

MCR12DG, MCR12MG, MCR12NG

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.2	$^{\circ}\text{C/W}$
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
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OFF CHARACTERISTICS

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

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	8.0	20	mA
Holding Current ($V_D = 12 \text{ V}$, Gate Open, Initiating Current = 200 mA)	I_H	4.0	20	40	mA
Latch Current ($V_D = 12 \text{ V}$, $I_G = 20 \text{ mA}$)	I_L	6.0	25	60	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}$; $R_L = 100 \Omega$)	V_{GT}	0.5	0.65	1.0	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	–	$\text{V}/\mu\text{s}$
Repetitive Critical Rate of Rise of On-State Current IPK = 50 A, Pw = 40 μsec , $di/dt = 1 \text{ A}/\mu\text{sec}$, $I_{gt} = 50 \text{ mA}$	di/dt	–	–	50	$\text{A}/\mu\text{s}$

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Indicates Pulse Test: Pulse Width $\leq 2.0 \text{ ms}$, Duty Cycle $\leq 2\%$.

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

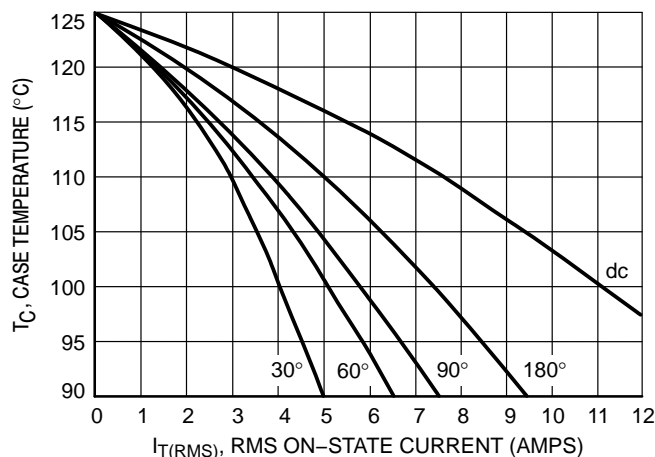
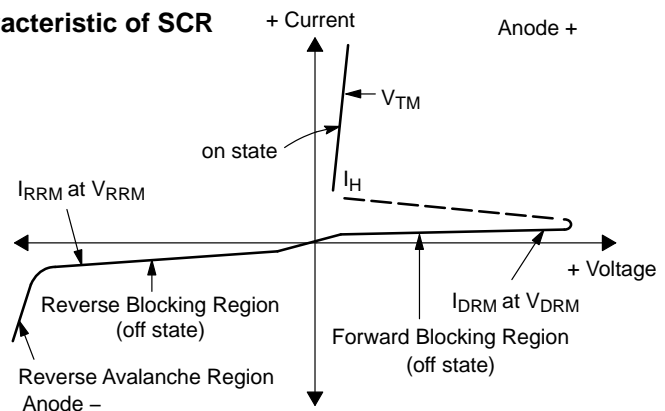


Figure 1. Typical RMS Current Derating

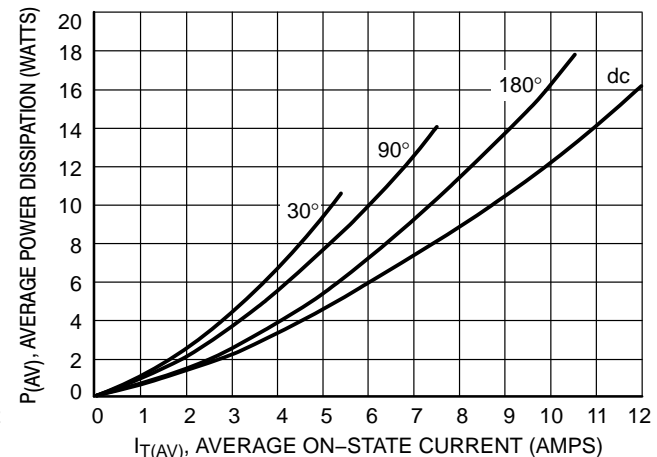


Figure 2. On-State Power Dissipation

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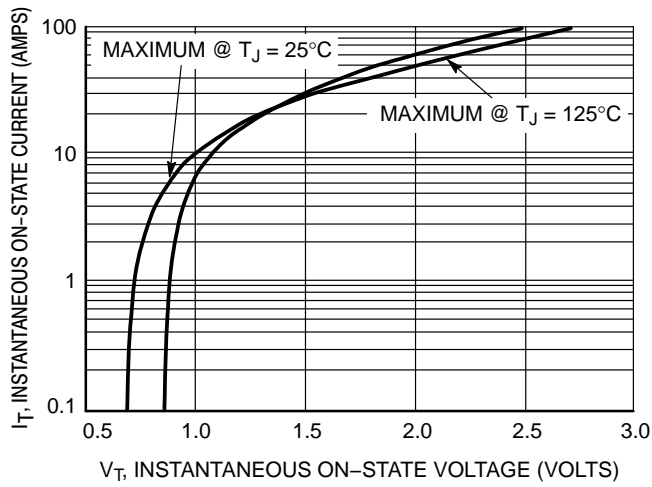


Figure 3. Typical On-State Characteristics

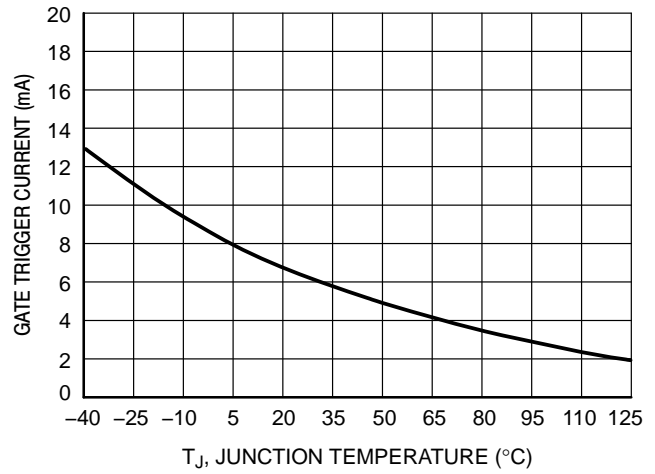


Figure 4. Typical Gate Trigger Current versus Junction Temperature

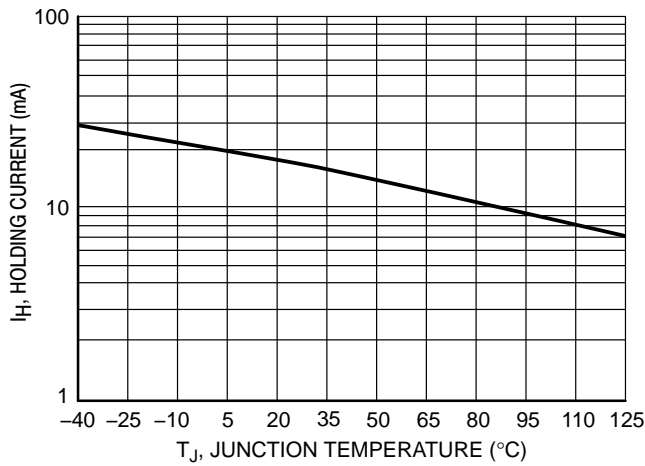


Figure 5. Typical Holding Current versus Junction Temperature

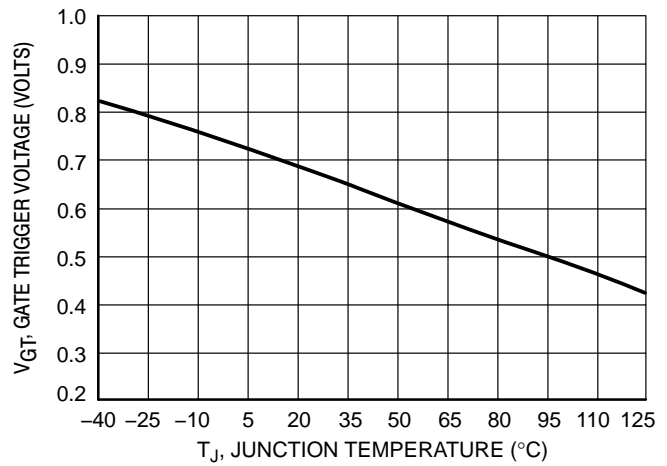


Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

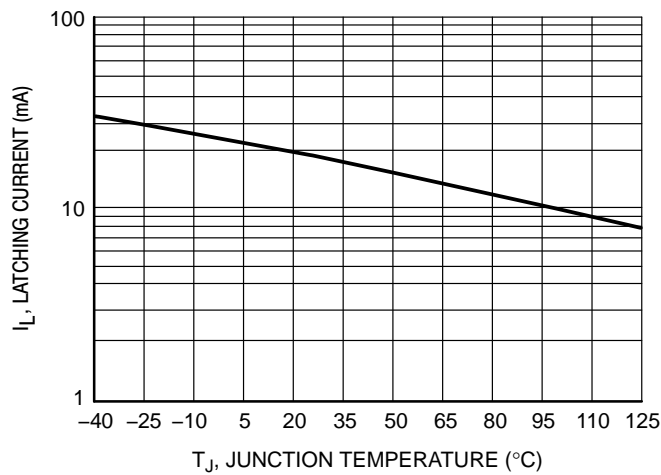
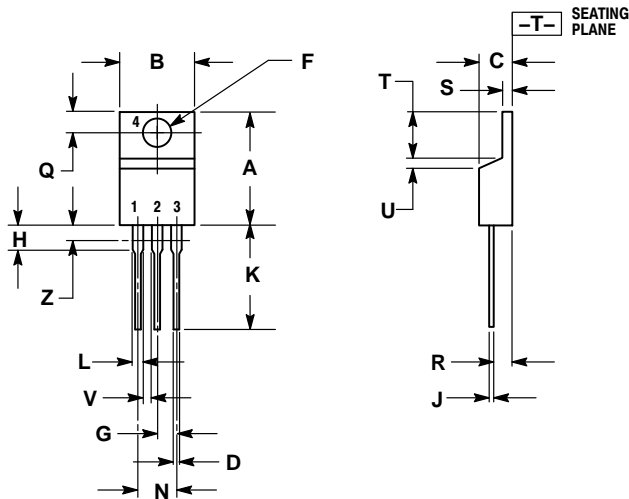


Figure 7. Typical Latching Current versus Junction Temperature

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PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AH




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	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
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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