2N5060
2N5061
2N5062*
2N5064*

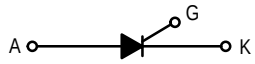
***Motorola preferred devices**

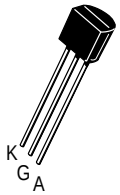
Silicon Controlled Rectifiers
Reverse Blocking Triode Thyristors

. . . Annular PNPN devices designed for high volume consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-226AA (TO-92) package which is readily adaptable for use in automatic insertion equipment.

- Sensitive Gate Trigger Current — 200 μA Maximum
- Low Reverse and Forward Blocking Current — 50 μA Maximum, T_C = 125°C
- Low Holding Current — 5 mA Maximum
- Passivated Surface for Reliability and Uniformity

SCRs
0.8 AMPERES RMS
30 thru 200 VOLTS





CASE 29-04
(TO-226AA)
STYLE 10

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

Rating		Symbol	Value	Unit
*Peak Repetitive Forward and Reverse Blocking Voltage(1) (T_J = 25 to 125°C) (R_{GK} = 1000 ohms)	2N5060 2N5061 2N5062 2N5064	V_{DRM} or V_{RRM}	 30 60 100 200	Volts
On-State Current RMS (All Conduction Angles)		$I_{T(RMS)}$	0.8	Amp
*Average On-State Current (T_C = 67°C) (T_C = 102°C)		$I_{T(AV)}$	 0.51 0.255	Amp
*Peak Non-repetitive Surge Current, T_A = 25°C (1/2 cycle, Sine Wave, 60 Hz)		I_{TSM}	10	Amps
Circuit Fusing Considerations (t = 8.3 ms)		I^2t	0.4	A^2s
*Peak Gate Power, T_A = 25°C		P_{GM}	0.1	Watt
*Average Gate Power, T_A = 25°C		$P_{G(AV)}$	0.01	Watt
*Peak Forward Gate Current, T_A = 25°C (300 μs, 120 PPS)		I_{FGM}	1	Amp
*Peak Reverse Gate Voltage		V_{RGM}	5	Volts

*Indicates JEDEC Registered Data. (cont.)

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 1

MAXIMUM RATINGS — continued

Rating	Symbol	Value	Unit
*Operating Junction Temperature Range @ Rated V_{RRM} and V_{DRM}	T_J	–65 to +125	°C
*Storage Temperature Range	T_{stg}	–65 to +150	°C
*Lead Solder Temperature (Lead Length ⩾ 1/16″ from case, 10 s Max)	—	+230*	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case(1)	$R_{\theta JC}$	75	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C, R_{GK} = 1000 Ω unless otherwise noted.), (2)

Characteristic		Symbol	Min	Typ	Max	Unit
*Peak Repetitive Forward or Reverse Blocking Current (V_{AK} = Rated V_{DRM} or V_{RRM})		I_{DRM}, I_{RRM}				
	T_C = 25°C		–	–	10	μA
	T_C = 125°C		–	–	50	μA
*Forward "On" Voltage(3) (I_{TM} = 1.2 A peak @ T_A = 25°C)		V_{TM}	–	–	1.7	Volts
Gate Trigger Current (Continuous dc)(4)		I_{GT}				μA
*(Anode Voltage = 7 Vdc, R_L = 100 Ohms)	T_C = 25°C		–	–	200	
	T_C = –65°C		–	–	350	
Gate Trigger Voltage (Continuous dc)	T_C = 25°C	V_{GT}	–		0.8	Volts
*(Anode Voltage = 7 Vdc, R_L = 100 Ohms)	T_C = –65°C		–		1.2	
(Anode Voltage = Rated V_{DRM}, R_L = 100 Ohms)	T_C = 125°C	V_{GD}	0.1		–	
Holding Current	T_C = 25°C	I_H	–	–	5	mA
*(Anode Voltage = 7 Vdc, initiating current = 20 mA)	T_C = –65°C		–	–	10	
Turn-On Time						μs
Delay Time		t_d	–	3	–	
Rise Time		t_r	–	0.2	–	
(I_{GT} = 1 mA, V_D = Rated V_{DRM}, Forward Current = 1 A, di/dt = 6 A/μs						
Turn-Off Time		t_q				μs
(Forward Current = 1 A pulse, Pulse Width = 50 μs, 0.1% Duty Cycle, di/dt = 6 A/μs, dv/dt = 20 V/μs, I_{GT} = 1 mA)	2N5060, 2N5061		–	10	–	
	2N5062, 5063, 5064		–	30	–	
Forward Voltage Application Rate (Rated V_{DRM}, Exponential)		dv/dt	–	30	–	V/μs

*Indicates JEDEC Registered Data.

1. This measurement is made with the case mounted "flat side down" on a heat sink and held in position by means of a metal clamp over the curved surface.
2. For electrical characteristics for gate-to-cathode resistance other than 1000 ohms see Motorola Bulletin EB-30.
3. Forward current applied for 1 ms maximum duration, duty cycle ⩽ 1%.
4. R_{GK} current is not included in measurement.

CURRENT DERATING

FIGURE 1 – MAXIMUM CASE TEMPERATURE

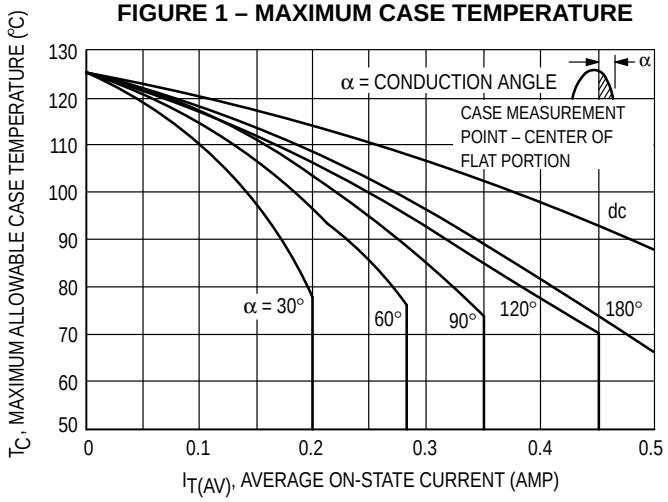


FIGURE 2 – MAXIMUM AMBIENT TEMPERATURE

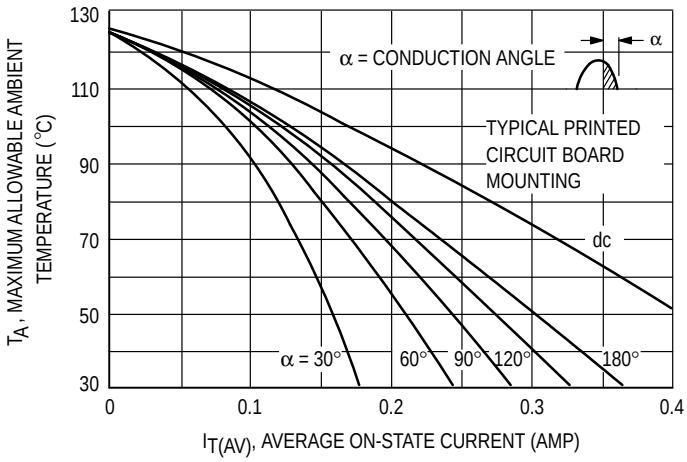


FIGURE 3 – TYPICAL FORWARD VOLTAGE

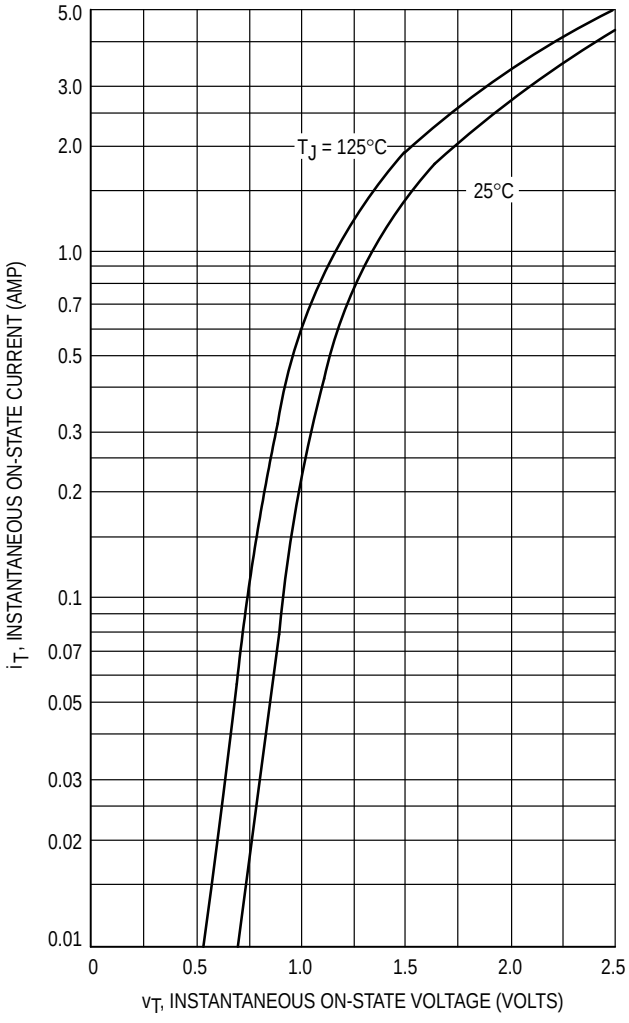


FIGURE 4 – MAXIMUM NON-REPETITIVE SURGE CURRENT

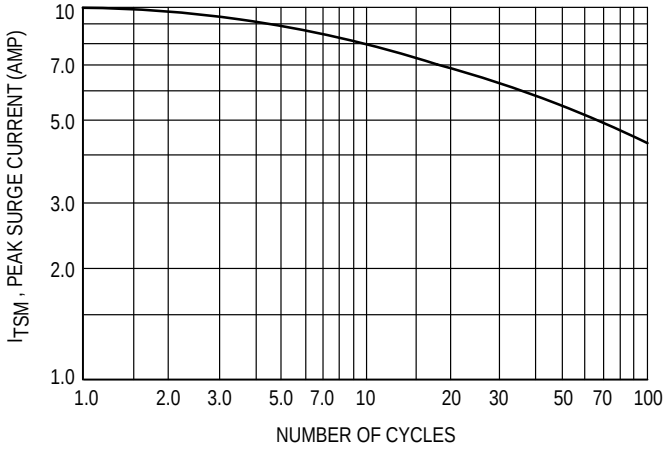


FIGURE 5 – POWER DISSIPATION

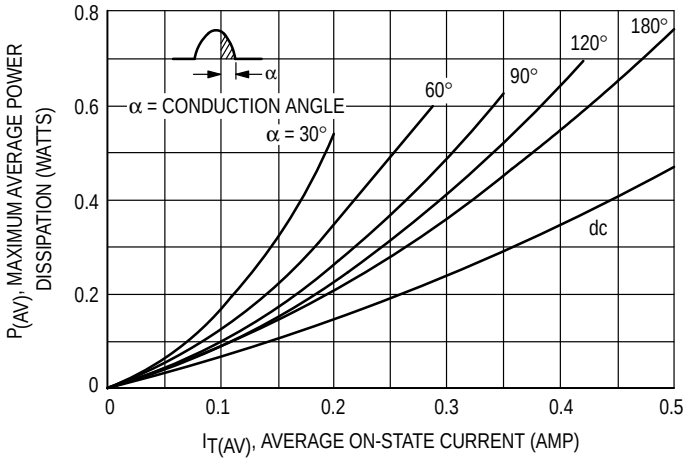
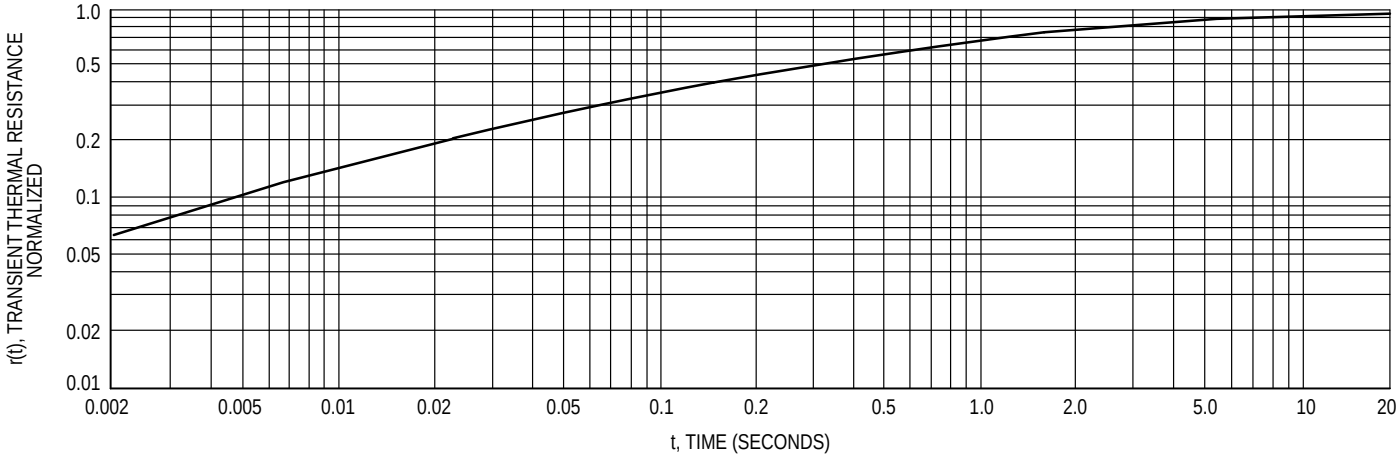


FIGURE 6 – THERMAL RESPONSE



TYPICAL CHARACTERISTICS

FIGURE 7 – GATE TRIGGER VOLTAGE

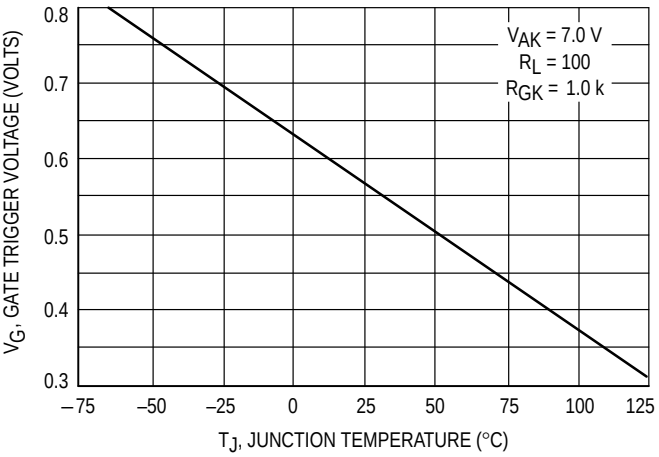


FIGURE 8 – GATE TRIGGER CURRENT

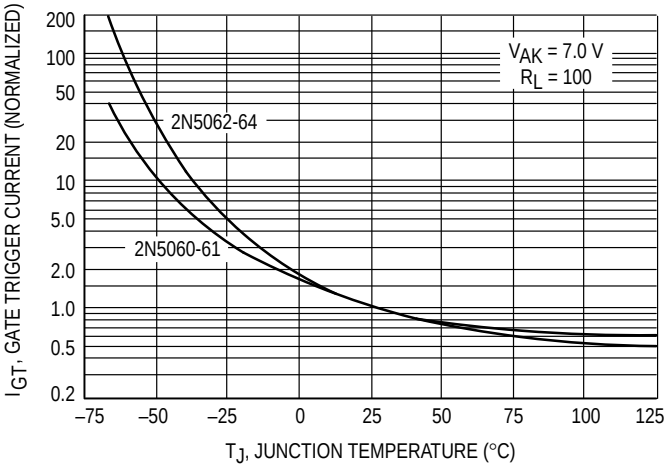


FIGURE 9 – HOLDING CURRENT

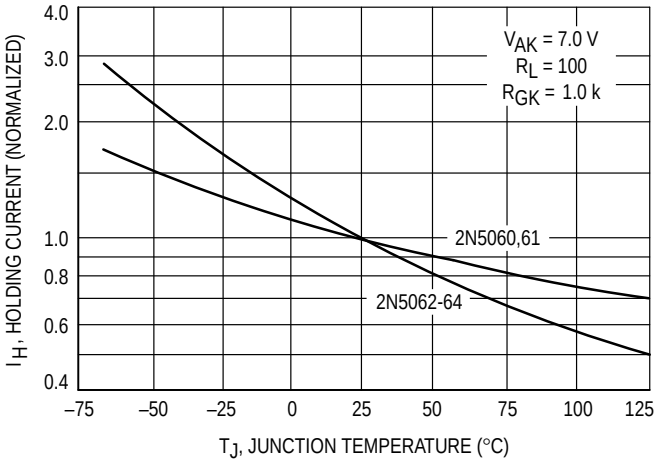
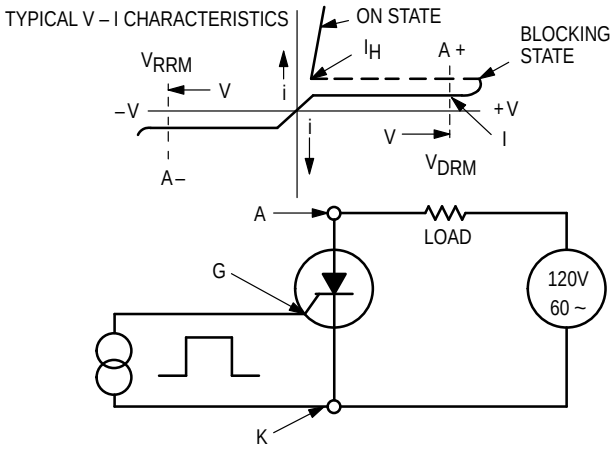
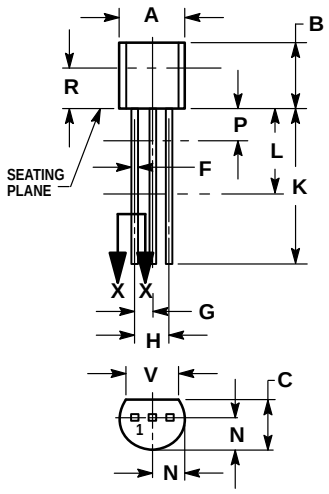


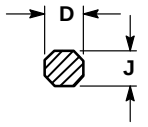
FIGURE 10 – CHARACTERISTICS AND SYMBOLS



PACKAGE DIMENSIONS



STYLE 10:
PIN 1. CATHODE
2. GATE
3. ANODE



SECTION X–X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

CASE 029–04
(TO–226AA)

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