{C}$, $\frac{1}{2}$ sine wave, 50 to 60Hz, gate open) MAC310-4, MAC310A-4 MAC310-6, MAC310A-6 MAC310-8, MAC310A-8 | V_{DRM} | 200 400 600 | Volts |
| RMS on-state current (Full cycle sine wave, 50 to 60Hz, $T_C = 80^\circ\text{C}$) | $I_{\text{T(RMS)}}$ | 10 | Amps |
| Peak non-repetitive surge current (1 cycle, 60Hz, $T_J = 110^\circ\text{C}$) | I_{TSM} | 100 | Amps |
| Circuit fusing considerations ($t = 8.3\text{ms}$) | I^2t | 40 | A^2s |
| Peak gate current ($t \leq 2\mu\text{s}$) | I_{GM} | ± 2 | Amps |
| Peak gate voltage ($t \leq 2\mu\text{s}$) | V_{GM} | ± 10 | Volts |
| Peak gate power ($t \leq 2\mu\text{s}$) | P_{GM} | 20 | Watts |
| Average gate power ($T_C = 80^\circ\text{C}$, $t \leq 8.3\text{ms}$) | $P_{\text{G(AV)}}$ | 0.5 | Watts |
| Operating junction temperature range | T_J | -40 to +110 | $^\circ\text{C}$ |
| Storage temperature range | T_{stg} | -40 to +150 | $^\circ\text{C}$ |
| Mounting torque | | 8 | In. lb. |

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 | Maximum | Unit |
|--|-----------------------|---------|---------------------------|
| Thermal resistance, junction to case | $R_{\theta\text{JC}}$ | 2.2 | $^\circ\text{C}/\text{W}$ |
| Thermal resistance, junction to ambient | $R_{\theta\text{JA}}$ | 60 | $^\circ\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ and either polarity of MT2 to MT1 voltage unless otherwise noted)

| Characteristic | Symbol | Min | Typ. | Max | Unit |
|---|------------------|-----|------|-------------------|----------|
| Peak blocking current ($V_D = \text{Rated } V_{\text{DRM}}$, gate open, $T_J = 25^\circ\text{C}$) ($V_D = \text{Rated } V_{\text{DRM}}$, gate open, $T_J = 110^\circ\text{C}$) | I_{DRM} | - | - | 10 2 | mA mA |
| Peak on-state voltage ($I_{\text{TM}} = 14\text{A}$ peak, pulse width $\leq 2\text{ms}$, duty cycle $\leq 2\%$.) | V_{TM} | - | - | 2.0 | Volts |
| Gate trigger current (continuous dc) ($V_D = 12\text{V}$, $R_L = 100\Omega$) MT2(+),G(+); MT2(+),G(-); MT2(-),G(-) MT2(-),G(+) "A" suffix only | I_{GT} | - | - | 5 10 | mA |
| Gate trigger voltage (continuous dc) ($V_D = 12\text{V}$, $R_L = 100\Omega$) MT2(+),G(+); MT2(+),G(-); MT2(-),G(-) MT2(-),G(+) "A" suffix only ($V_D = \text{Rated } V_{\text{DRM}}$, $R_L = 10\text{k}\Omega$, $T_C = 110^\circ\text{C}$) All Types | V_{GT} | - | - | 2.0 2.5 0.2 | Volts |

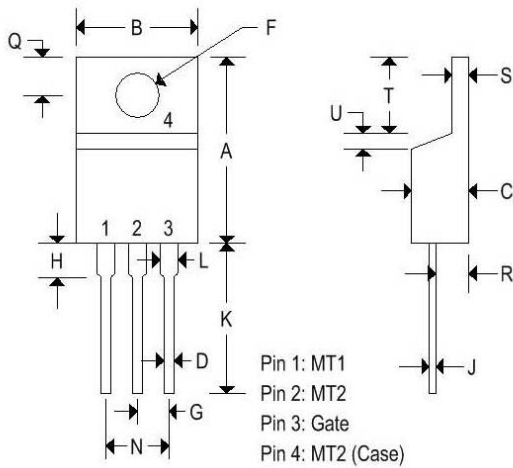
MAC310(A) SERIES

SILICON BIDIRECTIONAL THYRISTORS

| | | | | | |
|--|------------|---|-----|----|-----------|
| Holding current ($V_D = 12V$, $I_{TM} = 200mA$, gate open) | I_H | - | - | 15 | mA |
| Gate controlled turn-on time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 14A$, $I_G = 30mA$) | t_{gt} | - | 1.5 | - | μs |
| Critical rate of rise of off-state voltage ($V_D = \text{Rated } V_{DRM}$, exponential waveform, $T_C = 110^\circ C$) | dv/dt | - | 25 | - | $V/\mu s$ |
| Critical rate of rise of commutation voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 14A$ peak, commutating $di/dt = 5A/ms$, gate unenergized, $T_C = 80^\circ C$) | $dv/dt(c)$ | - | 5 | - | $V/\mu s$ |

MECHANICAL CHARACTERISTICS

| | |
|----------------|---------------|
| Case | TO-220AB |
| Marking | Alpha-numeric |
| Pin out | See below |



| | TO-220AB | | | |
|---|----------|-------|-------------|--------|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| A | 0.575 | 0.620 | 14.600 | 15.750 |
| B | 0.380 | 0.405 | 9.650 | 10.290 |
| C | 0.160 | 0.190 | 4.060 | 4.820 |
| D | 0.025 | 0.035 | 0.640 | 0.890 |
| F | 0.142 | 0.147 | 3.610 | 3.730 |
| G | 0.095 | 0.105 | 2.410 | 2.670 |
| H | 0.110 | 0.155 | 2.790 | 3.930 |
| J | 0.014 | 0.022 | 0.360 | 0.560 |
| K | 0.500 | 0.562 | 12.700 | 14.270 |
| L | 0.045 | 0.055 | 1.140 | 1.390 |
| N | 0.190 | 0.210 | 4.830 | 5.330 |
| Q | 0.100 | 0.120 | 2.540 | 3.040 |
| R | 0.080 | 0.110 | 2.040 | 2.790 |
| S | 0.045 | 0.055 | 1.140 | 1.390 |
| T | 0.235 | 0.255 | 5.970 | 6.480 |
| U | - | 0.050 | - | 1.270 |
| V | 0.045 | - | 1.140 | - |
| Z | - | 0.080 | - | 2.030 |

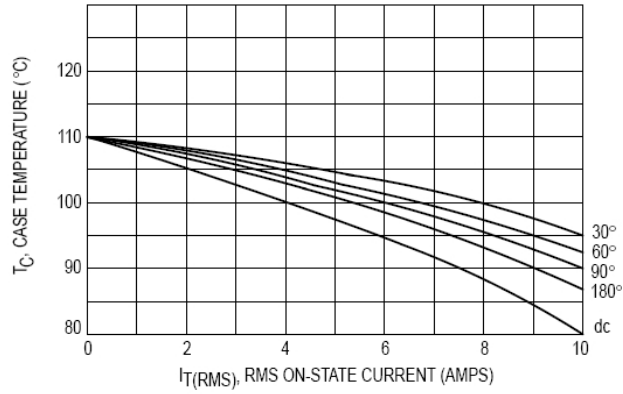


Figure 1. RMS Current Derating

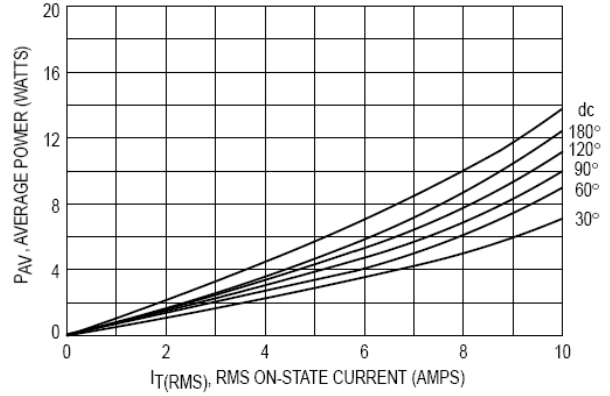


Figure 2. On-State Power Dissipation