

# 2N 5209 · 2N 5210

NPN SILICON AF LOW NOISE SMALL SIGNAL TRANSISTORS

THE 2N5209, 2N5210 ARE NPN SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF LOW NOISE PREAMPLIFIERS. THEY ARE COMPLEMENTARY TO THE PNP TYPE 2N5086, 2N5087.

CASE TO-92A



EBC

## ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage	VCBO	50V
Collector-Emitter Voltage	VCEO	50V
Emitter-Base Voltage	VEBO	4.5V
Collector Current	IC	50mA
Total Power Dissipation ( $T_A \leq 25^\circ\text{C}$ )	Ptot	350mW
		derate 2.8mW/°C above 25°C
Operating Junction & Storage Temperature	Tj, Tstg	-55 to 150°C

## ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	2N 5209		2N 5210		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Base Breakdown Voltage	BVCBO	50		50		V	IC=0.1mA IB=0
Collector-Emitter Breakdown Voltage	LVCEO	50		50		V	IC=1mA (Pulsed) IB=0
Collector Cutoff Current	ICBO		50		50	nA	VCB=35V IE=0
Emitter Cutoff Current	IEBO		50		50	nA	VEB=3V IC=0
Collector-Emitter Saturation Voltage	VCE(sat)		0.7		0.7	V	IC=10mA IB=1mA
Base-Emitter Voltage	VBE		0.85		0.85	V	IC=1mA VCE=5V
D.C. Current Gain	HFE	100	300	200	600		IC=0.1mA VCE=5V
		150		250			IC=1mA VCE=5V
		150		250			IC=10mA VCE=5V
Current Gain-Bandwidth Product	fT		30		30	MHz	IC=0.5mA VCE=5V
Collector-Base Capacitance	Cob		4		4	pF	VCB=5V IE=0 f=1MHz
Small Signal Current Gain	hfe	150	600	250	900		IC=1mA VCE=5V f=1KHz
Noise Figure	NF		3		2	dB	IC=20µA VCE=5V RG=22KΩ f=10Hz-15KHz
	NF		4		3	dB	IC=20µA VCE=5V RG=10KΩ f=1KHz

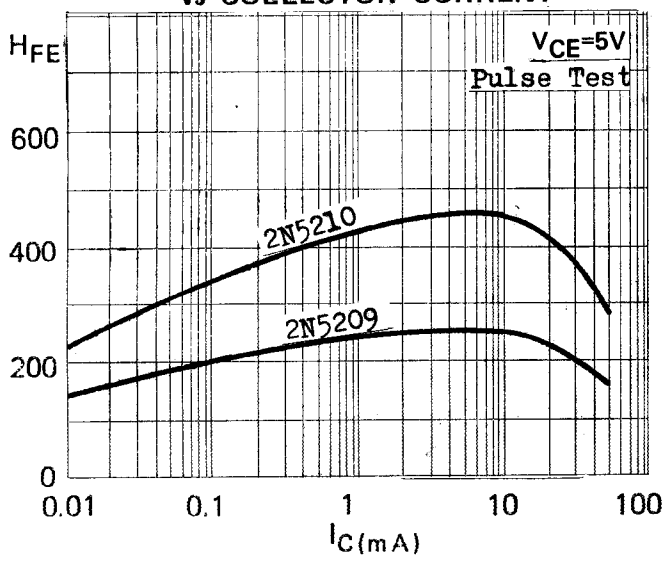
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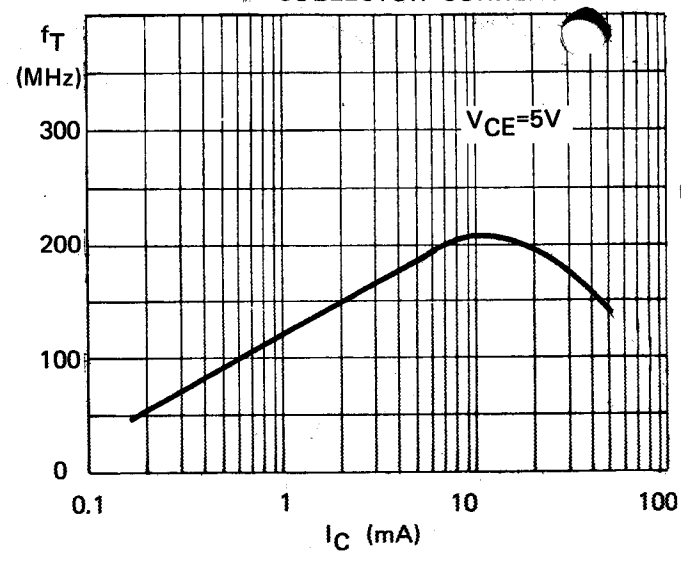
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2N5209, 2N5210

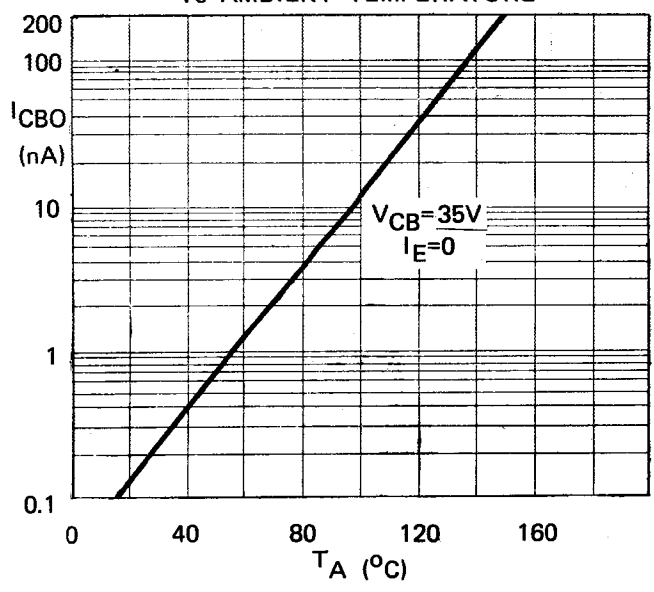
D.C. CURRENT GAIN vs COLLECTOR CURRENT



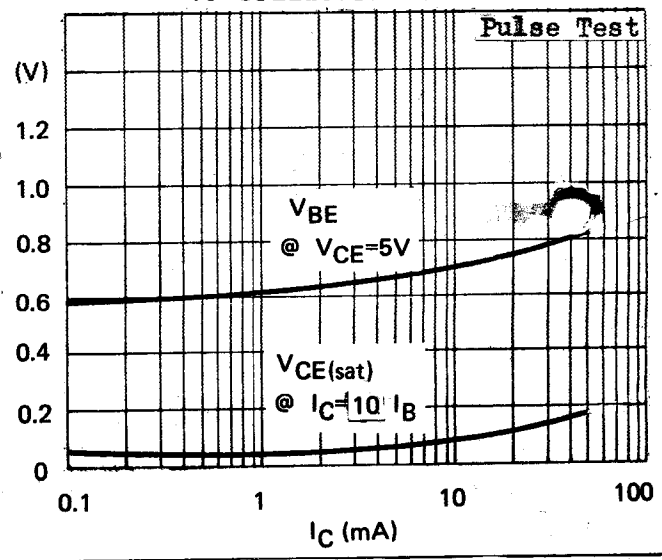
CURRENT GAIN - BANDWIDTH PRODUCT vs COLLECTOR CURRENT



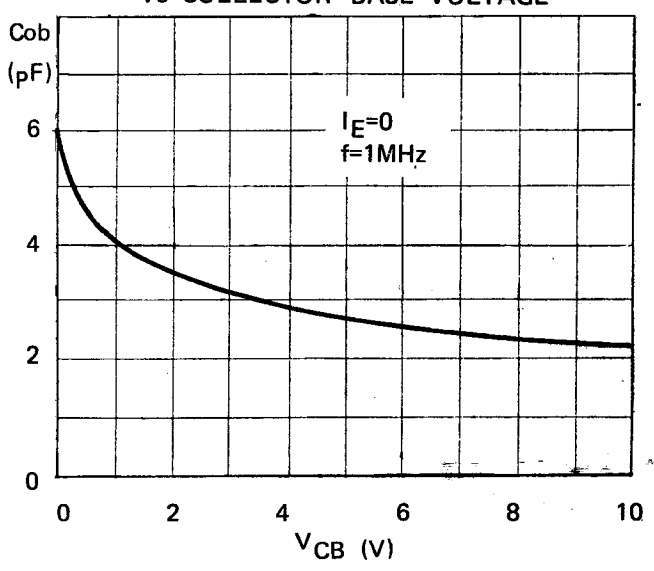
COLLECTOR CUTOFF CURRENT vs AMBIENT TEMPERATURE



VBE AND VCE(sat) vs COLLECTOR CURRENT



COLLECTOR-BASE CAPACITANCE vs COLLECTOR-BASE VOLTAGE



BROAD-BAND NOISE FIGURE vs COLLECTOR CURRENT

