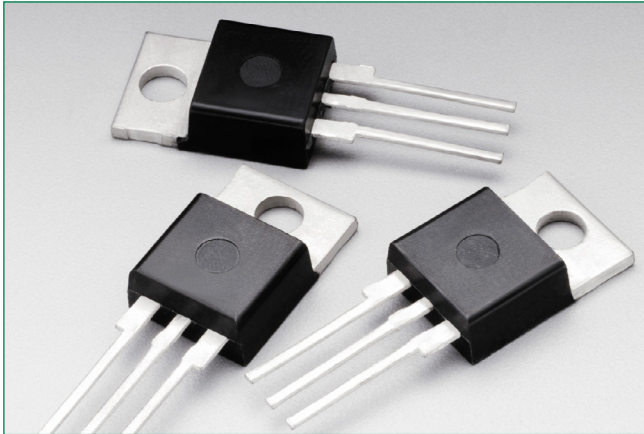


C122F1G

Surface Mount – 50V



Additional Information



Resources



Accessories



Samples

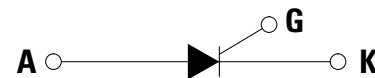
Description

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.

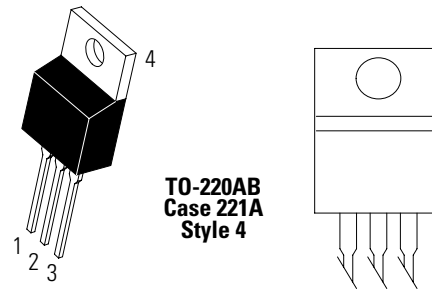
Features

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

Functional Diagram



Pin Out



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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 ² sec
Forward Peak Gate Power (Pulse Width = 10 μs, 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 +150	°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)	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$
	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 - OFF (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
†Peak Repetitive Blocking Current (V _{AK} = V _{DRM} = V _{RRM} ; Gate Open)	I_{DRM} I_{RRM}	-	-	10	μA
		-	-	0.5	mA

Electrical Characteristics - ON (T_C = 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)	I_{GT}	–	–	25	mA
		–	–	40	
Gate Trigger Voltage (Continuous dc) (V _{AK} = 12 V, R _L = 100 Ω)	V_{GT}	–	–	1.5	V
		–	–	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)	V_{GD}	–	–	30	mA
		–	–	60	
Turn-Off Time (V _D = Rated V _{DRM}) (I _{TM} = 8 A, I _R = 8 A)	t _q	–	30	–	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 × V _{DRM} ; Exponential Waveform, Gate Open, T _J = 100°C)	dV/dt	–	200	–	V/μs

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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

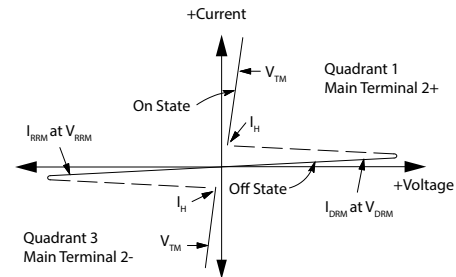


Figure 1. Current Derating (Half-Wave)

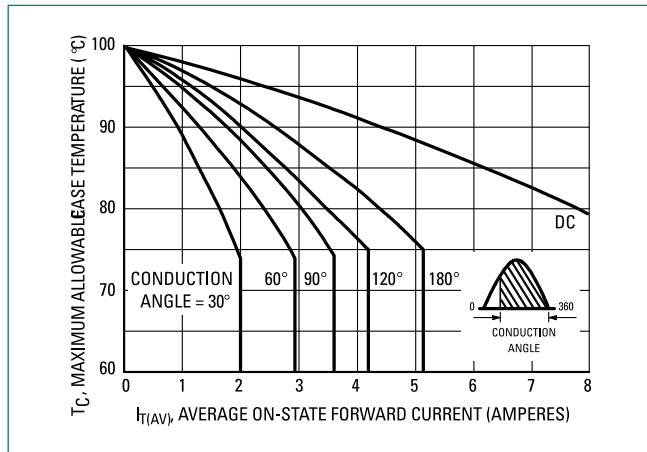


Figure 3. Maximum Power Dissipation (Half-Wave)

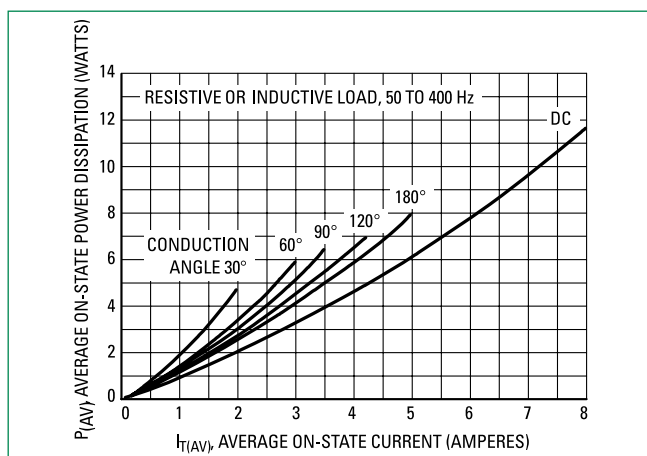


Figure 2. Current Derating (Full-Wave)

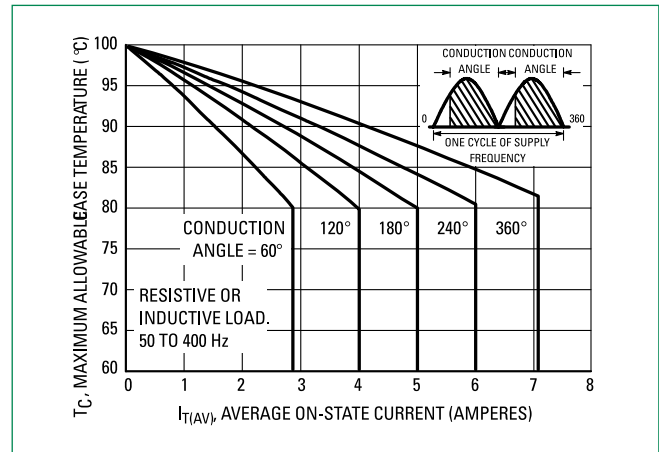
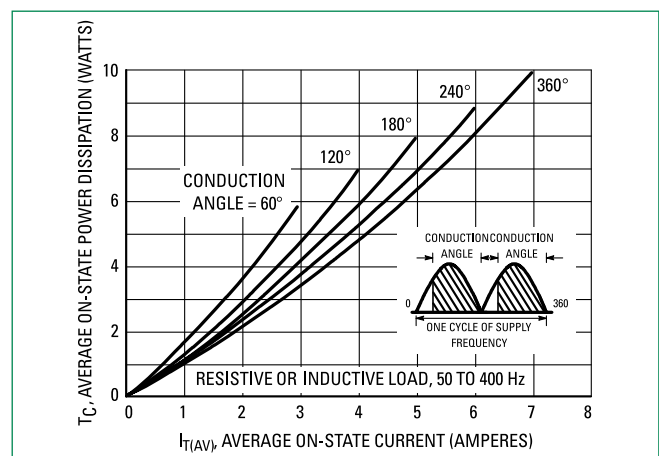


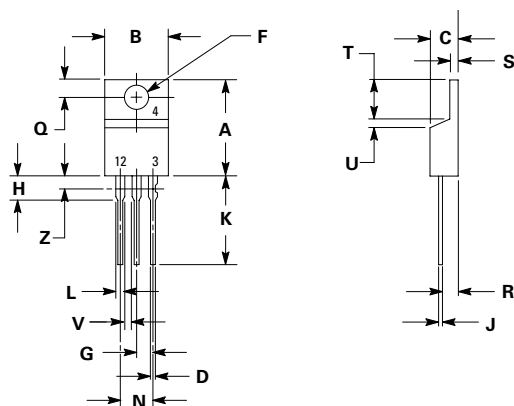
Figure 4. Maximum Power Dissipation (Full-Wave)



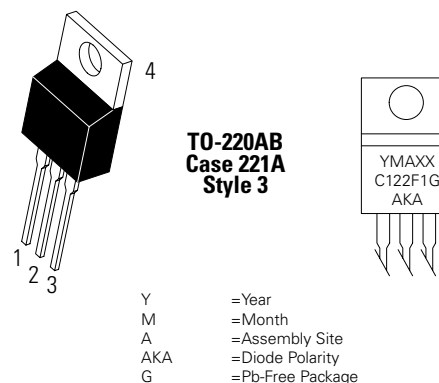
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Surface Mount – 50V

Dimensions



Part Marking System



Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	0.590	0.620	14.99	15.75
B	0.380	0.420	9.65	10.67
C	0.178	0.188	4.52	4.78
D	0.025	0.035	0.64	0.89
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.41	2.67
H	0.110	0.130	2.79	3.30
J	0.018	0.024	0.46	0.61
K	0.540	0.575	13.72	14.61
L	0.060	0.075	1.52	1.91
N	0.195	0.205	4.95	5.21
Q	0.105	0.115	2.67	2.92
R	0.085	0.095	2.16	2.41
S	0.045	0.060	1.14	1.52
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.

Pin Assignment	
1	Cathode
2	Anode
3	Gate
4	Anode

Ordering Information

Device	Package	Shipping
C122F1G	TO-220AB (Pb-Free)	1000 Units / Box

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