

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 _{CB0}	50V	50V	35V	30V
Collector-Emitter Voltage	V _{CEO}	50V	50V	30V	25V
Emitter-Base Voltage	V _{EB0}	3V	3V	4.5V	4.5V
Collector Current	I _C	50mA			
Total Power Dissipation (T _A ≤ 25°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 _{CB0}					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) I _B = 0
2N5086,7		50			V	
2N5088		30			V	
2N5089		25			V	
Collector Cutoff Current	I _{CB0}					V _{CB} = 10V I _E = 0
2N5086,7				10	nA	V _{CB} = 15V I _E = 0
2N5089				50	nA	V _{CB} = 20V I _E = 0
2N5088				50	nA	V _{CB} = 35V I _E = 0
2N5086,7				50	nA	
Emitter Cutoff Current	I _{EB0}					V _{EB} = 3V I _C = 0
All types				50	nA	V _{EB} = 4.5V I _C = 0
2N5088,9 only				100	nA	
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 2N5086,7 2N5088,9	V_{BE}		0.63 0.7	0.85 0.8	V V	$I_C=1mA$ $V_{CE}=5V$ $I_C=10mA$ $V_{CE}=5V$
Current Gain-Bandwidth Product 2N5086,7 2N5088,9	f_T	40 50	80 100		MHz MHz	$I_C=0.5mA$ $V_{CE}=5V$ $I_C=0.5mA$ $V_{CE}=5V$
Collector-Base Capacitance All types	C_{ob}		3	4	pF	$V_{CB}=5V$ $I_E=0$ $f=100KHz$
Emitter-Base Capacitance 2N5088,9 only	C_{ib}		7	10	pF	$V_{EB}=0.5V$ $I_C=0$ $f=100KHz$
Noise Figure 2N5086 only 2N5087 only 2N5086 only 2N5087 only 2N5088 only 2N5089 only	NF			3 2 3 2 3 2	dB dB dB dB dB dB	$I_C=20\mu A$ $V_{CE}=5V$ $R_G=10K\Omega$ $f=10Hz-15KHz$ $I_C=100\mu A$ $V_{CE}=5V$ $R_G=3K\Omega$ $f=1KHz$ $I_C=100\mu A$ $V_{CE}=5V$ $R_G=10K\Omega$ $f=10Hz-15KHz$

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

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 $T_A=25^\circ C$

