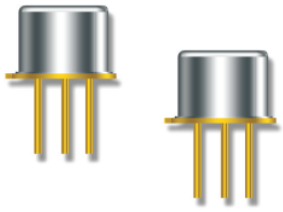
NPN POWER SILICON TRANSISTOR

2N5339

FEATURES

- JAN, JANTX, JANTXV, JANS, and JANSR 100K rad (si) per MIL-PRF-19500/560
- TO-39 (TO-205AD) Package



ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITION	SYMBOL	UNITS	MIN	MAX
OFF CHARACTERISTICS					
Collector – Emitter Breakdown Voltage	I_C = 50 mA dc	$V_{(BR)CEO}$	Vdc	100	—
Collector – Emitter Cutoff Current	V_{CE} = 100 V dc V_{CE} = 90 V dc, V_{BE} = 1.5 V dc	I_{CEO} I_{CEX}	µA dc	—	100 1.0
Collector – Base Cutoff Current	V_{CB} = 100 V dc	I_{CBO}	µA dc	—	1.0
Emitter – Base Cutoff Current	V_{EB} = 6.0 V dc	I_{EBO}	µA dc	—	100
ON CHARACTERISTIC[1]					
Forward Current Transfer Ratio	I_C= 0.5 A dc, V_{CE} = 2.0 V I_C = 2.0 A dc, V_{CE} = 2.0 V I_C= 0.5 A dc, V_{CE} = 2.0 V	h_{Fe}	—	60 60 40	— 240 —
Collector - Emitter Saturation Voltage	I_C= 2.0 A dc, I_B = 0.2 A dc I_C= 5.0 A dc, I_B = 0.5 A dc	$V_{CE(sat)}$	V dc	—	0.7 1.2
Emitter - Base Saturation Voltage	I_C = 150 A dc, I_B= 0.2 A dc I_C= 150 A dc, I_B =0.5 A dc	$V_{BE(sat)}$	V dc	—	1.2 1.8
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small Signal Short-Circuit Forward Current Transfer Ratio	I_C= 0.5 A dc, V_{CE} = 10.0 V dc, f = 10 MHz	$\lvert h_{Fe} \rvert$	—	3	15
Output Capacitance	V_{CB} = 10 V, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{obo}	pF	—	250
Input Capacitance	V_{BE} = 2 Vdc, Ic = 0, 100 kHz ≤ f ≤ 1 MHz	C_{ibo}	pF	—	1000

SAFE OPERATING AREA	
DC Tests:	T_C = + 25 °C, I Cycle, t ≥ 0.5 s
Test 1:	V_{CE} = 2 V dc, I_C = 5 A dc
Test 2:	V_{CE} = 5 V dc, IC = 2 A dc
Test 3:	V_{CE} = 90 V dc, I_C = 55 mA dc

NOTES:

1. Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤ 2.0%

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ABSOLUTE MAXIMUM RATINGS

RATING	SYMBOL	VALUE
Collector - Emitter Voltage	V_{CEO}	100 V dc
Collector - Base Voltage	V_{CBO}	100 V dc
Emitter - Base Voltage	V_{EBO}	6 V dc
Base Current	I_B	1 A dc
Collector Current	I_C	5 A dc
Total Power Dissipation @ T_A = 25 °C @ T_C = 25 °C	P_T	 1.0 W 17.5 W
Operating and Storage Temperature Range	T_{OP}, T_{STG}	-65 °C to +200 °C

NOTES:

1. Derate linearly 434 mW / °C for T_C = 25 °C

THERMAL CHARACTERISTICS

CHARACTERISTICS	SYMBOL	MAXIMUM VALUE
Thermal Resistance, Junction to Case	$R_{\theta JC}$	10 °C/W

OUTLINE DRAWING

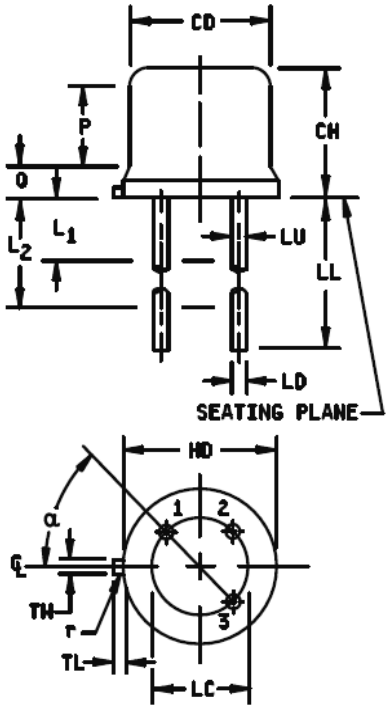

FIGURE 1. Physical dimensions (TO-39).

SYMBOL	INCHES		MILLIMETER		NOTES
	Min.	Max	Min	Max	
CD	.305	.355	7.75	9.02	5
CH	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	3
LC	.200 TP		5.08 TP		6
LD	.016	.021	.41	.53	7
LL	.500	.750	12.70	19.05	7
LU	.016	.019	.41	.48	7
L_1	-	.050	-	1.27	7
L_2	.250		6.35		7
TL	.029	.045	.74	1.14	3
TW	.028	.034	.71	.86	10
P	.100	-	2.54	-	5
Q	-	.050	-	1.27	4
r	-	.010	-	.25	10, 11
α	45° TP		45° TP		6
Notes	1, 2, 8, 9		1, 2, 8, 9		

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Symbol TL is measured from HD maximum.
4. Details of outline in this zone are optional.
5. Symbol CD shall not vary more than .010 (0.25 mm) in zone P. This zone is controlled for automatic handling.
6. Leads at gauge plane 0.54 inch (1.37 mm) + .001 inch (0.03 mm) - .000 inch (0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.
7. Symbol LD applies between L_1 and L_2. Dimension LD applies between L_2 and LL minimum.
8. Lead designation, depending on device type, shall be as follows: Lead number 1 is emitter; Lead number 2 is base; Lead number 3 is collector.
9. Lead number three is electrically connected to case.
10. Beyond r maximum, TW shall be held for a minimum length of .011 inch (0.28 mm)
11. Symbol r applied to both inside corners of tab.
12. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.