2N5086 · 2N5087
2N5088 · 2N5089

PNP . NPN SILICON AF LOW NOISE SMALL SIGNAL TRANSISTORS

THE 2N5086, 2N5087 (PNP) AND 2N5088, 2N5089 (NPN) ARE SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF LOW NOISE PREAMPLIFIER CIRCUITS.

CASE TO-92A

EBC

ABSOLUTE MAXIMUM RATINGS For p-n-p devices, voltage and current values are negative.		(PNP) 2N5086	(PNP) 2N5087	(NPN) 2N5088	(NPN) 2N5089
Collector-Base Voltage	V_{CBO}	50V	50V	35V	30V
Collector-Emitter Voltage	V_{CEO}	50V	50V	30V	25V
Emitter-Base Voltage	V_{EBO}	3V	3V	4.5V	4.5V
Collector Current	I_C	50mA			
Total Power Dissipation ($T_A \leq 25^\circ C$)	P_{tot}	350mW derate 2.8mW/°C above 25°C			
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to 150°C			

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage	BV_{CBO}					I_C=0.1mA I_E=0
2N5086,7		50			V	
2N5088		35			V	
2N5089		30			V	
Collector-Emitter Breakdown Voltage	LV_{CEO}					I_C=1mA (Pulsed)
2N5086,7		50			V	I_B=0
2N5088		30			V	
2N5089		25			V	
Collector Cutoff Current	I_{CBO}					
2N5086,7				10	nA	V_{CB}=10V I_E=0
2N5089				50	nA	V_{CB}=15V I_E=0
2N5088				50	nA	V_{CB}=20V I_E=0
2N5086,7				50	nA	V_{CB}=35V I_E=0
Emitter Cutoff Current	I_{EBO}					
All types				50	nA	V_{EB}=3V I_C=0
2N5088,9 only				100	nA	V_{EB}=4.5V I_C=0
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$					I_C=10mA I_B=1mA
2N5086,7			0.08	0.3	V	
2N5088,9			0.08	0.5	V	

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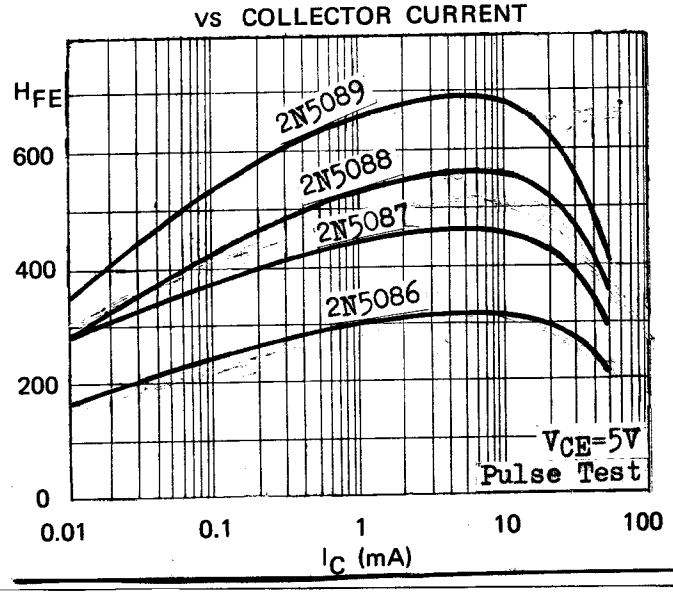
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Base-Emitter Voltage	V_{BE}					
2N5086,7			0.63	0.85	V	I_C=1mA, V_{CE}=5V
2N5088, 9			0.7	0.8	V	I_C=10mA V_{CE}=5V
Current Gain-Bandwidth Product	f_T					
2N5086,7		40	80		MHz	I_C=0.5mA V_{CE}=5V
2N5088,9		50	100		MHz	I_C=0.5mA V_{CE}=5V
Collector-Base Capacitance	C_{ob}					V_{CB}=5V I_E=0
All types			3	4	pF	f=100KHz
Emitter-Base Capacitance	C_{ib}					V_{EB}=0.5V I_C=0
2N5088,9 only			7	10	pF	f=100KHz
Noise Figure	NF					
2N5086 only				3	dB	I_C=20μA V_{CE}=5V
2N5087 only				2	dB	R_G=10KΩ f=10Hz-15KHz
2N5086 only				3	dB	I_C=100μA V_{CE}=5V
2N5087 only				2	dB	R_G=3KΩ f=1KHz
2N5088 only				3	dB	I_C=100μA V_{CE}=5V
2N5089 only				2	dB	R_G=10KΩ f=10Hz-15KHz

D.C. AND SMALL SIGNAL CURRENT GAIN (H_{FE}, h_{fe}) AT V_{CE}=5V T_A=25°C

TYPE	H_{FE} @ I_C=0.1mA		H_{FE} @ I_C=1mA		H_{FE} @ I_C=10mA		h_{fe} @ I_C=1mA f=1kHz	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
2N5086	150	500	150		150		150	600
2N5087	250	800	250		250		250	900
2N5088	300	900	350		300		350	1400
2N5089	400	1200	450		400		450	1800

TYPICAL CHARACTERISTICS AT T_A=25°C

D.C. CURRENT GAIN
vs COLLECTOR CURRENT



BROAD-BAND NOISE FIGURE
vs COLLECTOR CURRENT