

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N2904  
2N2904A  
2N2905  
2N2905A

PNP Silicon Transistor

JEDEC TO-39 Case

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N2904,A,2N2905,A are Silicon PNP Planar Epitaxial Transistors designed for small signal general purpose and switching applications.

MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$  unless otherwise noted)

	SYMBOL	2N2904 2N2905	2N2904A 2N2905A	UNIT
Collector-Base Voltage	$V_{CB0}$	60	60	Vdc
Emitter-Base Voltage	$V_{EB0}$	5.0	5.0	Vdc
Collector-Emitter Voltage	$V_{CE0}$	40	60	Vdc
Collector Current-Continuous	$I_C$		600	mA
Power Dissipation	$P_T$		0.6	watts
Power Dissipation, $T_C=25^\circ\text{C}$	$P_T$		3.0	watts
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to +200 $^\circ\text{C}$		

ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

Symbol	Test Conditions	2N2904 2N2905		2N2904A 2N2905A		Unit
		Min	Max	Min	Max	
$I_{CB0}$	$V_{CB}=50\text{V}$		20		10	nA
$I_{CEV}$	$V_{CE}=30\text{V}, V_{EB}=0.5\text{V}$				50	nA
$BV_{CB0}$	$I_C=10\mu\text{A}$	60		60		V
$BV_{EB0}$	$I_E=10\mu\text{A}$	5.0		5.0		V
$BV_{CE0}$	$I_C=10\text{mA}$	40		60		V
$V_{CE}(s)$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.4		0.4	V
$V_{CE}(s)$	$I_C=500\text{mA}, I_B=50\text{mA}$		1.6		1.6	V
$V_{BE}(s)$	$I_C=150\text{mA}, I_B=15\text{mA}$		1.3		1.3	V
$V_{BE}(s)$	$I_C=500\text{mA}, I_B=50\text{mA}$		2.6		2.6	V
		2N2904 2N2904A		2N2905 2N2905A		Unit
		Min	Max	Min	Max	
hFE	$V_{CE}=10\text{V}, I_C=100\mu\text{A}$ (2N2904,2N2905 Only)	20		35		-
hFE	$V_{CE}=10\text{V}, I_C=100\mu\text{A}$ (2N2904A,2N2905A Only)	40		75		-
hFE	$V_{CE}=10\text{V}, I_C=1\text{mA}$ (2N2904,2N2905 Only)	25		50		-
hFE	$V_{CE}=10\text{V}, I_C=1\text{mA}$ (2N2904A,2N2905A Only)	40		100		-
hFE	$V_{CE}=10\text{V}, I_C=10\text{mA}$ (2N2904,2N2905 Only)	35		75		-
hFE	$V_{CE}=10\text{V}, I_C=10\text{mA}$ (2N2904A,2N2905A Only)	40		100		-
hFE	$V_{CE}=10\text{V}, I_C=150\text{mA}$	40	120	100	300	-
hFE	$V_{CE}=10\text{V}, I_C=500\text{mA}$ (2N2904,2N2905 Only)	20		30		-
hFE	$V_{CE}=10\text{V}, I_C=500\text{mA}$ (2N2904A,2N2905A Only)	40		50		-
fT	$V_{CE}=20\text{V}, I_C=50\text{mA}, f=100\text{MHz}$	200		200		MHz
$C_{ob}$	$V_{CB}=10\text{V}, f=100\text{kHz}$		8.0		8.0	pF
tON	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_B=15\text{mA}$		45		45	ns
tOFF	$V_{CC}=6\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$		180		180	ns