

**2N2905A**

**60 Volts  
600 mAmps**

**PNP  
BIPOLAR  
TRANSISTOR**

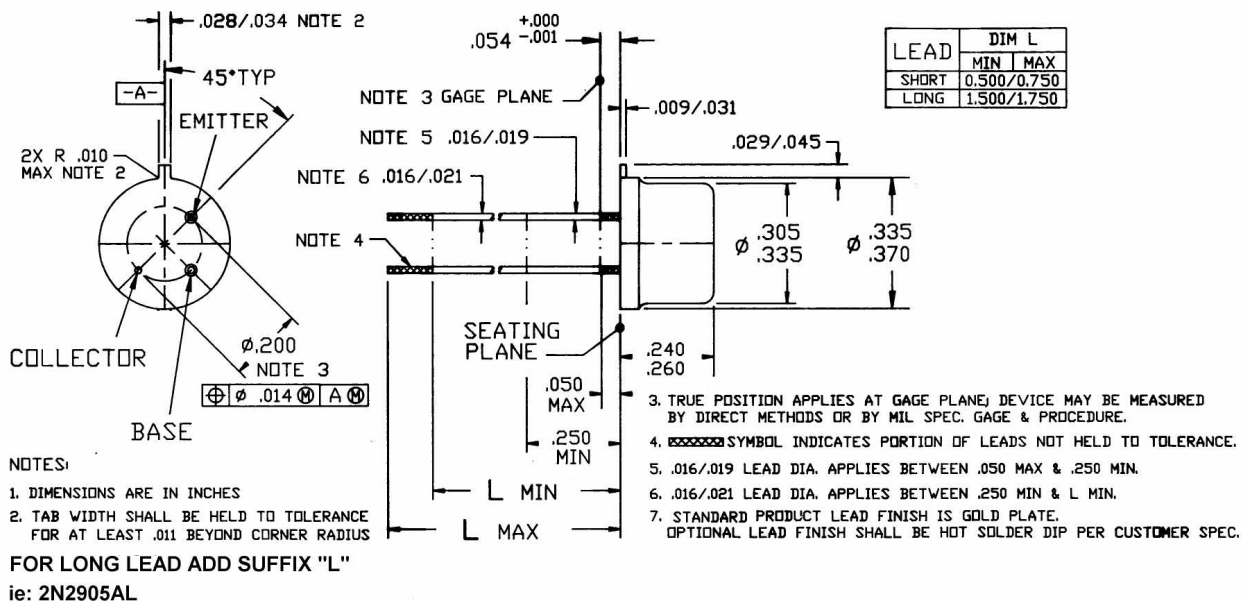
### Features

- Meets MIL-S-19500/290
- Collector-Base Voltage 60V
- Collector Current: 600 mA
- Fast Switching 345 nS

### Maximum Ratings

RATING	SYMBOL	MAX.	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	mA
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	600 3.43	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	3.0 17.2	W mW/ $^\circ\text{C}$
Operating Temperature Range	$T_J$	-65 to + 200	$^\circ\text{C}$
Storage Temperature Range	$T_S$	-65 to + 200	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	292	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	58	$^\circ\text{C/W}$

### Mechanical Outline



## Electrical Parameters (T<sub>A</sub> @ 25°C unless otherwise specified)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>Off Characteristics</b>					
Collector-Emitter Breakdown Voltage(1) (I <sub>C</sub> = -10 mAdc, I <sub>B</sub> = 0)	<b>BV<sub>CEO</sub></b>	-60	--	--	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = -10 μAdc, I <sub>C</sub> = 0)	<b>BV<sub>CBO</sub></b>	-60	--	--	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -10 uAdc, I <sub>C</sub> = 0)	<b>BV<sub>EBO</sub></b>	-5.0	--	--	Vdc
Collector to Emitter Cutoff Current (V <sub>CE</sub> = -30 Vdc, V <sub>EB</sub> = -0.5 Vdc)	<b>I<sub>CES</sub></b>	--	--	-1	uAdc
Collector-Base Cutoff Current (V <sub>CB</sub> = -50 Vdc, I <sub>E</sub> = 0) (V <sub>CB</sub> = -50 Vdc, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C)	<b>I<sub>CBO</sub></b>	--	--	-0.01 -10	μAdc
Emitter to Base Cutoff Current (V <sub>EB</sub> = -3.5 Vdc)	<b>I<sub>EBO</sub></b>	--	--	-50	nAdc
D.C. Current Gain (I <sub>C</sub> = -0.1 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -1.0 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -1.0 mAdc, V <sub>CE</sub> = -10Vdc) @ -55C (I <sub>C</sub> = -10 mAdc, V <sub>CE</sub> = -10 Vdc) (I <sub>C</sub> = -150 mAdc, V <sub>CE</sub> = -10 Vdc)(1) (I <sub>C</sub> = -500 mAdc, V <sub>CE</sub> = -10 Vdc)(1)	<b>h<sub>FE</sub></b>	75 100 50 100 100 50	-- -- -- -- --	-- 450 -- -- 300	--
Collector-Emitter Saturation Voltage (I <sub>C</sub> = -150 mAdc, I <sub>B</sub> = -15 Vdc) (I <sub>C</sub> = -500 mAdc, I <sub>B</sub> = -50 Vdc)	<b>V<sub>CE(Sat)</sub></b>	-- --	-- --	-0.4 -1.6	Vdc
Base-Emitter Saturation Voltage (I <sub>C</sub> = -150 mAdc, I <sub>B</sub> = -15 Vdc)(1) (I <sub>C</sub> = -500 mAdc, I <sub>B</sub> = -50 Vdc)(1)	<b>V<sub>BE(Sat)</sub></b>	-- --	-- --	-1.3 -2.6	Vdc
Small- signal short-circuit forward current transfer ratio (I <sub>C</sub> = 1mAdc, V <sub>CE</sub> = 10V, f = 1 kHz) (I <sub>C</sub> = -50 mAdc, V <sub>CE</sub> = -20 Vdc, f = 100MHz)	<b>h<sub>fe</sub></b>	100 --	-- --	-- 2	
Output Capacitance (V <sub>CB</sub> = -10 Vdc, I <sub>E</sub> = 0, 100kHz ≤ f ≤ 1MHz )	<b>C<sub>OB</sub></b>	--	--	8.0	pf
Input Capacitance (V <sub>EB</sub> = -2.0 Vdc, I <sub>C</sub> = 0, 100kHz < f < 1MHz)	<b>C<sub>IB</sub></b>	--	--	30	pf
Switching Speeds, Turn-on Time Turn-on Time (V <sub>CC</sub> = -30 Vdc, I <sub>C</sub> = -150 mAdc, I <sub>B1</sub> = -15mAdc)	<b>t<sub>ON</sub></b>	--	--	45	ns
Turn-off Time (V <sub>CC</sub> = -6.0 Vdc, I <sub>C</sub> = -150 mAdc, I <sub>B1</sub> = I <sub>B2</sub> = -15 mAdc)	<b>t<sub>off</sub></b>	--	--	300	ns

(1) Pulse Test: Pulse Width ≤ 300 ms, Duty Cycle ≤ 2.0%.