



Silicon Controlled Rectifier

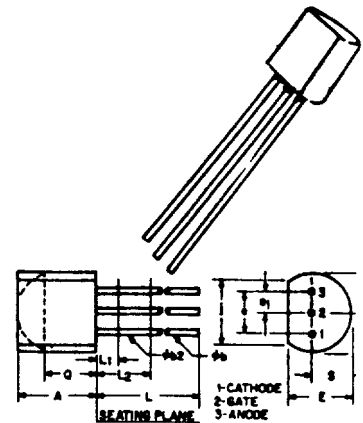
C203
0.8A RMS
UP TO 400 VOLTS
362-839

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

FEATURES:

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



SYMBOL	INCHES	MILLIMETERS	NOT
	MIN	MAX	
A	1.70	2.10	4.30 5.33
ϕ_b	0.16	0.21	4.07 5.33
ϕ_D	0.16	0.18	4.07 4.62
ϕ_D	1.75	2.03	4.43 5.20
E	1.25	1.63	3.18 4.19
ϕ	0.93	1.03	2.42 2.68
ϕ_1	0.45	0.53	1.15 1.39
J	1.35	—	3.43 —
L	50.0	—	12.70 —
L1	—	0.50	— 1.27
L2	25.0	—	6.35 —
S	0.15	—	3.81 —
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) ϕ_b APPLIES BETWEEN L_1 AND ϕ_D APPLIES BETWEEN L_2 AND S (12.70) FROM SEATING PLANE. DIAMETER IS UNCONTROLLED IN L_1 AND BEYOND 5 INCH (12.70) FROM SEATING PLANE

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

¹ $R_{GK} = 1000$ ohms maximum.

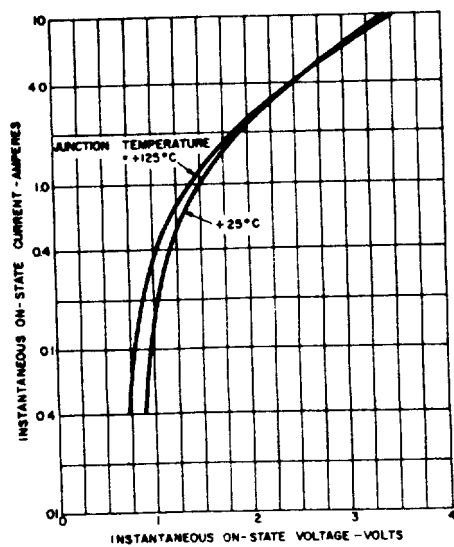
² Values apply for zero or negative gate voltage only.

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	$-65^\circ\text{C to } +125^\circ\text{C}$

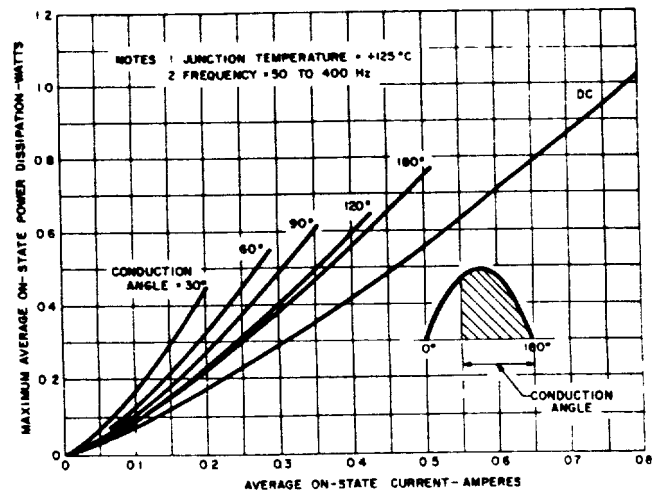
CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Peak Reverse and Off-State Current (All Types)	I_{RRM} or I_{DRM}	—	—	1.0	μA	$T_C = +25^\circ C$, $R_{GK} = 1000$ ohms $V_{RRM} = V_{DRM} = \text{Rated Value}$.
		—	—	50		$T_C = +125^\circ C$, $R_{GK} = 1000$ ohms $V_{RRM} = V_{DRM} = \text{Rated Value}$.
DC Gate Trigger Current	I_{GT}	—	—	200	μA_{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	V_{dc}	$T_C = +25^\circ C$, $V_D = 6V_{dc}$, $R_L = 100$ 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_{dc}	Anode source voltage = $12V_{dc}$, $R_{GK} = 1000$ 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	—	μsec	$T_C = +125^\circ C$, rectangular current waveform. Rate-of-rise of current $< 10A/\mu sec$. Rate reversal of current $< 5A/\mu sec$. $I_{TM} = 1A$ (50 μsec . pulse). Rep. Rate = 60 pps. $V_{RRM} = \text{Rated}$, $V_{RX} = 15V$ Min., $V_{DRM} = \text{Rated}$. 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).

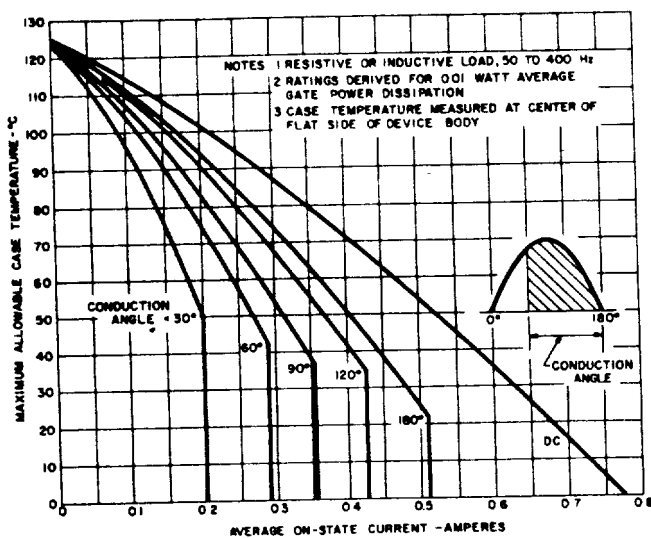
TYPICAL CHARACTERISTICS



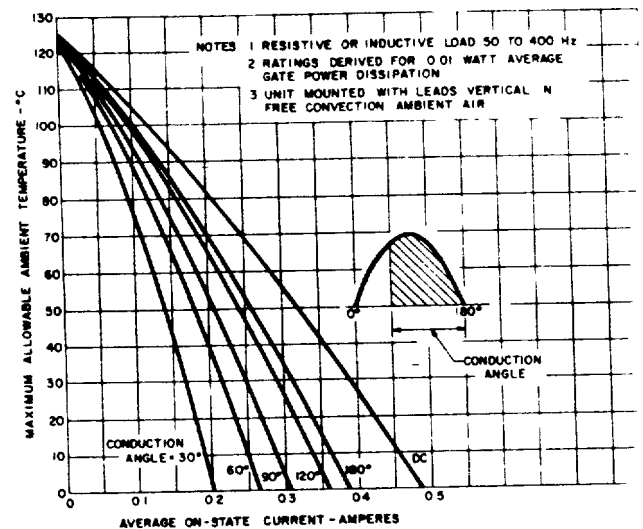
1. MAXIMUM ON-STATE CHARACTERISTICS



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

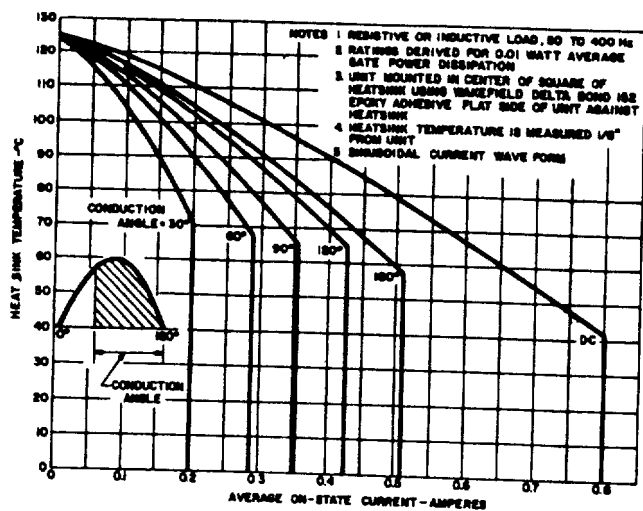


3. MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM

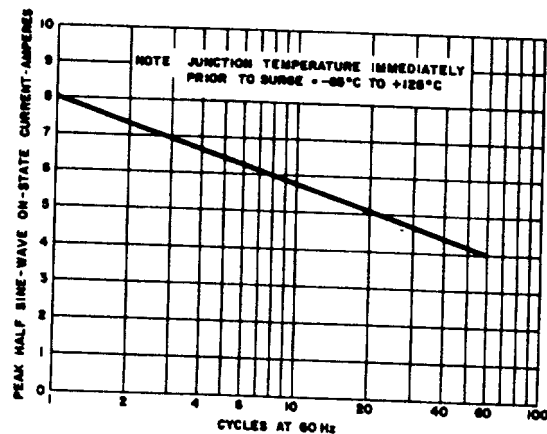


4. MAXIMUM ALLOWABLE AMBIENT TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM

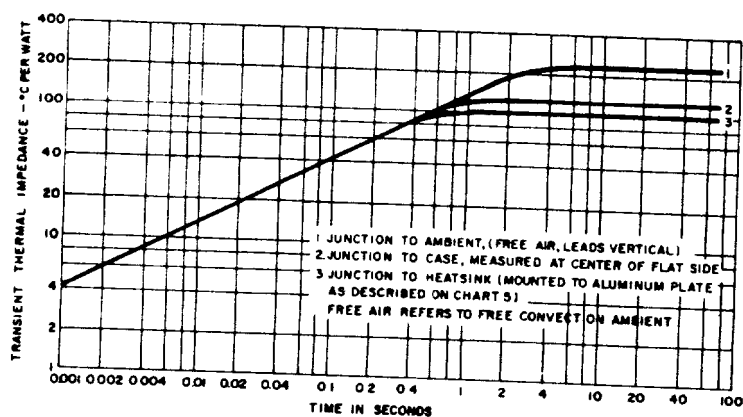
TYPICAL CHARACTERISTICS



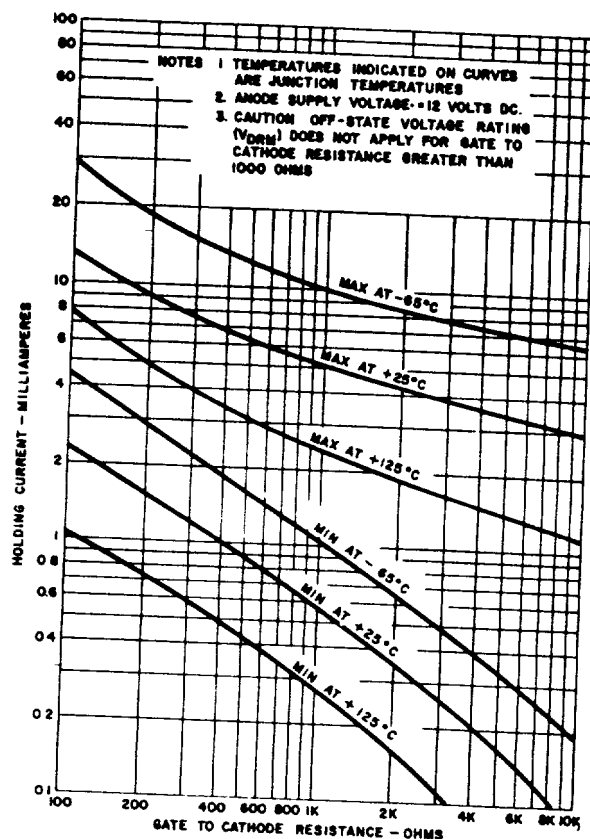
5. TYPICAL CURRENT CARRYING CAPABILITY FOR DEVICE MOUNTED ON 1" x 1" x 1/16" ALUMINUM HEATSINK



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.