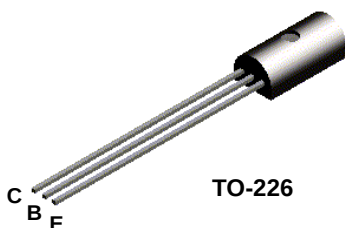


TN2905A



PNP General Purpose Amplifier

This device is designed for use as a general purpose amplifier and switch requiring collector currents to 500 mA. Sourced from Process 63. See PN2907A for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	60	V
V _{CBO}	Collector-Base Voltage	60	V
V _{EBO}	Emitter-Base Voltage	5.0	V
I _C	Collector Current - Continuous	800	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		TN2905A	
P _D	Total Device Dissipation Derate above 25°C	1.0 8.0	W mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	50	°C/W

PNP General Purpose Amplifier

(continued)

TN2905A

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 10 \text{ mA}, I_B = 0$	60		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}, I_E = 0$	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}, I_C = 0$	5.0		V
I_B	Base Cutoff Current	$V_{CE} = 30 \text{ V}, V_{BE} = 0.5 \text{ V}$		50	nA
I_{CEX}	Collector Cutoff Current	$V_{CE} = 30 \text{ V}, V_{BE} = 0.5 \text{ V}$		50	nA
I_{CBO}	Collector Cutoff Current	$V_{CB} = 50 \text{ V}, I_E = 0$ $V_{CB} = 50 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$		0.01 10	μA μA

ON CHARACTERISTICS

h_{FE}	DC Current Gain	$I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}^*$ $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}^*$	75 100 100 100 50	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage*	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		0.4 1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^*$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		1.3 2.6	V V

SMALL SIGNAL CHARACTERISTICS

f_T	Current Gain - Bandwidth Product	$I_C = 50 \text{ mA}, V_{CE} = 20 \text{ V},$ $f = 100 \text{ MHz}$	200		MHz
C_{obo}	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0,$ $f = 100 \text{ kHz}$		8.0	pF
C_{ibo}	Input Capacitance	$V_{EB} = 2.0 \text{ V}, I_C = 0,$ $f = 100 \text{ kHz}$		30	pF

SWITCHING CHARACTERISTICS

t_{on}	Turn-on Time	$V_{CC} = 30 \text{ V}, I_C = 150 \text{ mA},$ $I_{B1} = 15 \text{ mA}$		45	ns
t_d	Delay Time			10	ns
t_r	Rise Time			40	ns
t_{off}	Turn-off Time	$V_{CC} = 6.0 \text{ V}, I_C = 150 \text{ mA}$ $I_{B1} = I_{B2} = 15 \text{ mA}$		100	ns
t_s	Storage Time			80	ns
t_f	Fall Time			30	ns

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