# DIGITRON SEMICONDUCTORS

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

## SILICON CONTROLLED RECTIFIER

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 to +100°C) | | | |
| C230F, C231F, C230F3, C231F3, C232F, C233F | | 50 | |
| C230A, C231A, C230A3, C231A3, C232A, C233A | | 100 | |
| C230B, C231B, C230B3, C231B3, C232B, C233B | $V_{RRM}$, $V_{DRM}$ | 200 | Volts |
| C230C, C231C, C230C3, C231C3, C232C, C233C | | 300 | |
| C230D, C231D, C230D3, C231D3, C232D, C233D | | 400 | |
| C230E, C231E, C230E3, C231E3, C232E, C233E | | 500 | |
| C230M, C231M, C230M3, C231M3, C232M, C233M | | 600 | |
| **Peak non-repetitive reverse voltage** | | | |
| ($T_J$ = -40 to +100°C) | | | |
| C230F, C231F, C230F3, C231F3, C232F, C233F | | 75 | |
| C230A, C231A, C230A3, C231A3, C232A, C233A | | 150 | |
| C230B, C231B, C230B3, C231B3, C232B, C233B | $V_{RSM}$ | 300 | Volts |
| C230C, C231C, C230C3, C231C3, C232C, C233C | | 400 | |
| C230D, C231D, C230D3, C231D3, C232D, C233D | | 500 | |
| C230E, C231E, C230E3, C231E3, C232E, C233E | | 600 | |
| C230M, C231M, C230M3, C231M3, C232M, C233M | | 720 | |
| **Forward current RMS** | $I_{T(RMS)}$ | 25 | Amps |
| **Peak surge current** (one cycle, 60Hz, $T_C$ = -40 to +100°C) | $I_{TSM}$ | 250 | Amps |
| **Circuit fusing considerations** ($T_C$ = -40 to +100°C, t = 8.3ms) | $I^2t$ | 260 | $A^2s$ |
| **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 +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 | $R_{\Theta JC}$ | 1 | °C/W |
| Isolated stud | | 1.15 | |

### ELECTRICAL CHARACTERISTICS ($T_C$ = 25°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°C | $I_{DRM}$, $I_{RRM}$ | - | - | 10 | µA |
| $T_C$ = 100°C | | - | - | 1 | mA |
| **Forward "on" voltage** ($I_{TM}$ = 100A peak, pulse width ≤ 1ms, duty cycle ≤ 2%) | $V_{TM}$ | - | - | 1.9 | Volts |

144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com

# DIGITRON SEMICONDUCTORS

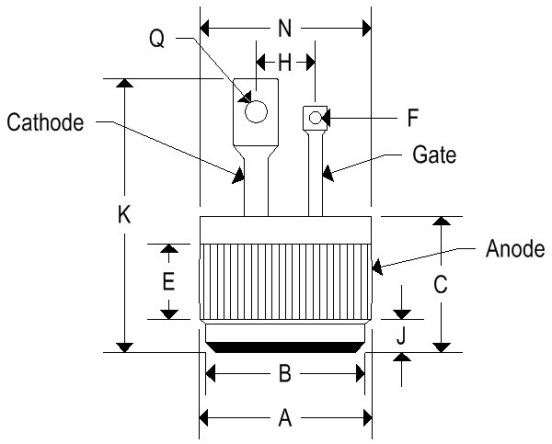
## C230, C231 SERIES
## C230()3, C231()3 SERIES
## C232, C233 SERIES

## SILICON CONTROLLED RECTIFIER

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

## 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 |

144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com

Rev. 20130128

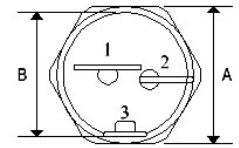
# DIGITRON SEMICONDUCTORS

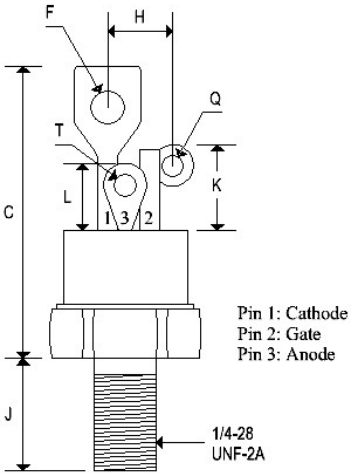
## C230, C231 SERIES
## C230()3, C231()3 SERIES
## C232, C233 SERIES

## SILICON CONTROLLED RECTIFIER

### MECHANICAL CHARACTERISTICS

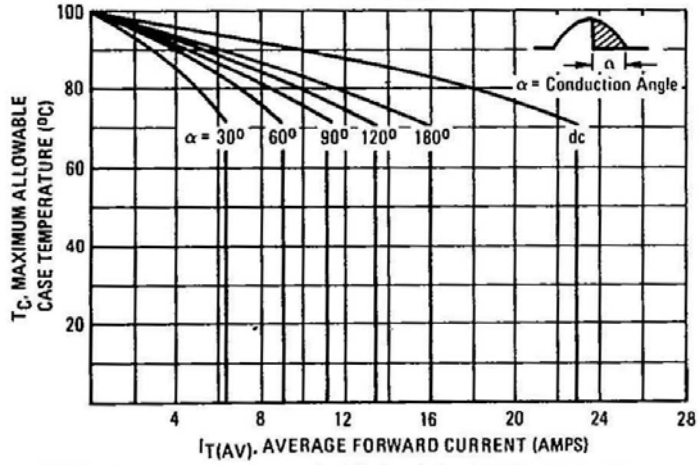
| | |
|---|---|
| **Case** | TO-48 ISO (C230,C231,C230()3, C231()3 SERIES) |
| **Marking** | Body painted, alpha-numeric |
| **Polarity** | Cathode is stud |



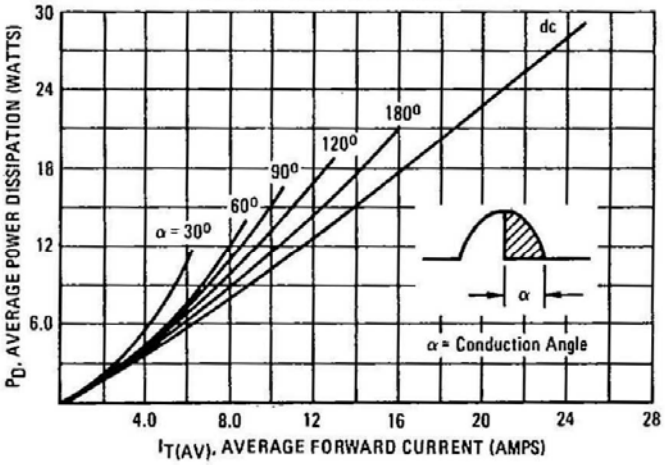

| | TO-48 ISO | | | |
|---|---|---|---|---|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| A | 0.551 | 0.559 | 14.000 | 14.200 |
| B | 0.501 | 0.505 | 12.730 | 12.830 |
| C | - | 1.280 | - | 32.510 |
| F | - | 0.160 | - | 4.060 |
| H | - | 0.265 | - | 6.730 |
| J | 0.420 | 0.455 | 10.670 | 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**





144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com


Rev. 20130128

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

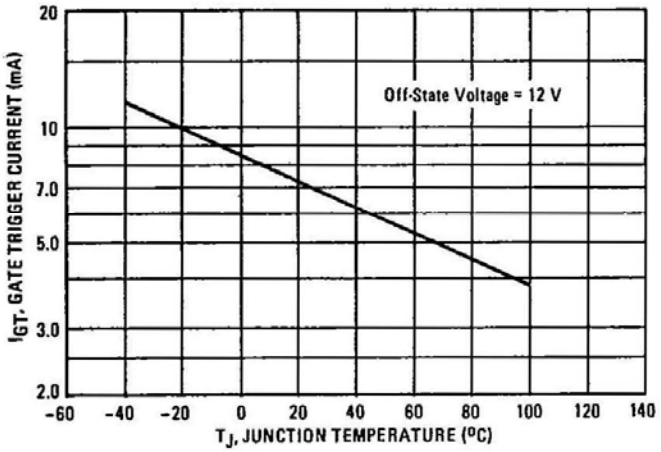
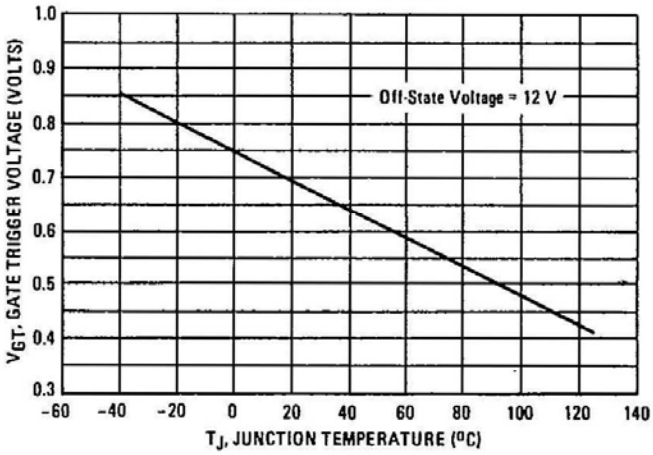



**FIGURE 4 – GATE VOLTAGE VARIATION WITH TEMPERATURE**





144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com