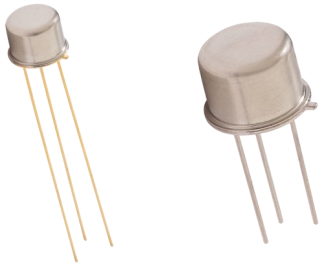
2N2323 - 2N2329 A, AS, S

Silicon Controlled Rectifier

Rev. V7

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/276
- TO-5 & TO-39 (TO-205AD) Package
- Triggered Solid State Switches Used in Motors and Power Supplies
- Ideal for Sensing Circuit Applications and Control Systems



Electrical Characteristics (T_C = +25°C unless otherwise specified)

Parameter	Conditions		Symbol	Min.	Max.	Units
Subgroup 2 Testing						
Reverse Blocking Current	R_2 = 1 kΩ R_2 = 2 kΩ V_R = 50 V dc V_R = 100 V dc V_R = 200 V dc V_R = 300 V dc V_R = 400 V dc	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS 2N2323, S, A, AS 2N2324, S, A, AS 2N2326, S, A, AS 2N2328, S, A, AS 2N2329, S, A, AS	I_{RBX1}	—	10	µA dc
Forward Blocking Current	R_2 = 1 kΩ R_2 = 2 kΩ V_R = 50 V dc V_R = 100 V dc V_R = 200 V dc V_R = 300 V dc V_R = 400 V dc	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS 2N2323, S, A, AS 2N2324, S, A, AS 2N2326, S, A, AS 2N2328, S, A, AS 2N2329, S, A, AS	I_{FBX1}	—	10	µA dc
Reverse Gate Current (V_{KG} = 6 Vdc)			I_{KG}	—	200	µA dc
Gate Trigger Voltage & Current $V_2 = V_{FBX}$ = 6 Vdc; R_L = 100 W	R_e = 1 kΩ R_e = 2 kΩ	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS	V_{GT1} I_{GT1} V_{GT1} I_{GT1}	0.35 — 0.35 —	0.80 200 0.60 20	V dc µA dc V dc µA dc
Subgroup 4 Testing						
Exponential Rate of Voltage Rise T_A = 125°C 50 Ω ≤ R_L ≤ 400 W, C = 0.1 to 1.0 µF, repetition rate = 60 pps, test duration = 15 seconds	dv/dt = 1.8 v/µs, R_3 = 1 kΩ dv/dt = 0.7 v/ms, R_3 = 2 kW V_R = 50 V dc V_R = 100 V dc V_R = 200 V dc V_R = 300 V dc V_R = 400 V dc	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS 2N2323, S, A, AS 2N2324, S, A, AS 2N2326, S, A, AS 2N2328, S, A, AS 2N2329, S, A, AS	V_{FBX}	47 95 190 285 380	—	V dc
Forward "on" Voltage I_{FM} = 4a (pk) (pulse), pulse width = 8.5 ms, max; duty cycle = 2% max.			V_{FM}	—	2.2	V (pk)
Holding Current V_{AA} = 24 V dc max., I_F1 = 100 mA dc, I_F2 = 10 mA dc Gate trigger source voltage = 6 V dc, trigger pulse width = 25 µs min. R_2 = 330 Ω	R_3 = 1 kΩ R_3 = 2 kΩ	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS	I_{HOX}	—	2.0	mA dc

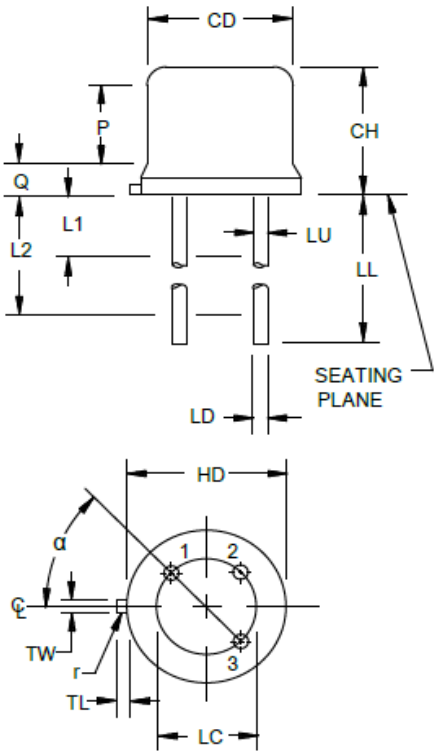
Absolute Maximum Ratings

Ratings	Symbol	2N2323, S/ 2N2323A, S	2N2324, S/ 2N2324A, S	2N2326, S/ 2N2326A, S	2N2328, S/ 2N2328A, S	2N2329, S/ 2N2329A, S	Unit
Reverse Voltage	V_{RM}	50	100	200	300	400	V dc
Working Peak Reverse Voltage	V_{RM}	75	150	300	400	500	V pk
Forward Blocking Voltage	V_{FBXM}	50[3,4]	100[3,4]	200[3,4]	300[3,4]	400[3,4]	V pk
Average Forward Current[1]	I_O	0.22					A dc
Forward Current Surge Peak[2]	I_{FSM}	15					A dc
Cathode-Gate Current	V_{GKM}	6					V pk
Operating Temperature	T_{OP}	-65 to +150					°C
Storage Junction Temperature	T_{STG}	-65 to +150					°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	175					°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	15					°C/W

1. This average forward current is for an ambient temperature of 80°C and 180 electrical degrees of conduction. For other operating conditions see figure 3 of MIL-PRF-19500/276.
2. Surge current is non-recurrent. The rate of rise of peak surge current shall not exceed 40 A during the first 5 µs after switching from the "off" (blocking) to the "on" (conducting) state. This is measured from the point where the thyristor voltage has decayed to 90% of its initial blocking value.
3. Gate connected to cathode through 1,000 ohm resistor.
4. Gate connected to cathode through 2,000 ohm resistor.

Outline Drawing (TO-5 & TO-39)

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.335	7.75	8.51	3
CH	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	3
LC	.200 TP		5.08 TP		4
LD	.016	.021	0.41	0.53	5, 6
LL					6, 7
LU	.016	.019	0.41	0.48	5, 6
L1		.050		1.27	5, 6
L2	.250		6.35		5, 6
P	.100		2.54		
Q		.050		1.27	3
TL	.029	.045	0.74	1.14	8
TW	.028	.034	0.71	0.86	9
r		.010		0.25	10
α	45° TP		45° TP		4



NOTES:

1. Dimension are in inches. Millimeters are given for general information only.
2. Terminal 1 = emitter, terminal 2 = base, terminal 3 = collector. The collector shall be internally connected to the case.
3. Body contour optional within zone defined by dimensions CD, HD, and Q.
4. Leads at gauge plane .054 +.001 -.000 inch (1.37 +0.03 -0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC. The device may be measured by direct methods.
5. Dimension LD applies between dimensions L2 and LL minimum. Diameter is uncontrolled in dimension L1 and beyond dimension LL minimum. Dimension LU applies between dimensions L1 and L2.
6. All three leads.
7. For non-"S" suffix devices (TO-205AA), dimension LL is 1.500 (38.10 mm) minimum, 1.750 (44.45 mm) maximum. For "S" suffix devices (TO-205AD), dimension LL is .500 (12.70 mm) minimum, .750 (19.05 mm) maximum.
8. Dimension TL measured from maximum HD.
9. Beyond r (radius) maximum, dimension TW shall be held for a minimum length of .011 inch (0.28 mm).
10. Dimension r (radius) applies to both inside corners of tab.
11. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions for TO-205AA and TO-205AD packages (formerly TO-39, TO-5).