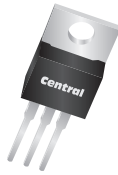


CQ220-12M3

SILICON  
THREE-QUADRANT TRIAC  
12 AMP, 600 VOLT



TO-220 CASE



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CQ220-12M3 is an epoxy molded silicon TRIAC designed for full wave AC control applications featuring gate triggering in three quadrants.

**MARKING: FULL PART NUMBER**

**FEATURES:**

- 3Q technology for noise immunity
- High commutation capability
- Triggering in three quadrants only

**APPLICATIONS:**

- Motor controls
- General purpose AC switching
- High power inductive load switching

MAXIMUM RATINGS: (T <sub>C</sub> =25°C unless otherwise noted)	SYMBOL		UNITS
Peak Repetitive Off-State Voltage	V <sub>DRM</sub> , V <sub>RRM</sub>	600	V
Peak One Cycle Surge Voltage, t=10ms (T <sub>J</sub> =125°C)	V <sub>DSM</sub>	700	V
RMS On-State Current (T <sub>C</sub> =90°C)	I <sub>T(RMS)</sub>	12	A
Peak One Cycle Surge Current, t=16.7ms	I <sub>TSM</sub>	100	A
I <sup>2</sup> t Value for Fusing, t=10ms	I <sup>2</sup> t	78	A <sup>2</sup> s
Average Gate Power Dissipation (T <sub>J</sub> =125°C)	P <sub>G(AV)</sub>	1.0	W
Peak Gate Current, tp=20µs (T <sub>J</sub> =125°C)	I <sub>GM</sub>	4.0	A
Critical Rate of Rise of On-State Current Repetitive, f=120Hz (T <sub>J</sub> =125°C)	di/dt	50	A/µs
Operating Junction Temperature	T <sub>J</sub>	-40 to +125	°C
Storage Temperature	T <sub>stg</sub>	-40 to +150	°C
Thermal Resistance	θ <sub>JA</sub>	60	°C/W
Thermal Resistance	θ <sub>JC</sub>	1.4	°C/W

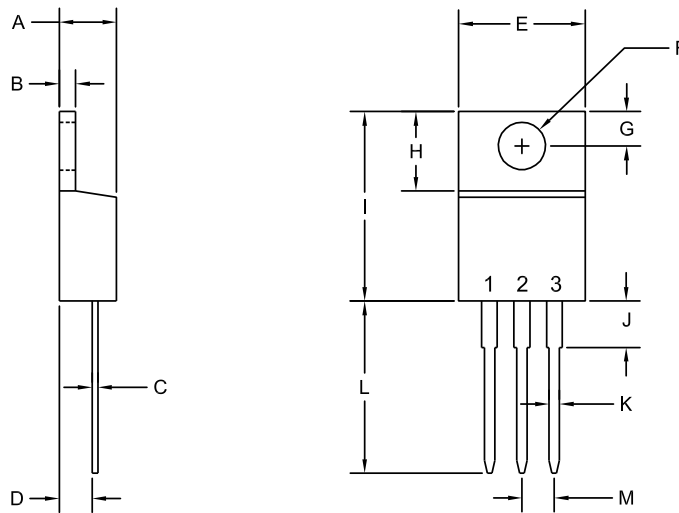
ELECTRICAL CHARACTERISTICS: (T <sub>C</sub> =25°C unless otherwise noted)						
SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS	
I <sub>DRM</sub> , I <sub>RRM</sub>	V <sub>DRM</sub> , V <sub>RRM</sub> =600V			5.0	µA	
I <sub>GT</sub>	V <sub>D</sub> =12V, R <sub>L</sub> =30Ω, QUAD I, II, III			50	mA	
I <sub>H</sub>	I <sub>T</sub> =500mA			50	mA	
V <sub>GT</sub>	V <sub>D</sub> =12V, R <sub>L</sub> =30Ω, QUAD I, II, III			1.3	V	
V <sub>TM</sub>	I <sub>TM</sub> =17A, tp=380µs		1.39	1.55	V	
dv/dt	V <sub>D</sub> = <sup>2</sup> / <sub>3</sub> V <sub>DRM</sub> , R <sub>GK</sub> =∞, T <sub>J</sub> =125°C			500	V/µs	

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TO-220 CASE - MECHANICAL OUTLINE



R2

LEAD CODE:

- 1) MT1
  - 2) MT2
  - 3) Gate
- Tab is common to pin 2

MARKING:

FULL PART NUMBER

SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.170	0.190	4.31	4.82
B	0.045	0.055	1.15	1.39
C	0.013	0.026	0.33	0.65
D	0.083	0.107	2.10	2.72
E	0.394	0.417	10.01	10.60
F (DIA)	0.140	0.157	3.55	4.00
G	0.100	0.118	2.54	3.00
H	0.230	0.270	5.85	6.85
I	0.560	0.625	14.23	15.87
J	-	0.250	-	6.35
K	0.025	0.038	0.64	0.96
L	0.500	0.579	12.70	14.70
M	0.090	0.110	2.29	2.79

TO-220 (REV: R2)

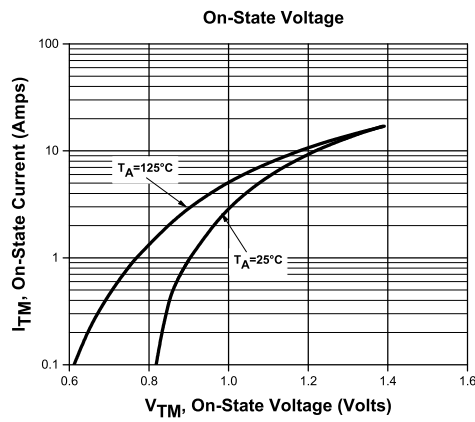
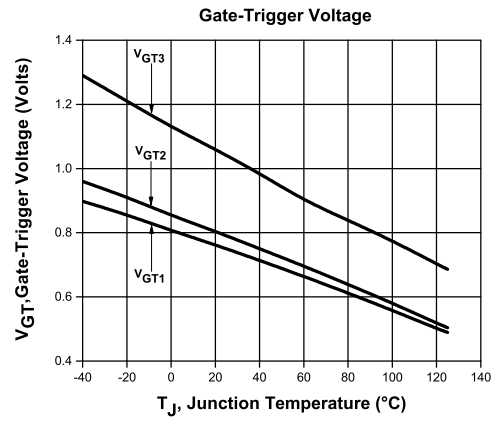
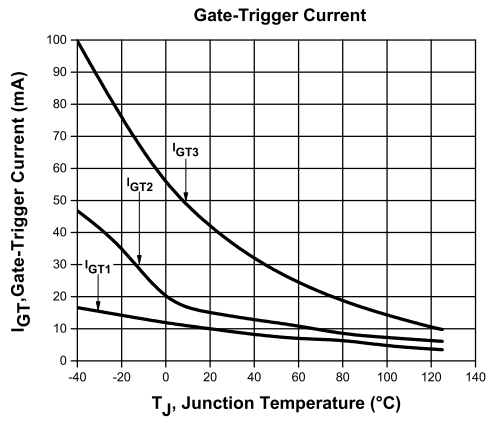
R1 (7-October 2015)

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### TYPICAL ELECTRICAL CHARACTERISTICS



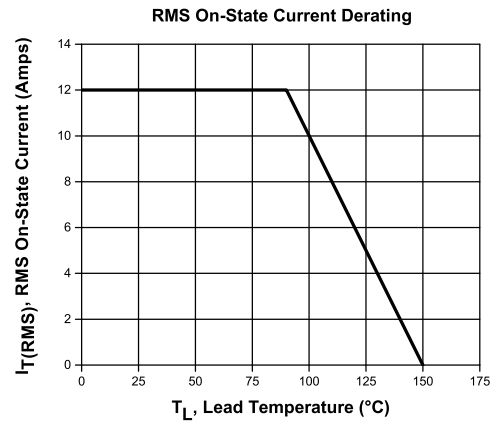
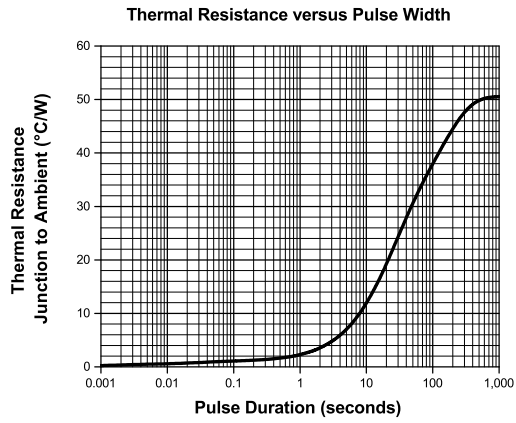
R1 (7-October 2015)

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### TYPICAL ELECTRICAL CHARACTERISTICS



R1 (7-October 2015)