

2N3905 2N3906

PNP SILICON PLANAR EPITAXIAL TRANSISTORS

THE 2N3905 AND 2N3906 ARE PNP SILICON PLANAR EPITAXIAL TRANSISTORS. THEY ARE INTENDED FOR GENERAL PURPOSE, SATURATED-SWITCHING AND AMPLIFIER APPLICATIONS. THEY ARE COMPLEMENTARY TO 2N3903 AND 2N3904 RESPECTIVELY.

CASE TO-92A



EBC

ABSOLUTE MAXIMUM RATINGS For p-n-p devices, voltage and current values are negative.

Collector-Base Voltage	V_{CB0}	-40V
Collector-Emitter Voltage	V_{CE0}	-40V
Emitter-Base Voltage	V_{EB0}	5V
Collector Current	I_C	200mA
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_{tot}	350mW
@ $T_C=25^\circ\text{C}$		1W
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to +150°C

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

PARAMETER	SYMBOL	2N3905		2N3906		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Base Breakdown Voltage	BV_{CB0}	40		40		V	$-I_C=10\mu\text{A}$ $I_E=0$
Collector-Emitter Breakdown Voltage	LV_{CE0}^*	40		40		V	$-I_C=1\text{mA}$ $I_B=0$
Emitter-Base Breakdown Voltage	BV_{EB0}	5		5		V	$-I_E=10\mu\text{A}$ $I_C=0$
Collector Cutoff Current	$-I_{CEV}$		50		50	nA	$V_{CE}=30\text{V}$ $V_{EB}=3\text{V}$
Base Cutoff Current	I_{BEV}		50		50	nA	$V_{CE}=30\text{V}$ $V_{EB}=3\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}^*$	0.25		0.25		V	$I_C=10\text{mA}$ $I_B=1\text{mA}$
		0.4		0.4		V	$I_C=50\text{mA}$ $I_B=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}^*$	0.65	0.85	0.65	0.85	V	$I_C=10\text{mA}$ $I_B=1\text{mA}$
		0.95		0.95		V	$I_C=50\text{mA}$ $I_B=5\text{mA}$
D.C. Current Gain	H_{FE}^*	30		60			$I_C=0.1\text{mA}$ $V_{CE}=1\text{V}$
		40		80			$I_C=1\text{mA}$ $V_{CE}=1\text{V}$
		50	150	100	300		$I_C=10\text{mA}$ $V_{CE}=1\text{V}$
		30		60			$I_C=50\text{mA}$ $V_{CE}=1\text{V}$
		15		30			$I_C=100\text{mA}$ $V_{CE}=1\text{V}$

* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%.

P.T.O.

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PARAMETER	SYMBOL	2N3905		2N3906		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Current Gain-Bandwidth Product	f_T	200		250		MHz	$I_C=10mA$ $V_{CE}=20V$ $f=100MHz$
Output Capacitance	C_{ob}		4.5	4.5		pF	$V_{CB}=5V$ $I_E=0$ $f=100kHz$
Input Capacitance	C_{ib}		10	10		pF	$V_{EB}=0.5V$ $I_C=0$ $f=100kHz$
Input Impedance	h_{ie}	0.5	8	2	12	k Ω	$I_C=1mA$ $V_{CE}=10V$ $f=1kHz$
Voltage Feedback Ratio	h_{re}	0.1	5	1	10	$\times 10^{-4}$	$I_C=1mA$ $V_{CE}=10V$ $f=1kHz$
Small Signal Current Gain	h_{fe}	50	200	100	400		$I_C=1mA$ $V_{CE}=10V$ $f=1kHz$
Output Admittance	h_{oe}	1	40	3	60	μS	$I_C=1mA$ $V_{CE}=10V$ $f=1kHz$
Noise Figure	NF		5	4		dB	$I_C=100\mu A$ $V_{CE}=5V$ $R_S=1k\Omega$ $f=10Hz$ to $15.7kHz$
Delay Time	t_d		35	35		nS	$V_{CC}=3V$ $V_{EB}=0.5V$ $I_C=10mA$ $I_{B1}=1mA$
Rise Time	t_r		35	35		nS	$V_{CC}=3V$ $V_{EB}=0.5V$ $I_C=10mA$ $I_{B1}=1mA$
Storage Time	t_s		200	225		nS	$V_{CC}=3V$ $I_C=10mA$ $I_{B1}=I_{B2}=1mA$
Fall Time	t_f		60	75		nS	$V_{CC}=3V$ $I_C=10mA$ $I_{B1}=I_{B2}=1mA$