2N5679 & 2N5680

PNP Silicon Amplifier

Rev. V6

Features

- JAN, JANTX and JANTXV per MIL-PRF-19500/582
- TO-39 (TO-205AD) Package
- Ideal for General Purpose Amplifier and Switching Applications Where High Voltages are Required

Electrical Characteristics (T_A = +25°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	I_C = -10 mA dc, 2N5679 I_C = -10 mA dc, 2N5680	$V_{(BR)CEO}$	V dc	-100 -120	—
Collector - Emitter Cutoff Current	V_{CE} = -70 V dc, 2N5679 V_{CE} = -80 V dc, 2N5680	I_{CEO}	µA dc	—	-10 -10
Collector - Emitter Cutoff Current	V_{CE} = -100 V dc, V_{BE} = +1.5 Vdc, 2N5679 V_{CE} = -120 V dc, V_{BE} = +1.5 Vdc, 2N5680	I_{CEX1}	nA dc	—	-100 -100
Collector - Base Cutoff Current	V_{CE} = -100 V dc, 2N5679 V_{CE} = -120 V dc, 2N5680	I_{CBO}	nA dc	—	-100 -100
Emitter - Base Cutoff Current	V_{BE} = -4.0 V dc	I_{EBO}	µA dc	—	-1.0
Forward Current Transfer Ratio	I_C = -250 mA dc, V_{CE} = -2.0 V dc I_C = -500 mA dc, V_{CE} = -2.0 V dc I_C = -1.0 A dc, V_{CE} = -2.0 V dc	h_{FE}	-	40 20 5	150
Collector - Emitter Saturation Voltage	I_C = -250 mA dc, I_B = -25 mA dc I_C = -500 mA dc, I_B = -50 mA dc	$V_{CE(sat)1}$ $V_{CE(sat)2}$	V dc	—	-0.6 -1.0
Emitter - Base Saturation Voltage	I_C = -250 mA dc, I_B = -25 mA dc I_C = -500 mA dc, I_B = -50 mA dc	$V_{BE(sat)1}$ $V_{BE(sat)2}$	V dc	—	-1.1 -1.3
Collector - Emitter Cutoff Current	T_A = +150°C V_{CE} = -100 V dc, V_{BE} = +1.5 Vdc, 2N5679 V_{CE} = -120 V dc, V_{BE} = +1.5 Vdc, 2N5680	I_{CEX2}	mA dc	—	-1.0 -1.0
Forward Current Transfer Ratio	T_A = -55°C I_C = -250 mA dc, V_{CE} = -2.0 V dc	h_{FE4}	-	20	
Dynamic Characteristics					
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = -0.1 A dc, V_{CE} = -10 V dc, f = 10 MHz	$\lvert h_{FE} \rvert$	-	3	
Small-Signal Short-Circuit Forward Current Transfer Radio	I_C = -0.2 A dc, V_{CE} = -1.5 V dc, f = 1.0 kHz	h_{fe}	-	40	
Open Circuit Output Capacitance	V_{CB} = -20 V dc, I_E = 0, f = 1 MHz	C_{obo}	pF	—	50

Absolute Maximum Ratings (T_A = +25°C unless otherwise noted)

Ratings	Symbol	Value
Collector - Emitter Voltage 2N5679 2N5680	V_{CEO}	 -100 V dc -120 V dc
Collector - Base Voltage 2N5679 2N5680	V_{CBO}	 -100 V dc -120 V dc
Emitter - Base Voltage	V_{EBO}	-4.0 V dc
Base Current	I_B	-0.5 A dc
Collector Current	I_C	-1.0 A dc
Total Power Dissipation @ T_A = +25°C (1) @ T_C = +25°C (2)	P_T	 1.0 W 10 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +200°C

(1) Derate linearly 5.7 mW/°C for T_A > +25°C.
(2) Derate linearly 57mW/°C for T_C > +25°C.

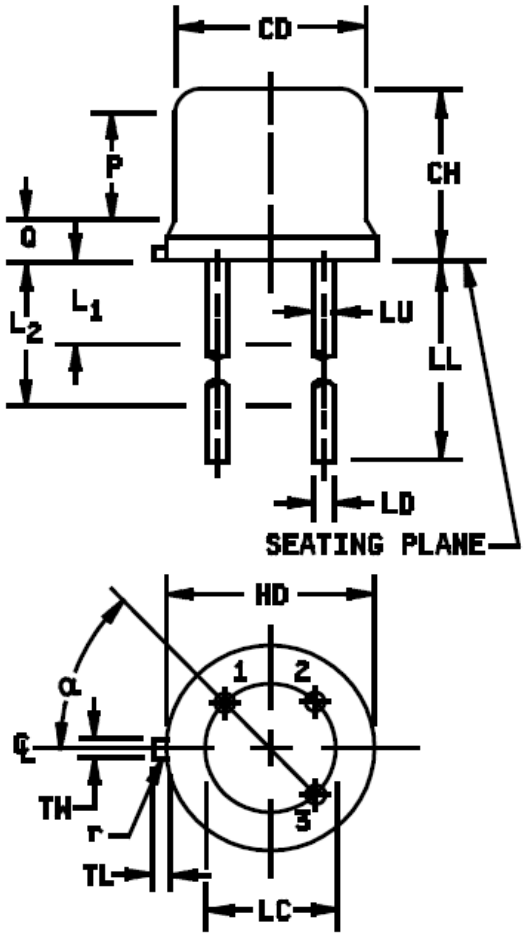
Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	17.5°C

Safe Operating Area	
DC Tests:	T_C = +25°C, I Cycle, t ≥ 0.5 s
Test 1:	I_C = -1.0 A dc, V_{CE} = -2 V dc
Test 2:	I_C = -1.0 A dc, V_{CE} = -10 V dc
Test 3:	I_C = -50 mA dc, V_{CE} = -90 V dc

Outline Drawing (TO-39)

Symbol (see note 3)	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	0.305	.335	7.75	8.51	
CH	0.240	.260	6.10	6.60	
HD	0.335	.370	8.51	9.39	
LC	0.200 BSC		5.08 BSC		9
LD	0.016	0.021	0.41	0.53	9, 10
LL	0.500	0.750	12.70	19.05	10, 11
LU	0.016	0.019	0.41	0.48	10, 11
L_1		0.050		1.27	10, 11
L_2	0.250		6.35		10, 11
P	0.100		2.54		8
Q		0.050		1.27	7
r		0.010		0.25	12
TL	0.029	0.045	0.74	1.14	6
TW	0.028	0.034	0.72	0.86	5
α	45° BSC				9
Term 1	Emitter				
Term 2	Base				
Term 3	Collector				



NOTES:
1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Refer to applicable symbol list.
4. Lead number 1 is the emitter, lead number 2 is the base, lead number 4 is omitted from this outline. The collector is number 3 and is electrically connected to the case.
5. Beyond r (radius) max, TW shall be held for a minimum length of .011 inch (0.28 mm).
6. TL measured from maximum HD.
7. Outline in this zone is not controlled.
8. CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
9. 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.
10. LU applies between L_1 and L_2. LD applies between L_2 and LL minimum. Diameter is uncontrolled in L_1 and beyond LL minimum.
11. All three leads.
12. r (radius) applies to both inside corners of tab.
13. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.