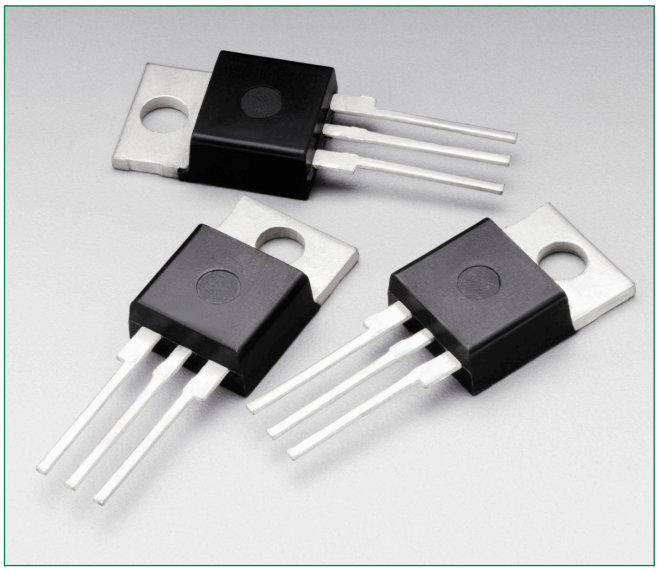
C122F1G



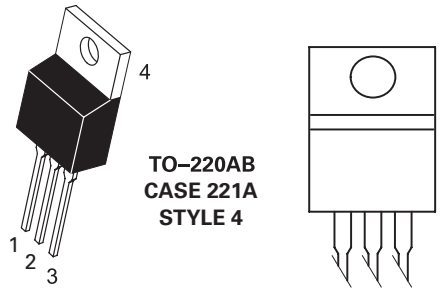
Description

Designed primarily for full-wave ac control applications, such as motor controls, heating controls and power supplies; or wherever half–wave silicon gate–controlled, solid–state devices are needed.

Features

- Glass Passivated Junctions and Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 50 Volts
- This is a Pb–Free Device

Pin Out



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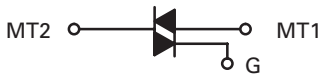
Functional Diagram



Additional Information

Datasheet

Resources

Samples

Revised: 08/30/17

Maximum Ratings (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Note 1) (Gate Open, Sine Wave 50 to 60 Hz, T_J = 25° to 100°C)	V_{DRM}, V_{RRM}	50	V
On-State RMS Current (180° Conduction Angles; T_C = 75°C)	$I_{T\ (RMS)}$	8.0	A
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, T_C = 75°C)	I_{TSM}	90	A
Circuit Fusing Consideration (t = 8.3 ms)	I^2t	34	A^2sec
Forward Peak Gate Power (Pulse Width = 10 s, T_C = 70°C)	P_{GM}	5.0	W
Forward Average Gate Power (t = 8.3 ms, T_C = 70°C)	$P_{G\ (AV)}$	0.5	W
Forward Peak Gate Current (Pulse Width = 10 s, T_C = 70°C)	I_{GM}	2.0	W
Operating Junction Temperature Range	T_J	-40 to +125	°C
Storage Temperature Range	T_{stg}	-40 to +125	°C

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.

Thermal Characteristics

Rating		Symbol	Value	Unit
Thermal Resistance,	Junction–to–Case (AC)	R_{8JC}	1.8	°C/W
	Junction–to–Ambient	R_{8JA}	62.5	
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds		T_L	260	°C

Revised: 08/30/17

Electrical Characteristics - OFF (T_J = 25°C unless otherwise noted ; Electricals apply in both directions)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak Repetitive Blocking Current ($V_D = V_{DRM} = V_{RRM}$; Gate Open)	T_J = 25°C	I_{DRM}, I_{RRM}	-	-	10	mA
	T_J = 110°C		-	-	0.5	

Electrical Characteristics - ON (T_J = 25°C unless otherwise noted; Electricals apply in both directions)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak On–State Voltage (Note 2) (I_{TM} = 16 A Peak, T_C = 25°C)		V_{TM}	–	–	1.83	V
Gate Trigger Current (Continuous dc) (V_{AK}= 12 V, R_L = 100 Ω)	T_C = 25°C	I_{GT}	–	–	25	mA
	T_C = -40°C		–	–	40	
Gate Trigger Voltage (Continuous dc) (V_{AK}= 12 V, R_L = 100 Ω)	T_C = 25°C	V_{GT}	–	–	1.5	V
	T_C = -40°C		–	–	2.0	
Gate Non–Trigger Voltage (Continuous dc) (V_{AK} = 12 V, R_L = 100 Ω, T_C = 125°C)		V_{GD}	0.2	–	–	
Holding Current (V_D = 12 V, Gate Open, Initiating Current = 200 mA)	T_C = 25°C	V_{GD}	–	–	30	mA
	T_C = -40°C		–	–	60	
Turn-Of f Time (V_D = Rated V_{DRM}) (I_{TM} = 8 A, I_R = 8 A)		t_q	–	50	–	µS

2. Indicates Pulse Test: Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2%.

Dynamic Characteristics

Characteristic	Symbol	Min	Typ	Max	Unit
Critical Rate of Rise of Off-State Voltage (V_D = 0.66 x V_{DRM}, Exponential Waveform, Gate Open, T_J = 100°C)	dV/dt	–	50	–	V/µs

Revised: 08/30/17

Voltage Current Characteristic of SCR

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

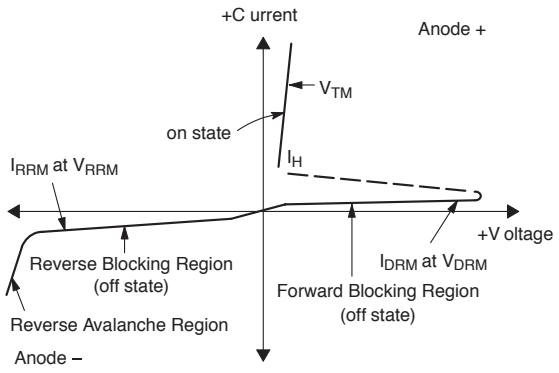


Figure 1. Current Derating (Half-Wave)

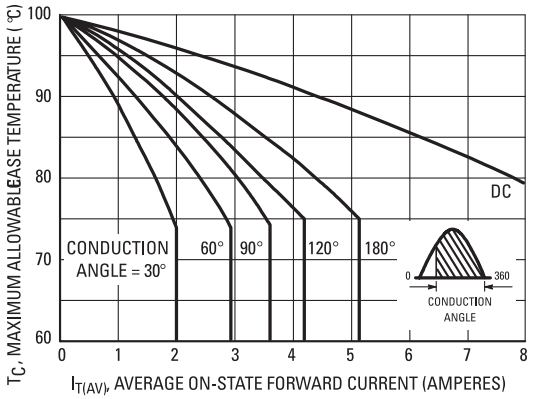


Figure 2. Current Derating (Full-Wave)

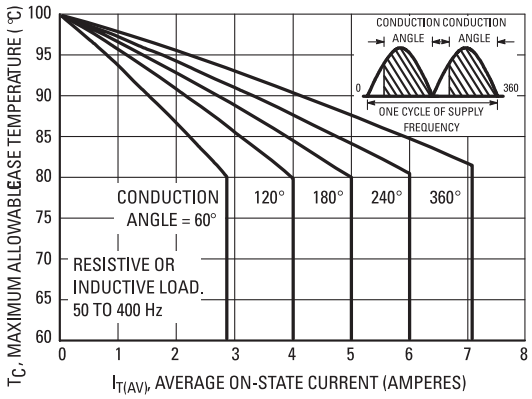


Figure 3. Maximum Power Dissipation (Half-Wave)

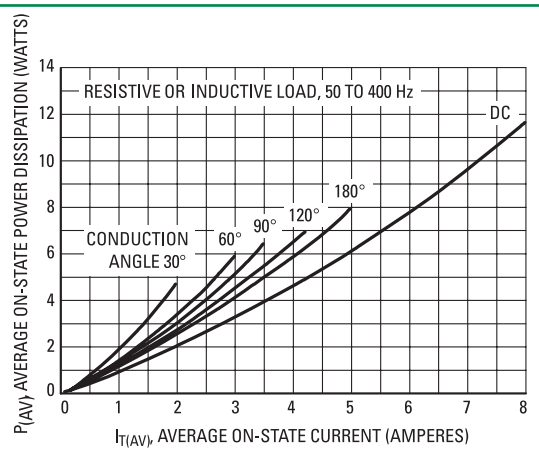
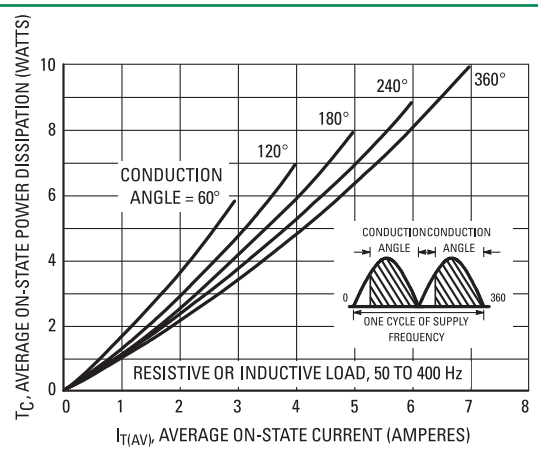


Figure 4. Maximum Power Dissipation (Full-Wave)

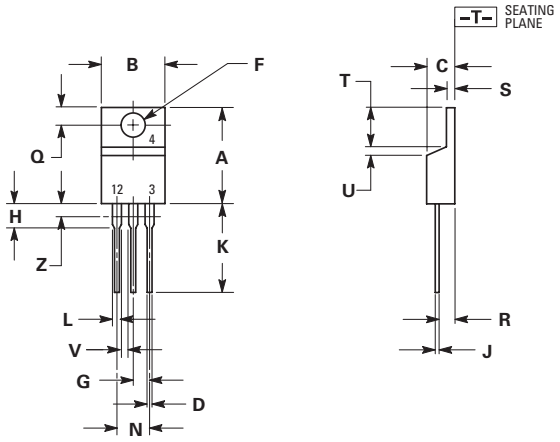


Revised: 08/30/17

Thyristors

Surface Mount – 50V > C122F1G

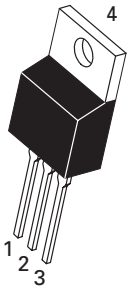
Dimensions



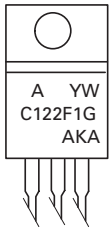
Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.022	0.36	0.55
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	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

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.

Part Marking System



TO–220AB
CASE 221A
STYLE 3



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

Pin Assignment

1	Cathode
2	Anode
3	Gate
4	Anode

Ordering Information

Device	Package	Shipping
C122F1G	TO-220AB (Pb-Free)	500 Units / Box