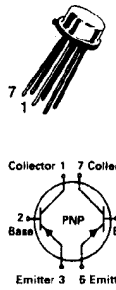
NEW ENGLAND SEMICONDUCTOR

2N3806,A thru 2N3809,A 2N3810*,A 2N3811*,A

*also available as JAN, JANTX, JANTXV

PNP SILICON DUAL AMPLIFIER TRANSISTOR

TO-99



DUAL TRANSISTORS PNP SILICON

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

RATINGS	SYMBOL	VALUE		UNITS
Collector-Emitter Voltage	V_{CEO}	60		Vdc
Collector-Base Voltage	V_{CBO}	60		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current -- Continuous	I_C	50		mAdc
		One Die	Both Die	
Total Power Dissipation Derate above 25°C	P_D	500 2.86	600 3.43	mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

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

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage[1] I_C = 10 mAdc, I_B = 0		$V_{(BR)CEO}$	60		Vdc
Collector-Base Breakdown Voltage I_C = 10 µAdc, I_E = 0		$V_{(BR)CBO}$	60		Vdc
Emitter-Base Breakdown Voltage I_E = 10 µAdc, I_C = 0		$V_{(BR)EBO}$	5.0		Vdc
Collector Cutoff Current V_{CB} = 50 Vdc, I_E = 0 V_{CB} = 50 Vdc, I_E = 0, T_A = 150°C		I_{CBO}		0.01 10	µAdc
Emitter Cutoff Current V_{BE} = 4.0 Vdc, I_C = 0		I_{EBO}		20	ηAdc
ON CHARACTERISTICS (1)					
DC Current Gain I_C = 1.0 µAdc, V_{CE} = 5.0 Vdc	2N3807,9,11,A	h_{FE}	75		--
I_C = 10 µAdc, V_{CE} = 5.0 Vdc	2N3806,8,10,A		100		
	2N3807,9,11,A		225		
I_C = 100 µAdc, V_{CE} = 5.0 Vdc	2N3806,8,10,A		150	450	
	2N3807,9,11,A		300	900	
I_C = 100 µAdc, V_{CE} = 5.0 Vdc, T_A = -55°C	2N3806,8,10,A		75		
	2N3807,9,11,A		150		
I_C = 500 µAdc, V_{CE} = 5.0 Vdc	2N3806,8,10,A		150	450	
	2N3807,9,11,A		300	900	
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc	2N3806,8,10,A		150	450	
	2N3807,9,11,A		300	900	
I_C = 10 mAdc, V_{CE} = 5.0 Vdc	2N3806,8,10,A		125		
	2N3807,9,11,A		250		
Collector-Emitter Saturation Voltage I_C = 100 µAdc, I_B = 1.0 µAdc I_C = 1.0 mAdc, I_B = 100 µAdc		$V_{CE(sat)}$		0.2 0.25	Vdc
Base-Emitter Saturation Voltage I_C = 100 µAdc, I_B = 10 µAdc I_C = 1.0 mAdc, I_B = 100 µAdc		$V_{BE(sat)}$		0.7 0.8	Vdc

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2N3806,A thru 2N3809,A 2N3810*,A 2N3811*,A

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ELECTRICAL CHARACTERISTICS..con't.. ($T_A = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min	Max	Unit
ON CHARACTERISTICS (1) con't					
Base-Emitter On Voltage I_C = 100 µAdc, V_{CE} = 10 µAdc		$V_{BE(on)}$		0.7	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain -- Bandwidth Product I_C = 500 µAdc, V_{CE} = 5.0 Vdc, f = 30 Mhz I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 100 Mhz		f_T	30 100	- 500	MHz
Output Capacitance V_{CB} = 5.0 Vdc, I_E = 0, f = 100 kHz		C_{obo}		4.0	p^f
Input Capacitance V_{BE} = 0.5 Vdc, I_C = 0, f = 100 kHz		C_{ibo}		8.0	p^f
Input Impedance I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz	2N3806,8,10,A 2N3807,9,11,A	h_{ie}	3.0 10	30 40	kΩ
Voltage Feedback Ratio I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz		h_{re}		25	$x10^{-4}$
Small-Signal Current Gain I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz	2N3806,8,10,A 2N3807,9,11,A	h_{fe}	150 300	600 900	--
Output Admittance I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz		h_{oe}	5.0	60	µmhos
Noise Figure I_C = 100 µAdc, V_{CE} = 10 Vdc, R_G = 3.0 kohms f = 100 Hz, BW = 20 Hz	2N3806,8,10,A 2N3807,9,11,A	NF		7.0 4.0	dB
Spot Noise f = 1.0 kHz, BW = 200 Hz	2N3806,8,10,A 2N3807,9,11,A			3.0 1.5	
f = 10 kHz, BW = 2.0 kHz	2N3806,8,10,A 2N3807,9,11,A			2.5 1.5	
Broadband Noise Bandwidth 10 Hz to 15.7 kHz	2N3806,8,10,A 2N3807,9,11,A			3.5 2.5	
MATCHING CHARACTERISTICS					
DC Current Gain Ratio (2) I_C = 100 µAdc, V_{CE} = 5.0 Vdc	2N3808,9 2N3810,11 2N3810A,11A	h_{FE1}/h_{FE2}	0.8 0.9 0.95	1.0 1.0 1.0	--
T_A = -55 to +125°C	2N3810A,11A		0.85	1.0	
Base-Emitter Voltage Differential I_C = 10 µAdc to 10 mAdc, V_{CE} = 5.0 Vdc	2N3808,9 2N3810,A,11,A	$V_{BE1} - V_{BE2}$		8.0 5.0	mVdc
I_C = 100 µAdc, V_{CE} = 5.0 Vdc	2N3808,9 2N3810,11 2N3810A,11A			5.0 3.0 1.5	
Base-Emitter Voltage Differential Change Due to Temperature I_C = 100 µAdc, V_{CE} = 5.0 Vdc T_A = -55 to +125°C	2N3808,9 2N3810,11 2N3810A,11A	$\Delta V_{BE1} - V_{BE2}$		1.6 0.8 0.4	mVdc
I_C = 100 µAdc, V_{CE} = 5.0 Vdc T_A = +25 to +125°C	2N3808,9 2N3810,11 2N3810A,11A			2.0 1.0 0.5	

(1)Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2.0%.
(2)The lowest h_{FE} reading is taken as h_{FE1} for this ratio.

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