Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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MCR310 Series

Preferred Device

Silicon Controlled Rectifiers

Reverse Blocking Triode Thyristors

Designed for industrial and consumer applications such as temperature, light and speed control; process and remote controls; warning systems; capacitive discharge circuits and MPU interface.

- Center Gate Geometry for Uniform Current Density
- All Diffused and Glass-Passivated Junctions for Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Low Trigger Currents, 200 μA Maximum for Direct Driving from Integrated Circuits
- Pb−Free Packages are Available

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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage(1) (T_J = −40 to 110°C) (1/2 Sine Wave, R_{GK} = 1 kΩ) MCR310-6 MCR310-8 MCR310-10	V_{DRM} or V_{RRM}	400 600 800	Volts
On-State RMS Current (T_C = 75°C)	$I_{T(RMS)}$	10	Amps
Peak Non-repetitive Surge Current (1/2 Cycle, 60 Hz, T_J = −40 to 110°C)	I_{TSM}	100	Amps
Circuit Fusing (t = 8.3 ms)	I^2t	40	A^2s
Peak Gate Voltage (t ≤ 10 μs)	V_{GM}	±5	Volts
Peak Gate Current (t ≤ 10 μs)	I_{GM}	1	Amp
Peak Gate Power (t ≤ 10 μs)	P_{GM}	5	Watts
Average Gate Power	$P_{G(AV)}$	0.75	Watt
Operating Junction Temperature Range	T_J	−40 to +110	°C
Storage Temperature Range	T_{stg}	−40 to +150	°C
Mounting Torque	−	8	in.-lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

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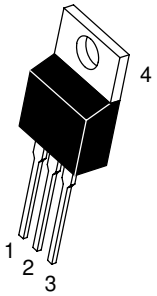
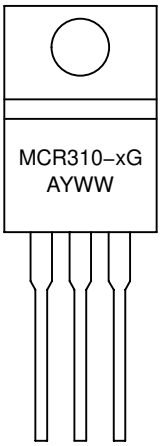
SCRs
10 AMPERES RMS
400 thru 800 VOLTS



TO−220AB
CASE 221A
STYLE 3

MARKING DIAGRAM



x = 6, 8 or 10
A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
MCR310−6	TO220AB	500/Box
MCR310−6G	TO220AB (Pb−Free)	500/Box
MCR310−8	TO220AB	500/Box
MCR310−8G	TO220AB (Pb−Free)	500/Box
MCR310−10	TO220AB	500/Box
MCR310−10G	TO220AB (Pb−Free)	500/Box

Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS (T_C = 25°C, R_{GK} = 1 kΩ unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak Forward Blocking Current[1] (T_J = 110°C, V_D = Rated V_{DRM})	T_C = 110°C T_C = 25°C	I_{DRM}	— —	— —	500 10	μA μA
Peak Reverse Blocking Current[1] (T_J = 110°C, V_R = Rated V_{RRM})	T_C = 110°C T_C = 25°C	I_{RRM}	— —	— —	500 10	μA μA
On-State Voltage (I_{TM} = 20 A Peak, Pulse Width ≤ 1 ms, Duty Cycle ≤ 2%)		V_{TM}	—	1.7	2.2	Volts
Gate Trigger Current, Continuous dc[2] (V_D = 12 V, R_L = 100 Ω)		I_{GT}	—	30	200	μA
Gate Trigger Voltage, Continuous dc (V_D = 12 V, R_L = 100 Ω) (V_D = Rated V_{DRM}, R_L = 10 kΩ, T_J = 110°C)		V_{GT}	— 0.1	0.5 —	1.5 —	Volts
Holding Current (V_D = 12 V, I_{TM} = 100 mA)		I_H	—	—	6	mA
Critical Rate of Rise of Forward Blocking Voltage (V_D = Rated V_{DRM}, T_J = 110°C, Exponential Waveform)		dv/dt	—	10	—	V/μs
Gate Controlled Turn-On Time (V_D = Rated V_{DRM}, I_{TM} = 20 A, I_G = 2 mA)		t_{gt}	—	1	—	μs

1. Ratings apply for negative gate voltage or R_{GK} = 1 kΩ. Devices shall not have a positive gate voltage concurrently with a negative voltage on the anode. Devices should not be tested with a constant current source for forward and reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.
2. Does not include R_{GK} current.

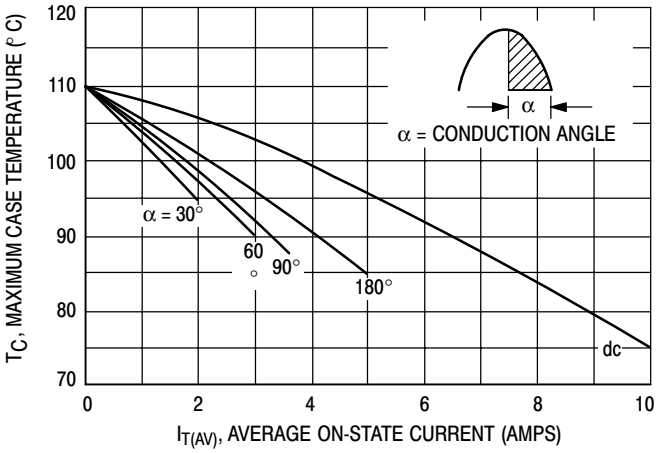


Figure 1. Average Current Derating

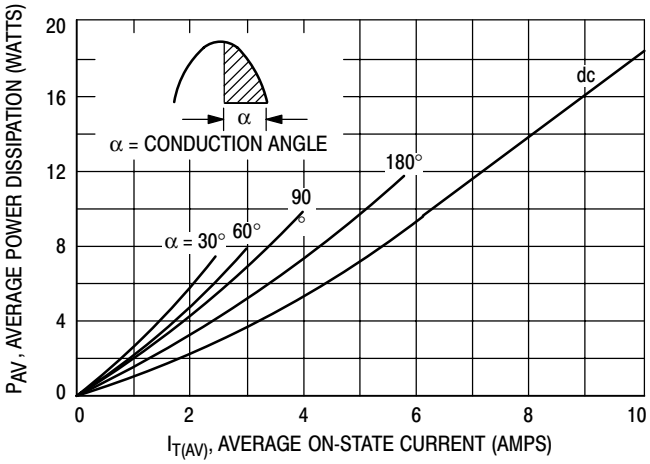


Figure 2. On-State Power Dissipation

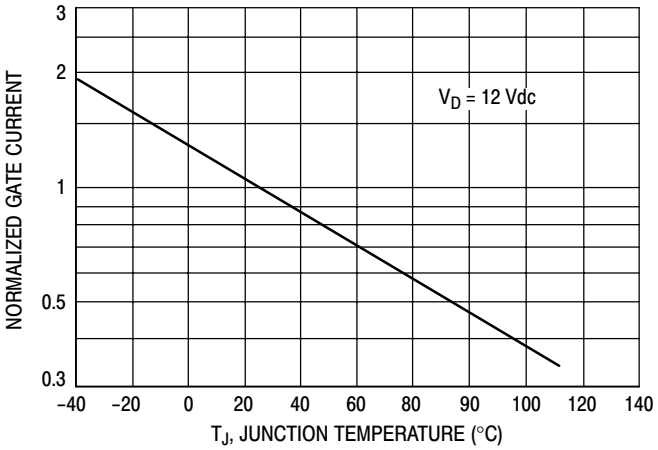


Figure 3. Normalized Gate Current

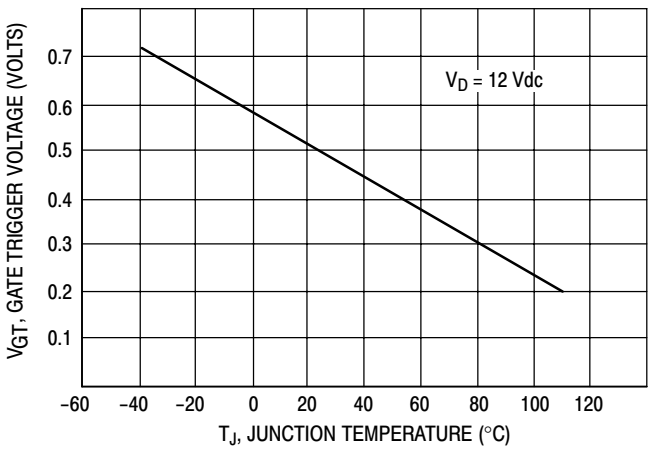
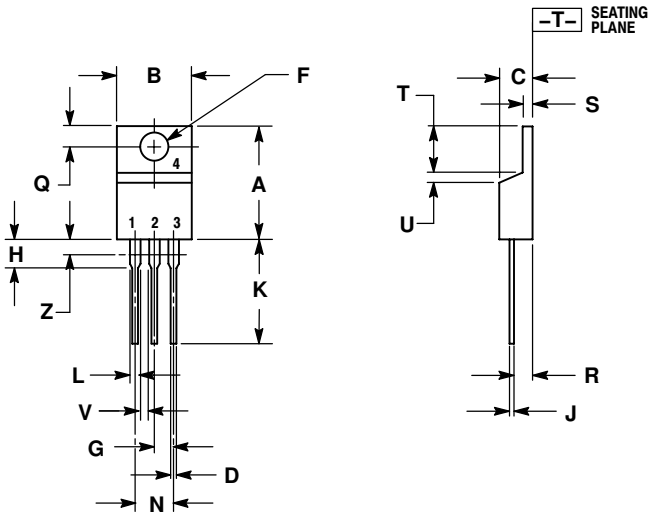


Figure 4. Gate Voltage

PACKAGE DIMENSIONS

TO–220AB
CASE 221A–07
ISSUE AA



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.

	INCHES		MILLIMETERS	
DIM	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	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.022	0.36	0.55
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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