

C230, C231, C230()3, C231()3, C232, C233 SERIES

SILICON CONTROLLED RECTIFIERS

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⁾ $(T_J = -40 \text{ to } +100^\circ\text{C})$ C230F, C231F, C230F3, C231F3, C232F, C233F C230A, C231A, C230A3, C231A3, C232A, C233A C230B, C231B, C230B3, C231B3, C232B, C233B C230C, C231C, C230C3, C231C3, C232C, C233C C230D, C231D, C230D3, C231D3, C232D, C233D C230E, C231E, C230E3, C231E3, C232E, C233E C230M, C231M, C230M3, C231M3, C232M, C233M	V_{RRM}, V_{DRM}	50 100 200 300 400 500 600	Volts
Peak non-repetitive reverse voltage $(T_J = -40 \text{ to } +100^\circ\text{C})$ C230F, C231F, C230F3, C231F3, C232F, C233F C230A, C231A, C230A3, C231A3, C232A, C233A C230B, C231B, C230B3, C231B3, C232B, C233B C230C, C231C, C230C3, C231C3, C232C, C233C C230D, C231D, C230D3, C231D3, C232D, C233D C230E, C231E, C230E3, C231E3, C232E, C233E C230M, C231M, C230M3, C231M3, C232M, C233M	V_{RSM}	75 150 300 400 500 600 720	Volts
Forward current RMS	$I_{T(RMS)}$	25	Amps
Peak surge current $(\text{one cycle, } 60\text{Hz, } T_C = -40 \text{ to } +100^\circ\text{C})$	I_{TSM}	250	Amps
Circuit fusing considerations $(T_C = -40 \text{ to } +100^\circ\text{C, } t = 8.3\text{ms})$	I^2t	260	A ² s
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 +100	°C
Storage temperature range	T_{stg}	-40 to +125	°C
Mounting torque		30	In. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case Pressfit Isolated stud	$R_{\theta JC}$	1 1.15	°C/W

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

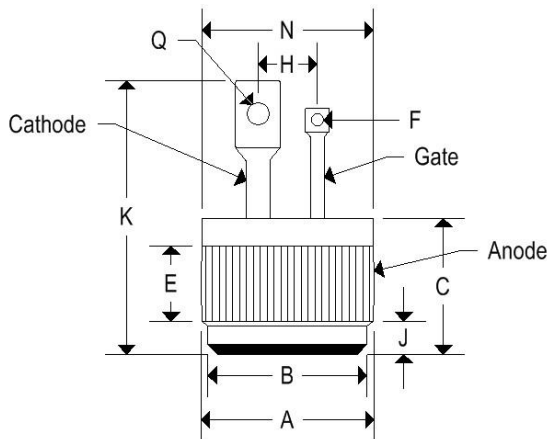
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Peak forward or reverse blocking current (Rated V_{DRM} or V_{RRM} , gate open) $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_{DRM}, I_{RRM}	- -	- -	10 1	μA mA
Forward "on" voltage ($I_{TM} = 100\text{A}$ peak, pulse width $\leq 1\text{ms}$, duty cycle $\leq 2\%$)	V_{TM}	-	-	1.9	Volts
Gate trigger current (C230, C230()3, C232 series) ($V_D = 12\text{V}$, $R_L = 120\Omega$) ($V_D = 12\text{V}$, $R_L = 60\Omega$, $T_C = -40^\circ\text{C}$)	I_{GT}	- -	- -	25 40	mA
Gate trigger current (C231, C231()3, C233 series) ($V_D = 12\text{V}$, $R_L = 120\Omega$) ($V_D = 12\text{V}$, $R_L = 60\Omega$, $T_C = -40^\circ\text{C}$)	I_{GT}	- -	- -	9 20	mA
Gate trigger voltage (continuous dc) ($V_D = 12\text{V}$, $R_L = 120\Omega$) ($V_D = 12\text{V}$, $R_L = 60\Omega$, $T_C = -40^\circ\text{C}$) ($V_D = \text{Rated } V_{DRM}$, $R_L = 1000\Omega$, $T_C = 100^\circ\text{C}$)	V_{GT}	- - 0.2	- - -	1.5 2 -	Volts
Holding current ($V_D = 24\text{V}$, gate open, $I_T = 0.5\text{A}$) $T_C = 25^\circ\text{C}$ $T_C = -40^\circ\text{C}$	I_H	- -	- -	50 100	mA
Turn-on time ($t_d + t_r$) ($I_{TM} = 25\text{A}$, $I_{GT} = 40\text{mA}$, $V_D = \text{Rated } V_{DRM}$)	t_{gt}	-	1	-	μs
Turn-off time ($I_{TM} = 10\text{A}$, $I_R = 10\text{A}$, pulse width = $50\mu\text{s}$, $dv/dt = 20\text{V}/\mu\text{s}$, $V_D = \text{Rated } V_{DRM}$) ($T_C = 100^\circ\text{C}$)	t_q	- -	25 35	- -	μs
Forward voltage application rate ($V_D = \text{rated } V_{DRM}$, $T_C = 100^\circ\text{C}$)	dv/dt	-	100	-	$\text{V}/\mu\text{s}$

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SILICON CONTROLLED RECTIFIERS

MECHANICAL CHARACTERISTICS

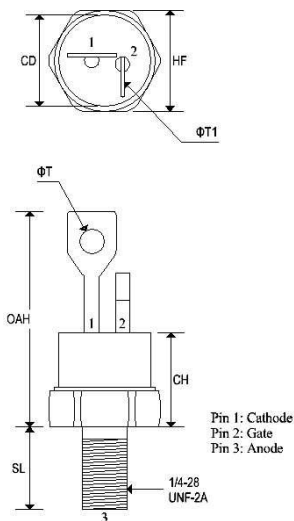
Case	Digi PF2 (C232 and C233 SERIES)
Marking	Alpha-Numeric



	DIGI PF2			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.501	0.505	12.730	12.830
B	0.465	0.475	11.810	12.060
C	0.330	0.380	8.390	9.650
E	0.100	-	2.540	-
F	0.035	0.085	0.890	2.160
J	0.080	0.097	2.040	2.460
K	-	0.800	-	20.320
N	-	0.510	-	12.950
Q	0.065	0.160	1.650	4.060

MECHANICAL CHARACTERISTICS

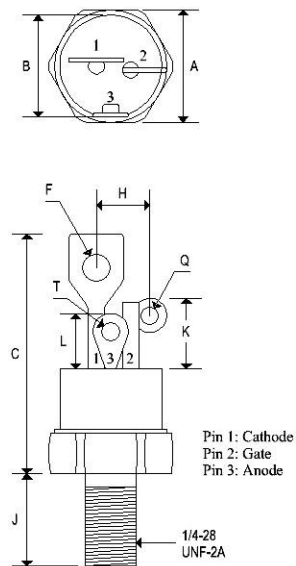
Case	TO-48 (C230,C231)
Marking	Alpha-Numeric
Polarity	As Marked



	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
ΦT ₁	0.060	0.075	1.524	1.905

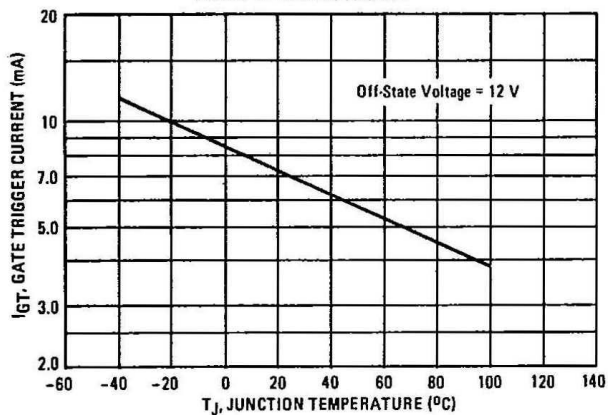
MECHANICAL CHARACTERISTICS

Case	TO-48 ISO (C230()3, C231()3 SERIES)
Marking	Alpha-Numeric
Polarity	As Marked



	TO-48 ISO			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.551	0.559	14.000	14.200
B	0.501	0.505	12.730	12.830
C	-	1.280	-	32.510
F	-	0.160	-	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.300	0.350	7.620	8.890
L	0.255	0.275	6.480	6.990
Q	0.055	0.085	1.400	2.160
T	0.135	0.150	3.430	3.810

**FIGURE 3 – GATE CURRENT VARIATION
WITH TEMPERATURE**



**FIGURE 4 – GATE VOLTAGE VARIATION
WITH TEMPERATURE**

