



# Silicon Controlled Rectifier

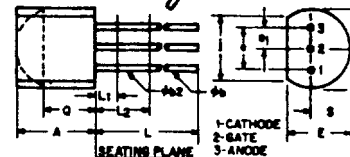
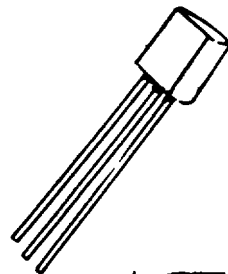
**C203**

0.8A RMS UP TO 400 VOLTS

362-839

**TYPICAL APPLICATIONS:**

- Sensors
  - Temperature
  - Pressure
  - Dryness
  - Proximity\*
  - Voltage
  - Current
- Amplifiers (gate)
- Timers
- Logic Circuits
- Controls
  - Small Motors
  - Small Lamps
  - Remote
- Switching
  - Solid-State Relay
  - Relay Driver
  - Counter
  - Low Power Inverter
- 120V AC Line Operation



SYMBOL	INCHES		MILLIMETERS		NOT
	MIN	MAX	MIN	MAX	
A	1.70	2.10	4.30	5.33	
phi	0.16	0.21	4.07	5.33	1
phi2	0.16	0.18	4.07	4.62	3
phi	1.75	2.03	4.43	5.20	
E	1.25	1.63	3.18	4.19	
e	0.98	1.03	2.42	2.68	
phi1	0.45	0.53	1.15	1.39	
J	1.39	-	3.43	-	
L	50.0	-	12.70	-	1
L1	-	0.50	-	1.27	
L2	25.0	-	6.35	-	
Q	1.18	-	2.93	-	
S	0.80	1.03	2.03	2.66	

NOTES  
 1. THREE LEADS  
 2. CONTOUR OF THE PACKAGE BEYOND THIS ZONE UNCONTROLLED  
 3. (THREE LEADS) phi1 APPLIES BETWEEN L1 AND phi APPLIES BETWEEN L2 AND 5 INCH (12.70) FROM SEATING PLANE. DIAMETER IS UNCONT' IN L1 AND BEYOND 5 INCH (12.70MM) FROM SEATING PLANE

**FEATURES:**

- 200  $\mu$ A Gate Sensitivity
- 8-Amp Surge
- 30 through 200 Volt Selection
- Plastic TO-92 Package
- Low  $V_F$
- High  $dv/dt$

**MAXIMUM ALLOWABLE RATINGS**

TYPE	REPETITIVE PEAK OFF-STATE VOLTAGE, $V_{DRM}^{(1)}$ $T_C = -65^\circ\text{C to } +125^\circ\text{C}$	REPETITIVE PEAK REVERSE VOLTAGE, $V_{DRM}^{(2)}$ $T_C = -65^\circ\text{C to } +125^\circ\text{C}$
C203Y	30 Volts	30 Volts
C203YY	60 Volts	60 Volts
C203A	100 Volts	100 Volts
C203B	200 Volts	200 Volts
C203C	300 Volts	300 Volts
C203D	400 Volts	400 Volts

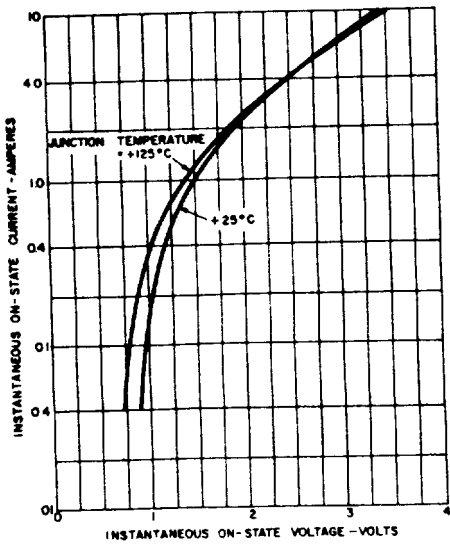
<sup>1</sup>  $R_{GK} = 1000$  ohms maximum.  
<sup>2</sup> Values apply for zero or negative gate voltage only.

RMS On-State Current, $I_{T(RMS)}$ (all Conduction Angles)	0.8 Amperes
Peak One Cycle Surge (non-rep) On-State Current, $I_{TSM}$	8.0 Amperes
Peak Gate Power Dissipation, $P_{GM}$	1.0 Watts for 8.3 msec.
Average Gate Power Dissipation, $P_{G(AV)}$	0.01 Watts
Peak Positive Gate Current, $I_{GM}$	0.5 Amperes
Peak Negative Gate Voltage, $V_{GM}$	8 Volts
Storage Temperature, $T_{STG}$	$-65^\circ\text{C to } +150^\circ\text{C}$
Operating Junction Temperature, $T_J$	$-65^\circ\text{C to } +125^\circ\text{C}$

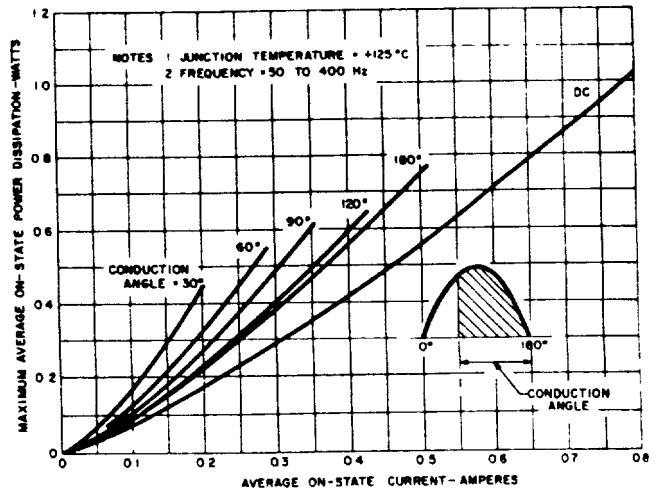
## CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Peak Reverse and Off-State Current (All Types)	$I_{RRM}$ OR $I_{DRM}$	-	-	1.0	$\mu A$	$T_C = +25^\circ C$ , $R_{GK} = 1000$ ohms $V_{RRM} = V_{DRM} =$ Rated Value.
		-	-	50		$T_C = +125^\circ C$ , $R_{GK} = 1000$ ohms $V_{RRM} = V_{DRM} =$ Rated Value.
DC Gate Trigger Current	$I_{GT}$	-	-	200	$\mu A_{dc}$	$T_C = +25^\circ C$ , $V_D = 6V_{dc}$ , $R_L = 100$ ohms.
		-	-	500		$T_C = -65^\circ C$ , $V_D = 6V_{dc}$ , $R_L = 100$ ohms.
DC Gate Trigger Voltage	$V_{GT}$	-	-	0.8	Vdc	$T_C = +25^\circ C$ , $V_D = 6V_{dc}$ , $R_L = 100$ ohms.
		-	-	1.0		$T_C = -65^\circ C$ , $V_D = 6V_{dc}$ , $R_L = 100$ ohms.
		0.1	-	-		$T_C = +125^\circ C$ , Rated $V_{DRM}$ , $R_L = 1000$ ohms.
Peak On-State Voltage	$V_{TM}$	-	-	1.5	V	$T_C = +25^\circ C$ , $I_{TM} = 1.0A$ peak, 1 msec. wide pulse, Duty Cycle $\leq 2\%$
Holding Current	$I_H$	-	-	5.0	mA <sub>dc</sub>	Anode source voltage = 12Vdc, $R_{GK} = 1000$ ohms. $T_C = +25^\circ C$ .
		-	-	10.0		$T_C = -65^\circ C$
Critical Rate-of-Rise of Off-State Voltage	dv/dt	-	20	-	V/ $\mu sec$	$T_C = +125^\circ C$ , Rated $V_{DRM}$ , $R_{GK} = 1000$ ohms.
Circuit Commutated Turn-Off Time	$t_q$	-	15	-	$\mu sec$	$T_C = +125^\circ C$ , rectangular current waveform. Rate-of-rise of current $< 10A/\mu sec$ . Rate reversal of current $< 5A/\mu sec$ . $I_{TM} = 1A$ (50 $\mu sec$ . pulse). Rep. Rate = 60 pps. $V_{RRM} =$ Rated, $V_{RX} = 15V$ Min., $V_{DRM} =$ Rated. Rate-of-rise of reapplied off-state voltage = 20V/ $\mu sec$ .; Gate Bias = 0 Volts, 100 Ohms (during turn-off time interval).
Steady-State Thermal Resistance	$R_{\theta JC}$	-	-	125	$^\circ C/W$	Junction-to-case (flat side of case is temperature reference point).
	$R_{\theta JA}$	-	-	230		Junction-to-ambient (free convection).

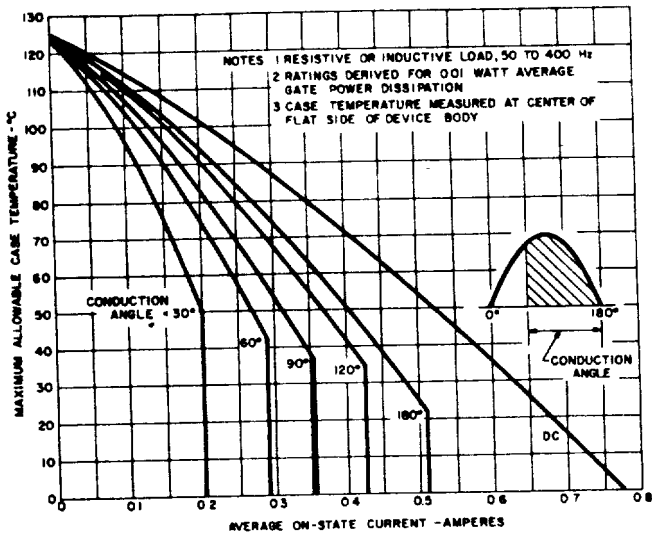
TYPICAL CHARACTERISTICS



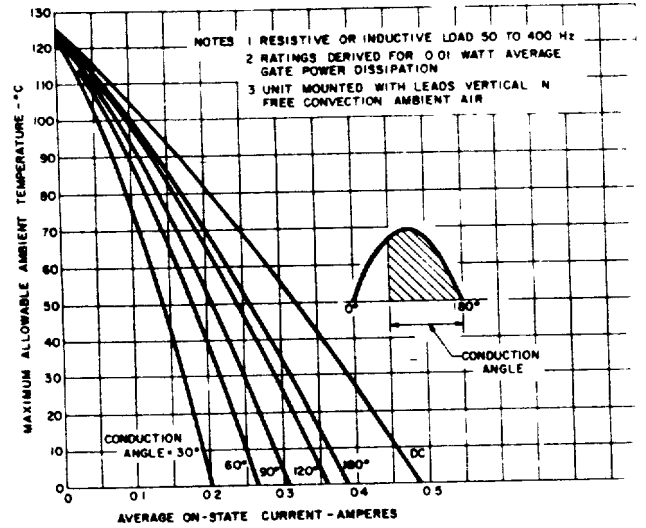
1. MAXIMUM ON-STATE CHARACTERISTICS



2. MAXIMUM ON-STATE POWER DISSIPATION FOR SINUSOIDAL CURRENT WAVEFORM

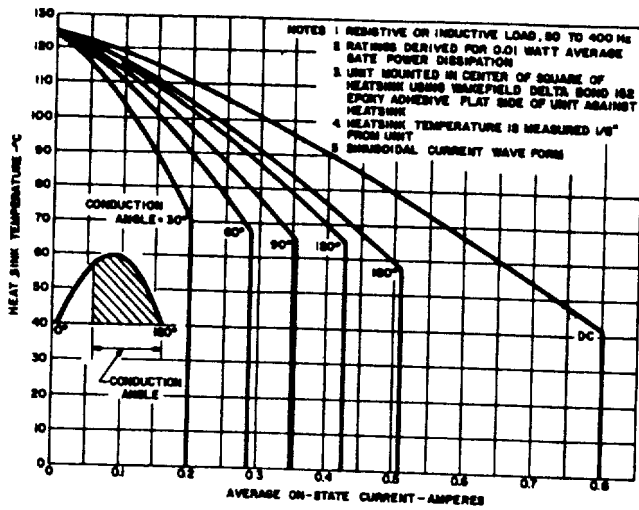


3. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM

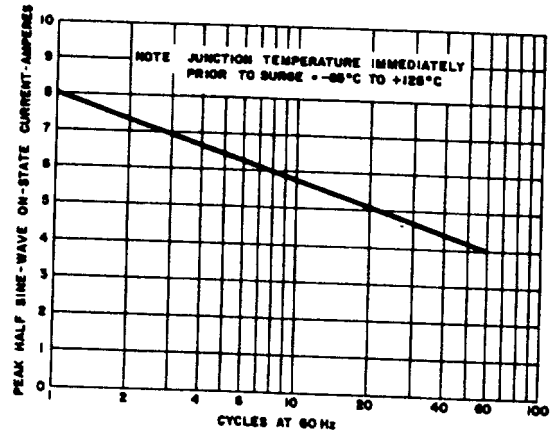


4. MAXIMUM ALLOWABLE AMBIENT TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM

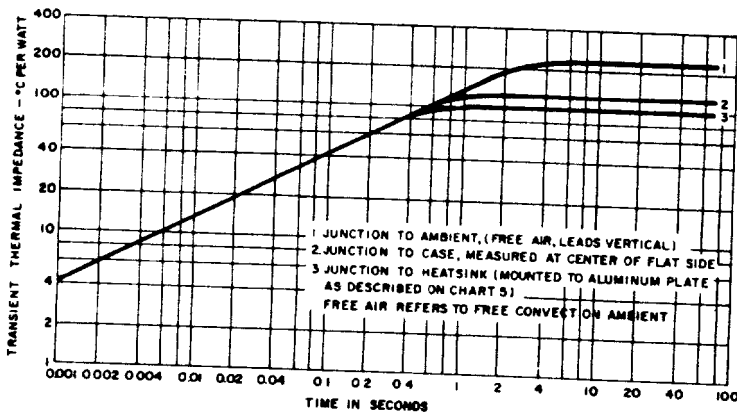
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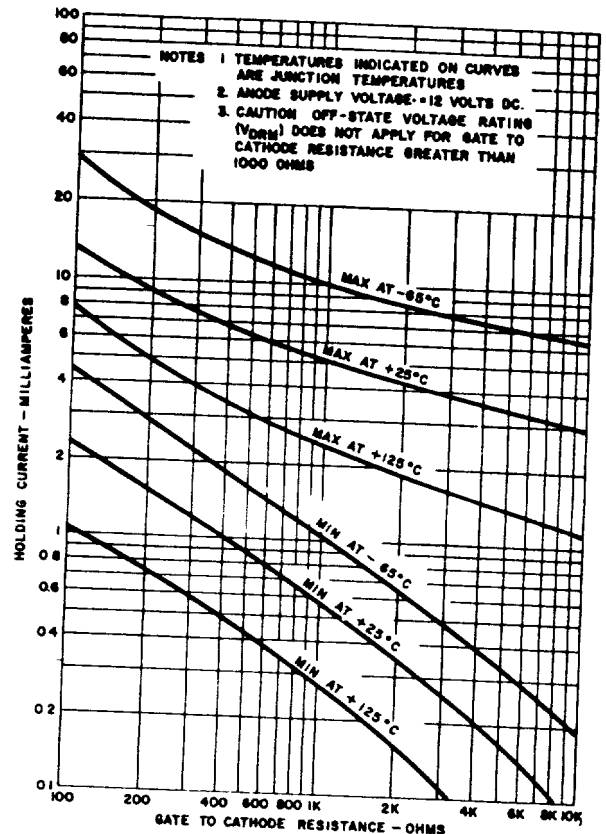
5. TYPICAL CURRENT CARRYING CAPABILITY FOR DEVICE MOUNTED ON 1" x 1" x 1/16" ALUMINUM HEATSINK



6. MAXIMUM ALLOWABLE SURGE (NON-REP) ON-STATE CURRENT



7. MAXIMUM TRANSIENT THERMAL IMPEDANCE



8. MAXIMUM AND MINIMUM HOLDING CURRENT VARIATION WITH GATE TO CATHODE RESISTANCE

\*Chart 5. For reference only, units are not available in this configuration.