

C228, C22803, C229 SERIES

SILICON CONTROLLED RECTIFIER

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off state voltage⁽¹⁾ $(T_j = -40 \text{ to } +125^\circ\text{C})$ C228F, C228F3, C229F C228A, C228A3, C229A C228B, C228B3, C229B C228C, C228C3, C229C C228D, C228D3, C229D C228E, C228E3, C229E C228M, C228M3, C229M	V_{RRM}, V_{DRM}	50 100 200 300 400 500 600	Volts
Peak non-repetitive reverse voltage $(T_j = -40 \text{ to } +125^\circ\text{C})$ C228F, C228F3, C229F C228A, C228A3, C229A C228B, C228B3, C229B C228C, C228C3, C229C C228D, C228D3, C229D C228E, C228E3, C229E C228M, C228M3, C229M	V_{RSM}	75 150 300 400 500 600 720	Volts
Forward current RMS	$I_{T(RMS)}$	35	Amps
Peak surge current $(\text{one cycle, } 60\text{Hz, } T_c = -40 \text{ to } +125^\circ\text{C})$	I_{TSM}	300	Amps
Circuit fusing considerations $(T_c = -40 \text{ to } +125^\circ\text{C, } t = 8.3\text{ms})$	I^2t	370	A^2s
Peak gate power	P_{GM}	5	Watts
Average gate power	$P_{G(AV)}$	0.5	Watts
Peak forward gate current	I_{GM}	2	Amps
Operating junction temperature range	T_j	-40 to +125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 to +150	$^\circ\text{C}$
Mounting torque		30	In. lb.

Note 1: V_{DRM} and V_{RRM} for all types can be applied on a continuous 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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case C228 and C229 SERIES C228()3 SERIES	$R_{\theta JC}$	1.70 1.85	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

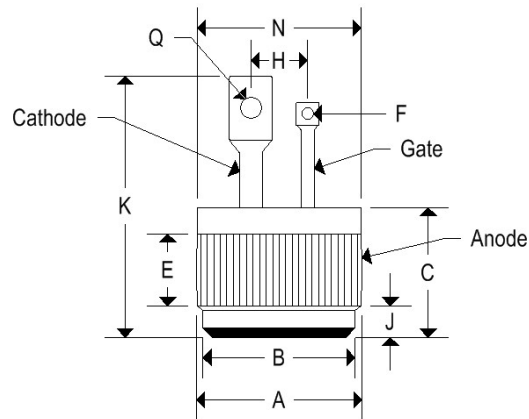
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Peak forward or reverse blocking current (Rated V_{DRM} or V_{RRM} , gate open) $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	I_{DRM}, I_{RRM}	- -	- -	10 3	μA mA
Forward "on" voltage ($I_{TM} = 100\text{A}$ peak)	V_T	-	-	1.9	Volts
Gate trigger current (continuous dc) ($V_D = 12\text{V}$, $R_L = 80\Omega$, $T_C = 25^\circ\text{C}$) ($V_D = 6\text{V}$, $R_L = 80\Omega$, $T_C = -40^\circ\text{C}$)	I_{GT}	- -	- -	40 80	mA
Gate trigger voltage (continuous dc) ($V_D = 12\text{V}$, $R_L = 80\Omega$, $T_C = 25^\circ\text{C}$) ($V_D = 6\text{V}$, $R_L = 80\Omega$, $T_C = -40^\circ\text{C}$)	V_{GT}	- -	- -	2.5 3	Volts
Gate trigger voltage (Rated V_{DRM} , $R_L = 1000\Omega$, $T_C = 125^\circ\text{C}$)	V_{GT}	0.2	-	-	Volts
Holding current (Anode voltage = 24V, gate open) $T_C = 25^\circ\text{C}$ $T_C = -40^\circ\text{C}$	I_H	- -	- -	75 150	mA
Turn-on time ($t_d + t_r$) ($I_{TM} = 35\text{A}$, $I_{GT} = 40\text{mA}$)	t_{on}	-	1	-	μs
Turn-off time ($I_{TM} = 10\text{A}$, $I_R = 10\text{A}$) ($I_{TM} = 10\text{A}$, $I_R = 10\text{A}$, $T_C = 100^\circ\text{C}$)	t_{off}	- -	20 35	- -	μs
Forward voltage application rate ($T_C = 100^\circ\text{C}$)	dv/dt	-	50	-	$\text{V}/\mu\text{s}$

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MECHANICAL CHARACTERISTICS

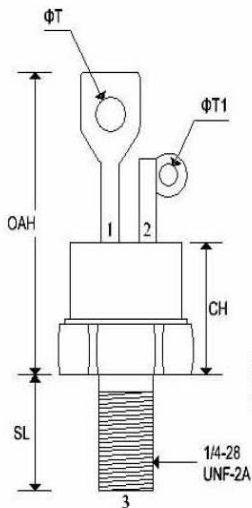
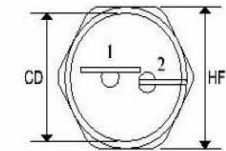
Case	Digi PF1 (C229 SERIES)
Marking	Body painted, alpha-numeric



	DIGI PF1			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.501	0.505	12.730	12.830
F	-	0.160	-	4.060
G	0.085	0.095	2.160	2.410
H	0.060	0.070	1.520	1.780
J	0.300	0.350	7.620	8.890
K	-	1.050	-	26.670
L	-	0.670	-	17.020
Q	0.055	0.085	1.400	2.160

MECHANICAL CHARACTERISTICS

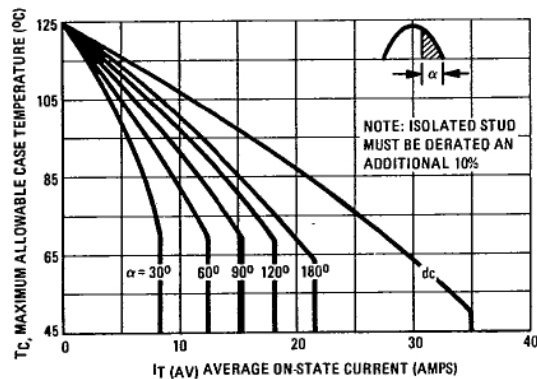
Case	TO-48 (C228, C228()3 SERIES)
Marking	Body painted, alpha-numeric
Polarity	Cathode is stud



Pin 1: Cathode
Pin 2: Gate
Pin 3: Anode

	TO-48			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.543	-	13.793
CH	-	0.550	-	13.970
HF	0.544	0.563	13.817	14.301
OAH	-	1.193	-	30.303
SL	0.422	0.453	10.718	11.507
ΦT	0.125	0.165	3.175	4.191
ΦT1	0.060	0.075	1.524	1.905

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



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

