

# MICRO ELECTRONICS

2N/PN2904A  
2N/PN2905A

PNP  
SILICON  
TRANSISTORS

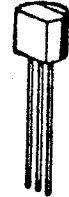
2N/PN2904A & 2N/PN2905A are PNP silicon planar epitaxial transistors. It is intended for high speed medium power switching and general purpose amplifier applications.

T0-39



2N2904A  
2N2905A

T0-92A



PN2904A  
PN2905A

ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage	$V_{CBO}$	60V	60V
Collector-Emitter Voltage	$V_{CEO}$	60V	60V
Emitter-Base Voltage	$V_{EBO}$	5V	5V
Collector Current	$I_C$	600mA	600mA
Total Power Dissipation @ $T_A \leq 25^\circ C$	$P_{tot}$	600mW	500mW
@ $T_C \leq 25^\circ C$		3W	1.2W
Operating Junction & Storage Temperature $T_j, T_{stg}$		-65 to +200 $^\circ C$	-55 to +150 $^\circ C$

ELECTRICAL CHARACTERISTICS @  $T_A = 25^\circ C$  (unless otherwise stated) :

PARAMETER	SYMBOL	2N/PN2904A		2N/PN2905A		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Base Cutoff Current	$I_{CBO}$		10		10	nA	$V_{CB} = 50V$ $I_E = 0$
Collector-Base Cutoff Current	$I_{CBO}$		10		10	$\mu A$	$V_{CB} = 50V$ $I_E = 0$ $T_A = 150^\circ C$
Collector Cutoff Current	$I_{CEX}$		50		50	nA	$V_{CE} = 30V$ $V_{BE} = 0.5V$
Base Cutoff Current	$I_B$		50		50	nA	$V_{CE} = 30V$ $V_{BE} = 0.5V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		1.6		1.6	V	$I_C = 500mA$ $I_B = 50mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.4		0.4	V	$I_C = 150mA$ $I_B = 15mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		1.3		1.3	V	$I_C = 150mA$ $I_B = 15mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		2.6		2.6	V	$I_C = 500mA$ $I_B = 50mA$
D.C. Current Gain	$h_{FE}$	40		75			$I_C = 0.1mA$ $V_{CE} = 10V$

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PARAMETER	SYMBOL	2N/PN2904 A		2N/PN2905A		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
D.C. Current Gain	$h_{FE}$	40		100			$I_C=1mA$ $V_{CE}=10V$
D.C. Current Gain	$h_{FE}$	40		100			$I_C=10mA$ $V_{CE}=10V$
D.C. Current Gain	$h_{FE}$	40	120	100	300		$I_C=150mA$ $V_{CE}=10V$
D.C. Current Gain	$h_{FE}$	40		50			$I_C=500mA$ $V_{CE}=10V$
Output Capacitance	$C_{ob}$		8		8	pF	$V_{CB}=10V$ $I_E=0$ $f=1MHz$
Input Capacitance	$C_{ib}$		30		30	pF	$V_{EB}=2V$ $I_C=0$ $f=1MHz$
High Frequency Current Gain	$h_{fe}$	2		2			$V_{CE}=20V$ $I_C=50mA$ $f=100MHz$

SWITCHING CHARACTERISTICS :

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Delay Time	$t_d$		6	10	nsec	$I_C=150mA$ $I_B=15mA$
Rise Time	$t_r$		15	40	nsec	$V_C=30V$
Turn-On Time	$t_{on}$		21	45	nsec	
Storage Time	$t_s$		60	80	nsec	$I_C=150mA$
Fall Time	$t_f$		20	20	nsec	$I_{B1}=I_{B2}=15mA$
Turn-Off Time	$t_{off}$		80	100	nsec	$V_C=6V$