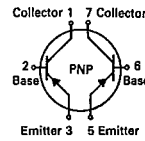
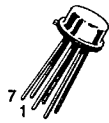


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**2N3806, A
thru
2N3811, A**

CASE 654-07, STYLE 1



**2N3810, 2N3811 — JAN, JTX, JTXV
AVAILABLE**

**DUAL
AMPLIFIER TRANSISTORS**

PNP SILICON

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
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
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	One Die	mW
		Both Die	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.)

Characteristic	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	nAdc
ON CHARACTERISTICS				
DC Current Gain(1) (I _C = 1.0 μAdc, V _{CE} = 5.0 Vdc)	h _{FE}	75	—	—
(I _C = 10 μAdc, V _{CE} = 5.0 Vdc)				
(I _C = 100 μAdc, V _{CE} = 5.0 Vdc)				
(I _C = 100 μAdc, V _{CE} = 5.0 Vdc, T _A = -55°C)				
(I _C = 500 μAdc, V _{CE} = 5.0 Vdc)				
(I _C = 1.0 mAdc, V _{CE} = 5.0 Vdc)				
(I _C = 10 mAdc, V _{CE} = 5.0 Vdc)				
Collector-Emitter Saturation Voltage(1) (I _C = 100 μAdc, I _B = 1.0 μA) (I _C = 1.0 mAdc, I _B = 100 μAdc)				
Base-Emitter Saturation Voltage(1) (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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ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Base-Emitter On Voltage ($I_C = 100 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$)	$V_{BE(on)}$	—	0.7	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 500 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 30 \text{ MHz}$) ($I_C = 1.0 \text{ mA}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	30 100	— 500	MHz
Output Capacitance ($V_{CB} = 5.0 \text{ Vdc}$, $I_E = 0$, $f = 100 \text{ kHz}$)	C_{obo}	—	4.0	pF
Input Capacitance ($V_{BE} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 100 \text{ kHz}$)	C_{ibo}	—	8.0	pF
Input Impedance ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{ie}	3.0 10	30 40	k Ω
Voltage Feedback Ratio ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{re}	—	25	$\times 10^{-4}$
Small-Signal Current Gain ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	150 300	600 900	—
Output Admittance ($I_C = 1.0 \text{ mA}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{oe}	5.0	60	μmhos
Noise Figure ($I_C = 100 \mu\text{A}$, $V_{CE} = 10 \text{ Vdc}$, $R_G = 3.0 \text{ kohms}$ $f = 100 \text{ Hz}$, $BW = 20 \text{ Hz}$)	NF	—	7.0 4.0	dB
Spot Noise $f = 1.0 \text{ kHz}$, $BW = 200 \text{ Hz}$		—	3.0 1.5	
$f = 10 \text{ kHz}$, $BW = 2.0 \text{ kHz}$		—	2.5 1.5	
Broadband Noise Bandwidth 10 Hz to 15.7 kHz		—	3.5 2.5	

MATCHING CHARACTERISTICS

DC Current Gain Ratio(2) ($I_C = 100 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE1}/h_{FE2}	0.8 0.9 0.95	1.0 1.0 1.0	—
($I_C = 100 \mu\text{A}$, $V_{CE} = 50 \text{ Vdc}$, $T_A = -55 \text{ to } +125^\circ\text{C}$)		0.85	1.0	
Base-Emitter Voltage Differential ($I_C = 10 \mu\text{A}$ to 10 mA , $V_{CE} = 5.0 \text{ Vdc}$)	$ V_{BE1} - V_{BE2} $	—	8.0 5.0	mVdc
($I_C = 100 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$)		—	5.0 3.0 1.5	
Base-Emitter Voltage Differential Change Due to Temperature ($I_C = 100 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$, $T_A = -55 \text{ to } +25^\circ\text{C}$)	$\Delta(V_{BE1} - V_{BE2})$	—	1.6 0.8 0.4	mVdc
($I_C = 100 \mu\text{A}$, $V_{CE} = 5.0 \text{ Vdc}$, $T_A = +25 \text{ to } +125^\circ\text{C}$)		—	2.0 1.0 0.5	

(1) Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.
 (2) The lowest h_{FE} reading is taken as h_{FE1} for this ratio.

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FIGURE 1 — DC CURRENT GAIN versus COLLECTOR CURRENT

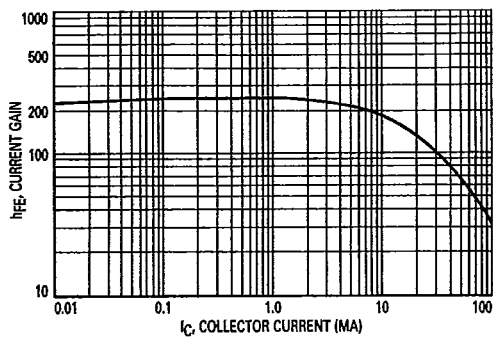


FIGURE 2 — DC CURRENT GAIN versus COLLECTOR CURRENT

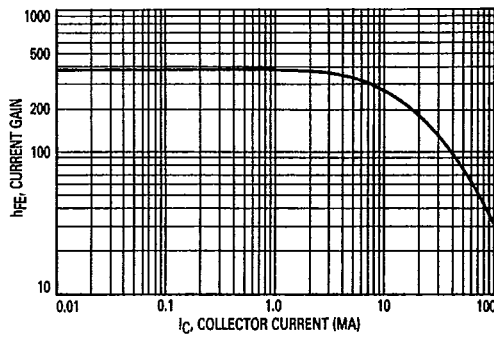


FIGURE 3 — "ON" VOLTAGES

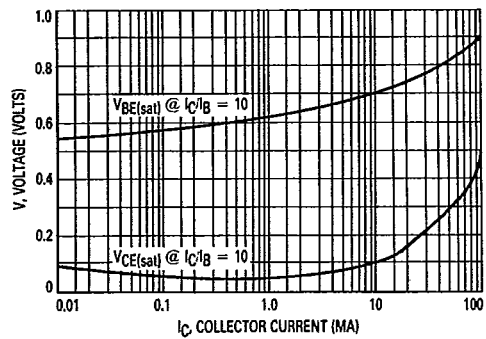
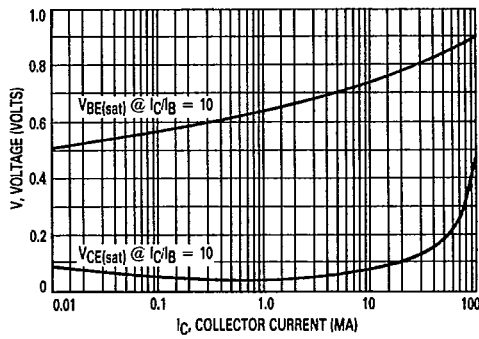


FIGURE 4 — "ON" VOLTAGES



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