

DIGITRON SEMICONDUCTORS

C230, C231 SERIES

SILICON CONTROLLED RECTIFIER

C230()3, C231()3 SERIES

C232, C233 SERIES

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

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 (one cycle, 60Hz, $T_C = -40 \text{ to } +100^\circ\text{C}$)	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.

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 Pressfit Isolated stud	$R_{\theta JC}$	1 1.15	°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) $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	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

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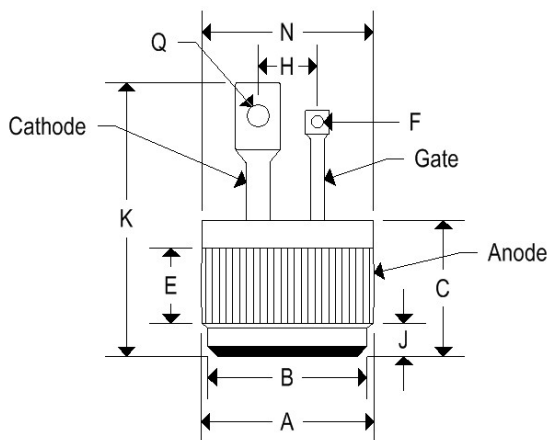
C232, C233 SERIES

SILICON CONTROLLED RECTIFIER

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

MECHANICAL CHARACTERISTICS

Case	Digi PF2 (C232 and C233 SERIES)
Marking	Body painted, 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

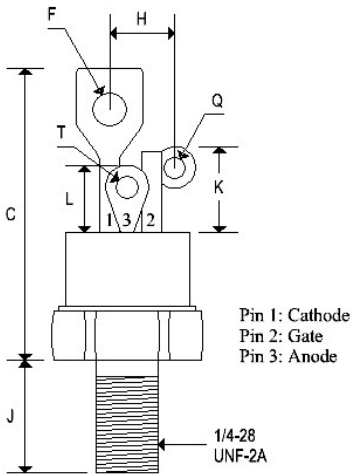
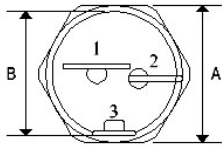
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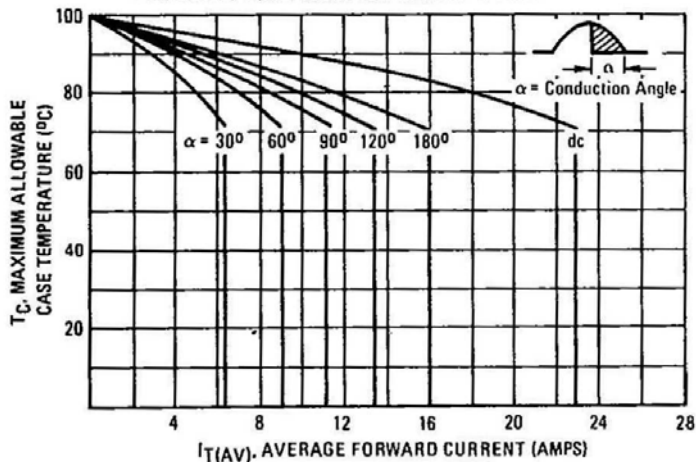
MECHANICAL CHARACTERISTICS

Case	TO-48 ISO (C230,C231,C230()3, C231()3 SERIES)
Marking	Body painted, alpha-numeric
Polarity	Cathode is stud



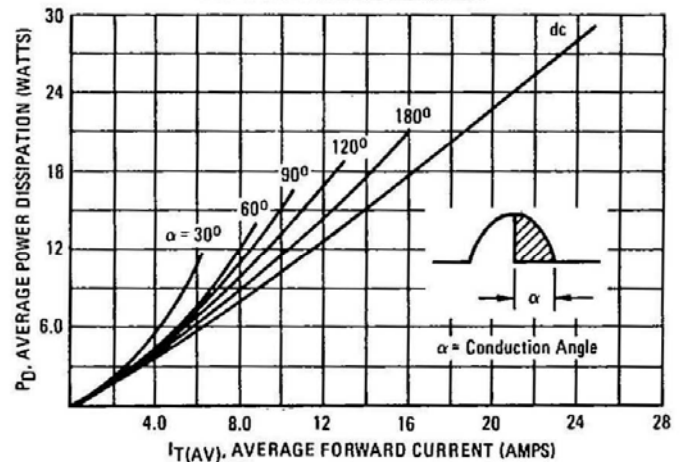
	TO-48 ISO			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.551	0.559	14.000	14.200
B	0.501	0.505	12.730	12.830
C	-	1.280	-	32.510
F	-	0.160	-	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.300	0.350	7.620	8.890
L	0.255	0.275	6.480	6.990
Q	0.055	0.085	1.400	2.160
T	0.135	0.150	3.430	3.810

FIGURE 1 – CURRENT DERATING FOR PRESSFIT AND NON-ISOLATED STUD



NOTE: Derating is for Pressfit and Stud Devices. Isolated stud devices must be derated an additional 15%. For example, the max T_C @ 16 A (180° conduction angle) is 70°C, a derating of 30°C. Isolated stud devices must be derated 34.5°C; therefore, the maximum T_C is 65.5°C.

FIGURE 2 – ON-STATE POWER DISSIPATION versus ON-STATE CURRENT



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FIGURE 3 – GATE CURRENT VARIATION
WITH TEMPERATURE

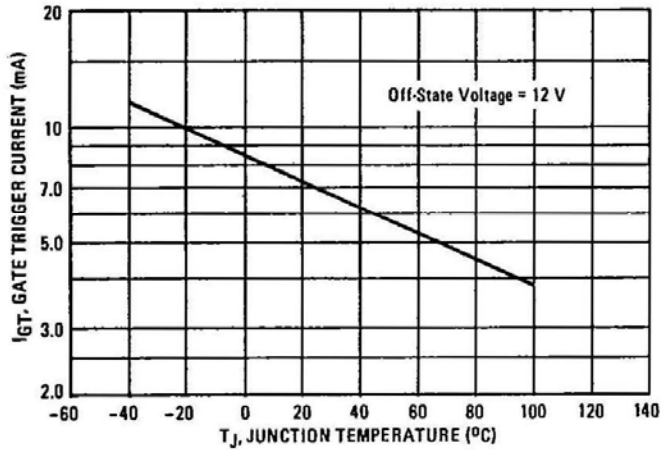


FIGURE 4 – GATE VOLTAGE VARIATION
WITH TEMPERATURE

