

# 2N2905A

## Small Signal Switching Transistor

### PNP Silicon

#### Features

- MIL-PRF-19500/290 Qualified
- Available as JAN, JANTX, and JANTXV

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	$V_{CEO}$	-60	Vdc
Collector - Base Voltage	$V_{CBO}$	-60	Vdc
Emitter - Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current - Continuous	$I_C$	-600	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$	$P_T$	800	mW
Total Device Dissipation @ $T_C = 25^\circ\text{C}$	$P_T$	3.0	W
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

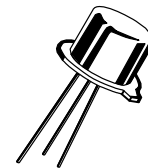
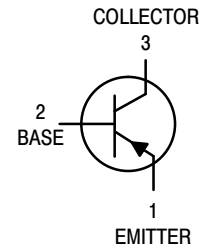
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	195	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	50	$^\circ\text{C/W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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TO-39  
CASE 205AB  
STYLE 1

#### ORDERING INFORMATION

Device	Package	Shipping
JAN2N2905A	TO-39	Bulk
JANTX2N2905A		
JANTXV2N2905A		

## 2N2905A

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector–Emitter Breakdown Voltage (Note 1) ( $I_C = -10\text{ mAdc}$ )	$V_{(BR)CEO}$	-60	-	Vdc
Collector–Emitter Cutoff Current ( $V_{CE} = -60\text{ Vdc}$ )	$I_{CES}$	-	-1.0	$\mu\text{Adc}$
Collector–Base Cutoff Current ( $V_{CB} = -50\text{ Vdc}$ ) ( $V_{CB} = -60\text{ Vdc}$ )	$I_{CBO}$	- -	-10 -10	nAdc $\mu\text{Adc}$
Emitter–Base Cutoff Current ( $V_{EB} = -5.0\text{ Vdc}$ ) ( $V_{EB} = -3.5\text{ Vdc}$ )	$I_{EBO}$	- -	-10 -50	$\mu\text{Adc}$ nAdc
<b>ON CHARACTERISTICS (Note 1)</b>				
DC Current Gain ( $I_C = -0.1\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -1.0\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -10\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -150\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ ) ( $I_C = -500\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ )	$h_{FE}$	75 100 100 100 50	- 450 - 300 -	-
Collector–Emitter Saturation Voltage ( $I_C = -150\text{ mAdc}$ , $I_B = -15\text{ mAdc}$ ) ( $I_C = -500\text{ mAdc}$ , $I_B = -50\text{ mAdc}$ )	$V_{CE(sat)}$	- -	-0.4 -1.6	Vdc
Base–Emitter Saturation Voltage ( $I_C = -150\text{ mAdc}$ , $I_B = -15\text{ mAdc}$ ) ( $I_C = -500\text{ mAdc}$ , $I_B = -50\text{ mAdc}$ )	$V_{BE(sat)}$	- -	-1.3 -2.6	Vdc
<b>SMALL–SIGNAL CHARACTERISTICS</b>				
Magnitude of Small Signal Current Gain ( $I_C = -50\text{ mAdc}$ , $V_{CE} = -20\text{ Vdc}$ , $f = 100\text{ MHz}$ )	$ h_{fe} $	2.0	-	-
Small Signal Current Gain ( $I_C = -1.0\text{ mAdc}$ , $V_{CE} = -10\text{ Vdc}$ , $f = 1\text{ kHz}$ )	$h_{fe}$	100	-	-
Output Capacitance ( $V_{CB} = -10\text{ Vdc}$ , $I_E = 0$ , $100\text{ kHz} \leq f \leq 1.0\text{ MHz}$ )	$C_{obo}$	-	8.0	pF
Input Capacitance ( $V_{EB} = -2.0\text{ Vdc}$ , $I_C = 0$ , $100\text{ kHz} \leq f \leq 1.0\text{ MHz}$ )	$C_{ibo}$	-	30	pF
<b>SWITCHING CHARACTERISTICS</b>				
Turn–On Time (Reference Figure in MIL–PRF–19500/290)	$t_{on}$	-	45	ns
Turn–Off Time (Reference Figure in MIL–PRF–19500/290)	$t_{off}$	-	300	ns

1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

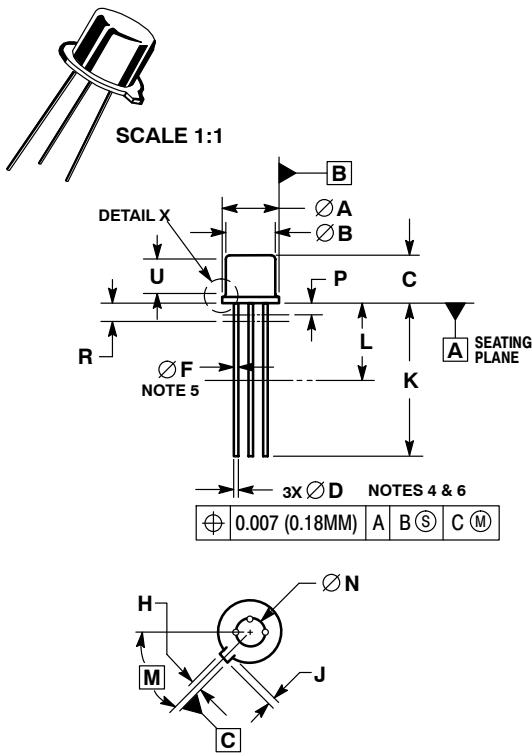
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

ON Semiconductor®



TO-39 3-Lead  
CASE 205AB  
ISSUE A

DATE 25 JUN 2012



NOTES:


1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION J MEASURED FROM DIAMETER A TO EDGE.
4. LEAD TRUE POSITION TO BE DETERMINED AT THE GAUGE PLANE DEFINED BY DIMENSION R.
5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L.
6. DIMENSION D APPLIES BETWEEN DIMENSION L AND K.
7. BODY CONTOUR OPTIONAL WITHIN ZONE DEFINED BY DIMENSIONS A, B, AND T.
8. DIMENSION B SHALL NOT VARY MORE THAN 0.010 IN ZONE P.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.41	0.48	0.016	0.019
E	0.23	3.18	0.009	0.125
F	0.41	0.48	0.016	0.019
H	0.71	0.86	0.028	0.034
J	0.73	1.02	0.029	0.040
K	12.70	14.73	0.500	0.580
L	6.35	---	0.250	---
M	45° BSC		45° BSC	
N	5.08 BSC		0.200 BSC	
P	---	1.27	---	0.050
R	1.37 BSC		0.054 BSC	
T	---	0.76	---	0.030
U	2.54	---	0.100	---

STYLE 1:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

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