

# 2N232x Series

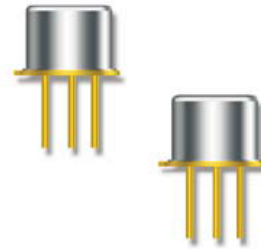


## Silicon Controlled Rectifier

Rev. V3

### Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/276
- TO-5 & TO-39 (TO-205AD) Package



### Electrical Characteristics

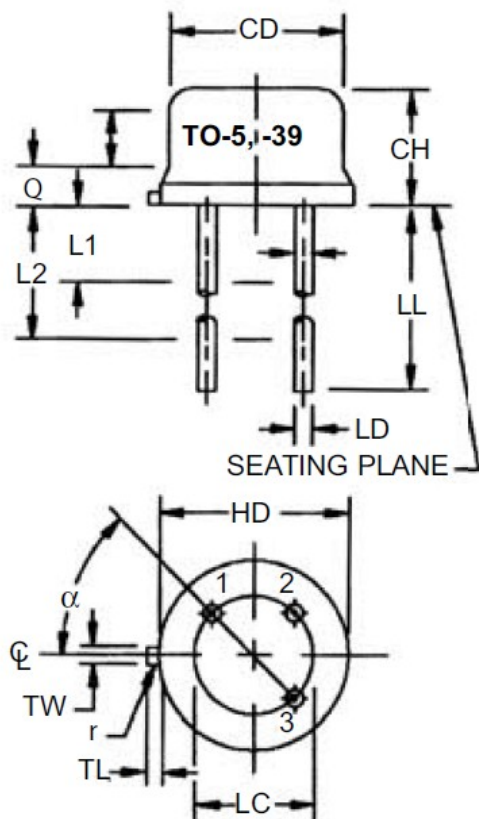
Characteristics	Symbol	Min.	Max.	Units	
<b>Subgroup 2 Testing</b>					
Reverse Blocking Current $R_2 = 1\text{ k}\Omega$ $R_2 = 2\text{ k}\Omega$ $V_R = 50\text{ Vdc}$ $V_R = 100\text{ Vdc}$ $V_R = 200\text{ Vdc}$ $V_R = 300\text{ Vdc}$ $V_R = 400\text{ Vdc}$	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS 2N2323, S, A, AS 2N2324, S, A, AS 2N2326, S, A, AS 2N2328, S, A, AS 2N2329, S, A, AS	$I_{RBX1}$	—	10 $\mu\text{Adc}$	
Forward Blocking Current $R_2 = 1\text{ k}\Omega$ $R_2 = 2\text{ k}\Omega$ $V_R = 50\text{ Vdc}$ $V_R = 100\text{ Vdc}$ $V_R = 200\text{ Vdc}$ $V_R = 300\text{ Vdc}$ $V_R = 400\text{ Vdc}$	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 $\mu\text{Adc}$	
Reverse Gate Current ( $V_{KG} = 6\text{ Vdc}$ )		$I_{kg}$	—	200 $\mu\text{Adc}$	
Gate Trigger Voltage & Current $V_2 = V_{FBX} = 6\text{ Vdc}$ ; $R_L = 100\text{ W}$	$R_e = 1\text{ k}\Omega$ $R_e = 2\text{ k}\Omega$	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 Vdc $\mu\text{Adc}$ Vdc $\mu\text{Adc}$	
<b>Subgroup 4 Testing</b>					
Exponential Rate of Voltage Rise $T_A = 125^\circ\text{C}$ $50\ \Omega \leq R_L \leq 400\text{ W}$ , $C = 0.1$ to $1.0\ \mu\text{F}$ , repetition rate = 60 pps, test duration = 15 seconds	$dv/dt = 1.8\text{ v}/\mu\text{s}$ , $R_3 = 1\text{ k}\Omega$ $dv/dt = 0.7\text{ v/ms}$ , $R_3 = 2\text{ k}\Omega$ $V_R = 50\text{ Vdc}$ $V_R = 100\text{ Vdc}$ $V_R = 200\text{ Vdc}$ $V_R = 300\text{ Vdc}$ $V_R = 400\text{ Vdc}$	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 Vdc	
Forward "on" Voltage $I_{FM} = 4\text{ a (pk)}$ (pulse), pulse width = 8.5 ms, max; duty cycle = 2% max.			$V_{FM}$	—	2.2 V(pk)
Holding Current $V_{AA} = 24\text{ Vdc max.}$ , $I_{F1} = 100\text{ mAdc}$ , $I_{F2} = 10\text{ mAdc}$ Gate trigger source voltage = 6 Vdc, trigger pulse width = 25 $\mu\text{s}$ min. $R_2 = 330\ \Omega$	$R_3 = 1\text{ k}\Omega$ $R_3 = 2\text{ k}\Omega$	2N2323, S - 2N2329, S 2N2323A, AS - 2N2329A, AS	$I_{HOX}$	—	2 mAdc

### 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	Vdc
Working Peak Reverse Voltage	$V_{RM}$	75	150	300	400	500	Vpk
Forward Blocking Voltage	$V_{FBXM}$	$50^{3,4}$	$100^{3,4}$	$200^{3,4}$	$300^{3,4}$	$400^{3,4}$	Vpk
Average Forward Current <sup>1</sup>	$I_O$	0.22					Adc
Forward Current Surge Peak <sup>2</sup>	$I_{FSM}$	15					Adc
Cathode-Gate Current	$V_{KGM}$	6					Vpk
Operating Temperature	$T_{OP}$	-65 to +125					°C
Storage Junction Temperature	$T_{STG}$	-65 to +150					°C

1. This average forward current is for an ambient temperature of 80°C and 180 electrical degrees of conduction.
2. Surge current is non-recurrent. The rate of rise of peak surge current shall not exceed 40 A during the first 5  $\mu$ s 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)



LTR	Dimensions				Note
	Inches		Millimeters		
	MIN	MAX	MIN	MAX	
CD	0.305	0.335	7.75	8.51	—
CH	0.240	0.260	6.10	6.60	—
HD	0.335	0.370	8.51	9.40	—
LC	0.200 TP		5.08 TP		7
LD	0.016	0.021	0.041	0.053	8, 9
LL					8,11,14
LU	0.016	0.019	0.041	0.048	8, 9
L1	—	0.050	—	1.27	8, 9
L2	0.250	—	6.35	—	8, 9
P	0.100	—	2.54	—	7
Q	—	0.050	—	1.27	5
TL	0.029	0.045	0.74	1.14	—
TW	0.028	0.034	0.71	0.86	—
r	—	0.010	—	0.25	10
$\alpha$	45° TP		45° TP		7
1, 2, 10, 12, 13, 14					

- Dimensions are in inches.
- Millimeters are given for general information only.
- Beyond r (radius) maximum, TW shall be held for a minimum length of .011 (0.28 mm).
- Dimension TL measured from maximum HD.
- Body contour optional within zone defined by HD, CD, and Q.
- CD shall not vary more than 0.010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
- Leads at gauge plane 0.054 +0.001 -0.000 inch (1.37 +0.03 -0.00 mm) below seating plane shall be within 0.007 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 or by gauging procedure.
- Dimension LU applies between L<sub>1</sub> and L<sub>2</sub>. Dimension LD applies between L<sub>1</sub> and LL minimum. Diameter is uncontrolled in and beyond LL minimum.
- All three leads.
- The collector shall be internally connected to the case.
- Dimension r (radius) applies to both inside corners of tab.
- In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.
- Lead 1 = cathode, lead 2 = gate, lead 3 = anode. The anode shall be internally connected to the case.
- For non-S-suffix devices (T0-5), dimension LL = 1.5 inches (38.10 mm) min. and 1.75 inches (44.45 mm) max. For S-suffix types (T0-39), dimension LL = 0.5 inch (12.70 mm) min. and 750 inch (19.05 mm) max.

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