

MCR12LD, MCR12LM, MCR12LN

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------|-----------------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 2.2 | $^{\circ}\text{C}/\text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ | 62.5 | |
| Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds | T_L | 260 | $^{\circ}\text{C}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | | |
|---|-----------------------------|-----------|---|---|------|----|
| Peak Repetitive Forward or Reverse Blocking Current ($V_D = \text{Rated } V_{DRM}$ and V_{RRM} ; Gate Open) | $T_J = 25^{\circ}\text{C}$ | I_{DRM} | - | - | 0.01 | mA |
| | $T_J = 125^{\circ}\text{C}$ | I_{RRM} | - | - | 2.0 | |

ON CHARACTERISTICS

| | | | | | |
|---|----------|-----|------|-----|----|
| Peak Forward On-State Voltage (Note 2) ($I_{TM} = 24 \text{ A}$) | V_{TM} | - | - | 2.2 | V |
| Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ V}$, $R_L = 100 \Omega$) | I_{GT} | 2.0 | 4.0 | 8.0 | mA |
| Holding Current ($V_D = 12 \text{ V}$, Gate Open, Initiating Current = 200 mA) | I_H | 4.0 | 10 | 20 | mA |
| Latch Current ($V_D = 12 \text{ V}$, $I_g = 20 \text{ mA}$) | I_L | 6.0 | 12 | 30 | mA |
| Gate Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}$, $R_L = 100 \Omega$) | V_{GT} | 0.5 | 0.65 | 0.8 | V |

DYNAMIC CHARACTERISTICS

| | | | | | |
|--|---------|-----|-----|----|------------------------|
| Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Waveform, Gate Open, $T_J = 125^{\circ}\text{C}$) | dv/dt | 100 | 250 | - | $\text{V}/\mu\text{s}$ |
| Critical Rate of Rise of On-State Current $I_{PK} = 50 \text{ A}$; $P_w = 40 \mu\text{sec}$; $di/dt = 1 \text{ A}/\mu\text{sec}$, $I_{gt} = 50 \text{ mA}$ | di/dt | - | - | 50 | $\text{A}/\mu\text{s}$ |

2. Indicates Pulse Test: Pulse Width $\leq 1.0 \text{ ms}$, Duty Cycle $\leq 2\%$.

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Voltage Current Characteristic of SCR

| Symbol | Parameter |
|-----------|---|
| V_{DRM} | Peak Repetitive Off State Forward Voltage |
| I_{DRM} | Peak Forward Blocking Current |
| V_{RRM} | Peak Repetitive Off State Reverse Voltage |
| I_{RRM} | Peak Reverse Blocking Current |
| V_{TM} | Peak On State Voltage |
| I_H | Holding Current |

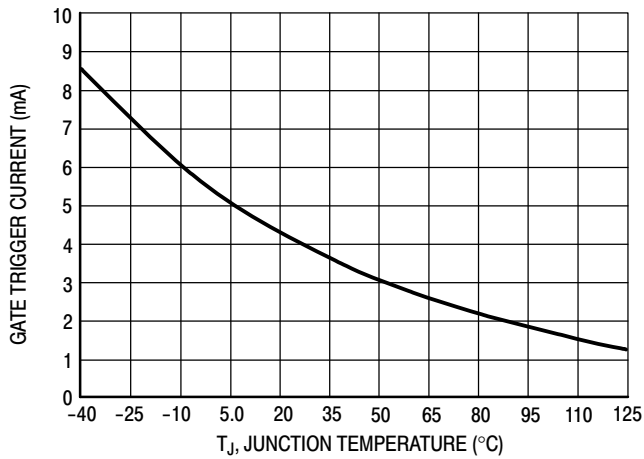
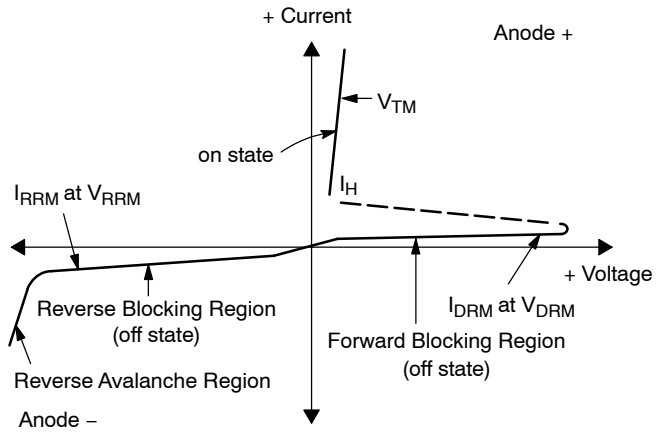


Figure 1. Typical Gate Trigger Current versus Junction Temperature

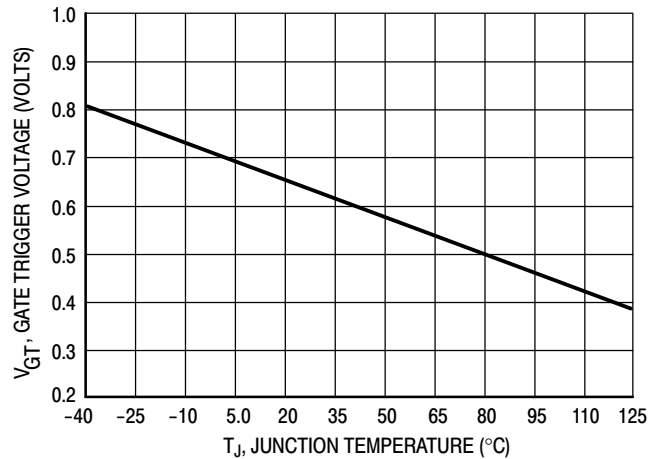


Figure 2. Typical Gate Trigger Voltage versus Junction Temperature

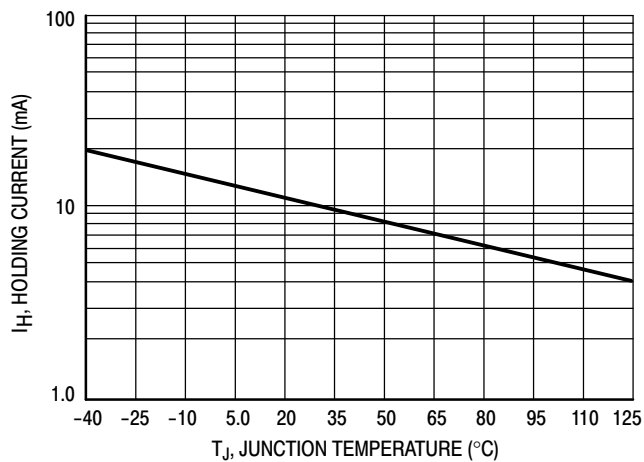


Figure 3. Typical Holding Current versus Junction Temperature

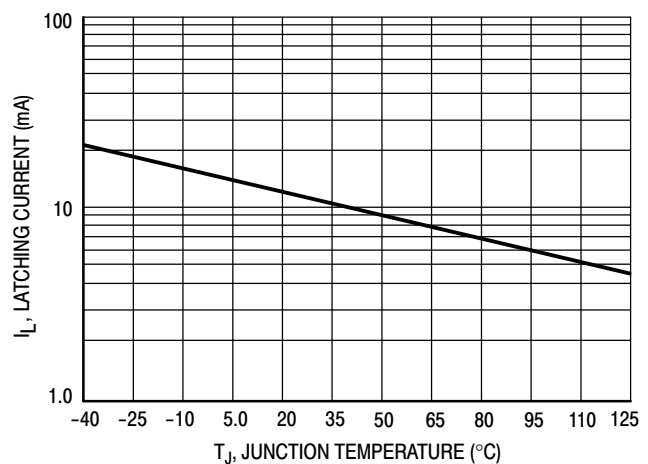


Figure 4. Typical Latching Current versus Junction Temperature

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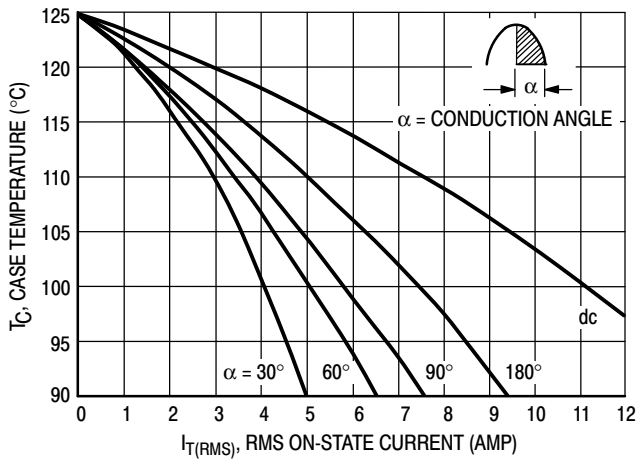


Figure 5. Typical RMS Current Derating

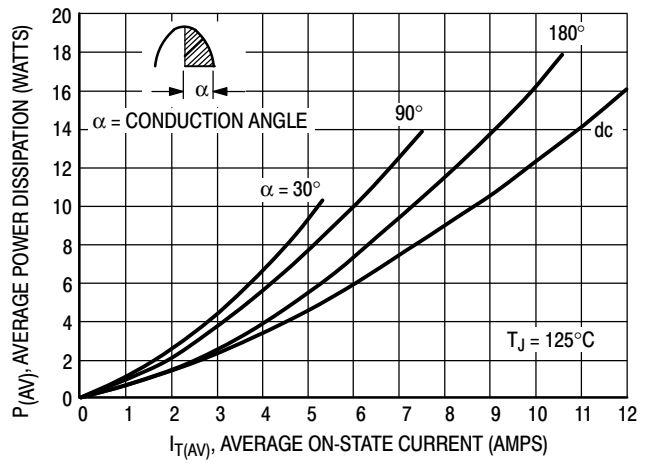


Figure 6. On-State Power Dissipation

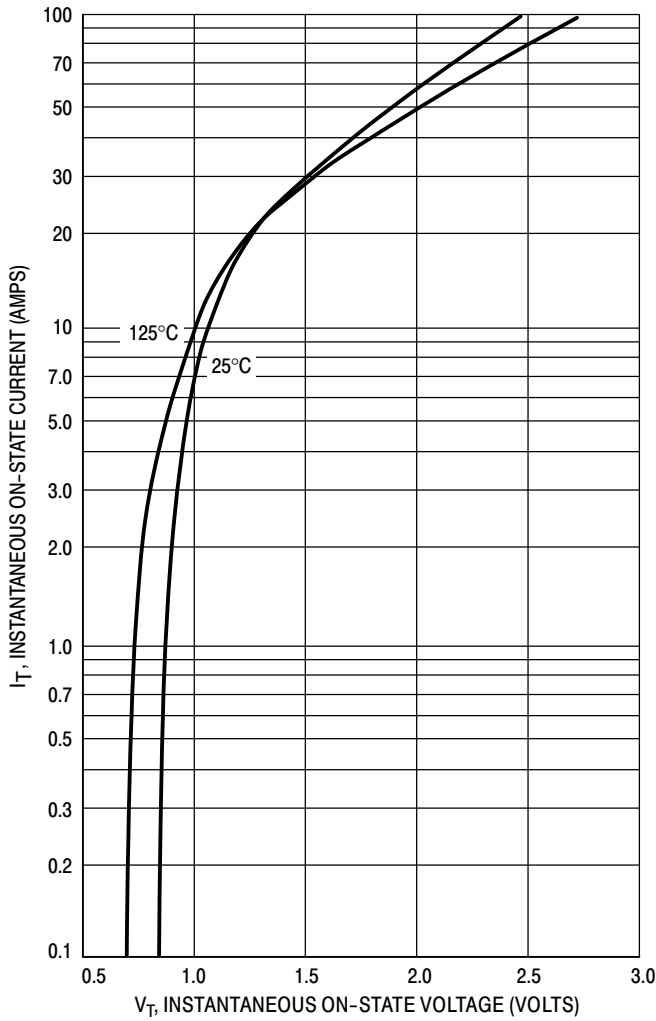


Figure 7. Typical On-State Characteristics

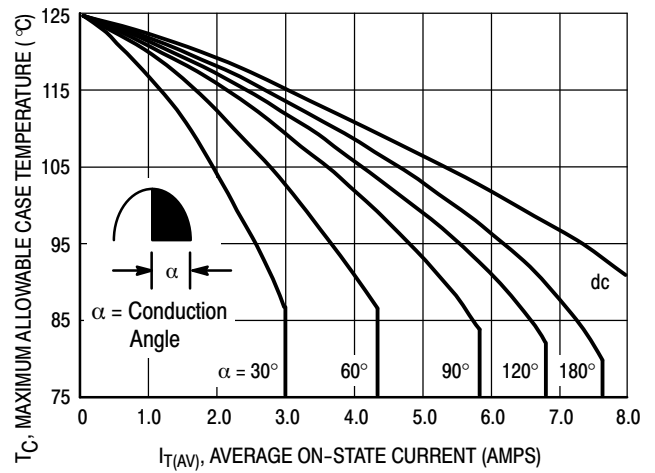
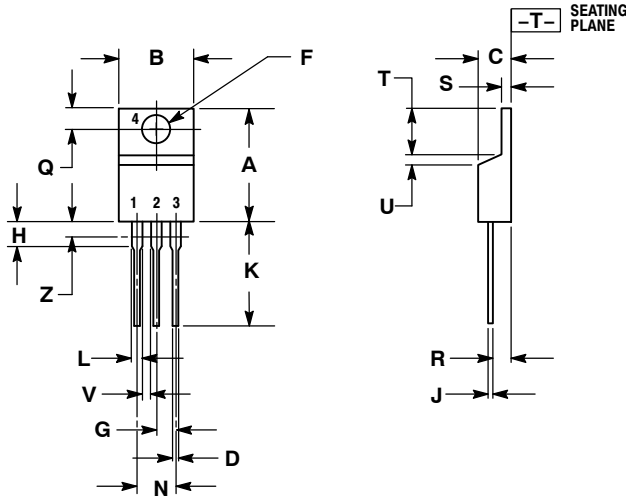


Figure 8. Average Current Derating

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PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AF



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.405 | 9.66 | 10.28 |
| C | 0.160 | 0.190 | 4.07 | 4.82 |
| D | 0.025 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.161 | 3.61 | 4.09 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.014 | 0.025 | 0.36 | 0.64 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.39 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | --- | 1.15 | --- |
| Z | --- | 0.080 | --- | 2.04 |

STYLE 3:

- PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

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