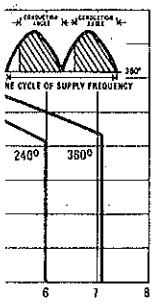
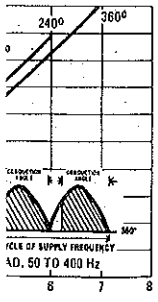
Max	Unit
0.1 0.5	mA
0.1 0.5	mA
1.83	Volts
25 40	mA
1.5 2 –	Volts
30 60	mA
–	µs
–	V/µs

NG (FULL-WAVE)



ENT (AMPERES)

TION (FULL-WAVE)



ENT (AMPERES)

MOTOROLA

C228
C228( )3
C229
series

REVERSE BLOCKING TRIODE THYRISTOR

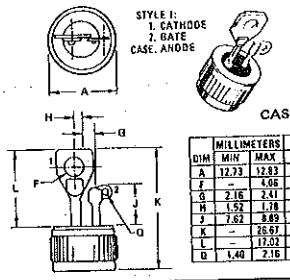
. . . designed for industrial and consumer applications such as power supplies, battery chargers, temperature, motor, light and welder controls.

- Economical for a Wide Range of Uses
- High Surge Current – I_{TSM} = 300 Amp
- Low Forward "On" Voltage – 1.2 V (Typ) @ I_{TM} = 35 Amp
- Practical Level Triggering and Holding Characteristics – 10 mA (Typ) @ T_C = 25°C
- Rugged Construction in Either Pressfit, Stud, or Isolated Stud Packages
- Glass Passivated Junctions for Maximum Reliability

SILICON CONTROLLED RECTIFIER

35 AMPERES RMS
50 thru 600 VOLTS

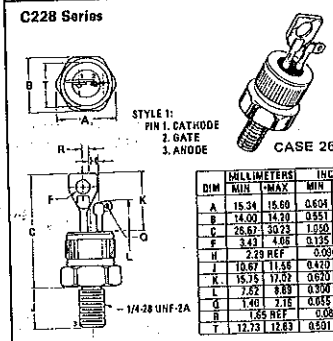
C229 Series



CASE 310-01

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	12.73	12.83	0.501	0.505
F	–	4.06	–	0.160
G	2.16	2.41	0.085	0.095
H	1.52	1.78	0.060	0.070
J	7.62	8.89	0.300	0.350
K	–	26.67	–	1.050
L	–	17.02	–	0.670
Q	1.40	2.16	0.055	0.085

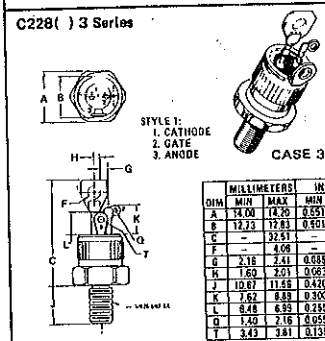
C228 Series



CASE 263-03

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	15.34	15.60	0.604	0.614
B	14.00	14.20	0.551	0.559
C	25.67	30.23	1.050	1.190
F	3.43	4.06	0.135	0.160
H	2.29 REF		0.090 REF	
J	10.67	11.56	0.420	0.455
K	15.75	17.02	0.620	0.670
L	7.62	8.89	0.300	0.350
Q	1.40	2.16	0.055	0.085
R	1.65 REF		0.065 REF	
T	12.73	12.83	0.5011	0.505

C228( ) 3 Series



CASE 311-01

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.00	14.20	0.551	0.559
B	12.73	12.83	0.501	0.505
C	–	32.51	–	1.280
F	–	4.06	–	0.160
G	2.16	2.41	0.085	0.095
H	1.60	2.01	0.063	0.079
J	10.67	11.56	0.420	0.455
K	7.62	8.89	0.300	0.350
L	6.48	6.99	0.255	0.275
Q	1.40	2.16	0.055	0.085
T	3.43	3.81	0.135	0.150

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage (1) (T_J = -40 to +125°C) C229F, C228F, C228F3 C229A, C228A, C228A3 C229B, C228B, C228B3 C229C, C228C, C228C3 C229D, C228D, C228D3 C229E, C228E, C228E3 C229M, C228M, C228M3	V_{DRM} and V_{RRM}	 50 100 200 300 400 500 600	Volts
Non-Repetitive Reverse Voltage (T_J = -40 to +125°C) C229F, C228F, C228F3 C229A, C228A, C228A3 C229B, C228B, C228B3 C229C, C228C, C228C3 C229D, C228D, C228D3 C229E, C228E, C228E3 C229M, C228M, C228M3	V_{RSM}	 75 150 300 400 500 600 720	Volts
Forward Current RMS	$I_{T(RMS)}$	35	Amp
Peak Surge Current (one cycle, 60 Hz) (T_C = -40 to +125°C)	I_{TSM}	300	Amp
Circuit Fusing Considerations (T_C = -40 to +125°C) (t = 1.0 to 8.3 ms)	I^2t	370	A^2s
Peak Gate Power	P_{GM}	5	Watts
Average Gate Power	$P_{G(AV)}$	0.5	Watt
Peak Forward Gate Current	I_{GM}	2	Amp
Operating Junction Temperature Range	T_J	-40 to +125	°C
Storage Temperature Range	T_{stg}	-40 to +150	°C
Stud Torque	–	30	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case C228 and C229 Series C228( ) 3 Series	$R_{\theta JC}$	 1.7 1.85	°C/W

(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode.

2.3

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak Forward Blocking Current (Rated V_{DRM}, with gate open)	T_C = 25°C T_C = 125°C	I_{DRM}	– –	– –	1 3	mA
Peak Reverse Blocking Current (Rated V_{RRM})	T_C = 25°C T_C = 125°C	I_{RRM}	– –	– –	1 3	mA
Forward "On" Voltage (I_{TM} = 100 A Peak)		V_{TM}	–	–	1.9	Volts
Gate Trigger Current (V_D = 12 Vdc, R_L = 80 Ohms, T_C = 25°C) (V_D = 6 Vdc, R_L = 50 Ohms, T_C = -40°C)		I_{GT}	– –	– –	40 80	mA
Gate Trigger Voltage (V_D = 12 Vdc, R_L = 80 Ohms, T_C = 25°C) (V_D = 6 Vdc, R_L = 80 Ohms, T_C = -40°C)		V_{GT}	– –	– –	2.5 3	Volts
Gate Trigger Voltage (Rated V_{DRM}, R_L = 1000 Ohms, T_C = +125°C)		V_{GT}	0.2	–	–	Volts
Holding Current (Anode Voltage = 24 V, gate open)	T_C = 25°C T_C = -40°C	I_H	– –	– –	75 150	mA
Turn-On Time (t_d + t_r) (I_{TM} = 35 Adc, I_{GT} = 40 mAdc)		t_{on}	–	1.0	–	μs
Turn-Off Time (I_{TM} = 10 A, I_R = 10 A) (I_{TM} = 10 A, I_R = 10 A, T_C = 100°C)		t_{off}	– –	20 35	– –	μs
Forward Voltage Application Rate (T_C = 100°C)		dv/dt	–	50	–	V/μs

FIGURE 1 – CURRENT DERATING (HALF-WAVE RECTIFIED SINE WAVE)

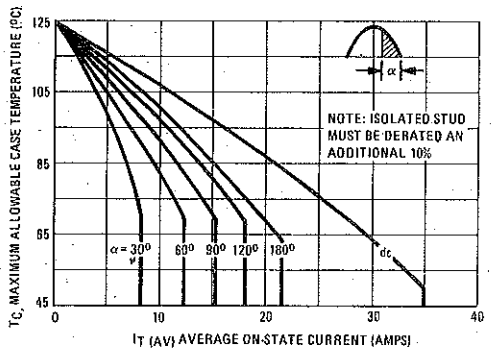


FIGURE 2 – CURRENT DERATING (FULL-WAVE RECTIFIED SINE WAVE)