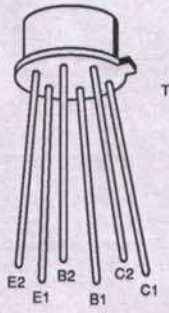
calogic
CORPORATION

Monolithic Dual Matched PNP General Purpose Amplifier

2N3810A / 2N3811A

PIN CONFIGURATION



5010

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

Emitter-Base Voltage (Note 1) ..... -5V
Collector-Base or Collector-Emitter Voltage (Note 1) ..... -60V
Collector Current (Note 1) 50mA
Storage Temperature Range ..... -65°C to +175°C
Operating Temperature Range ..... -55°C to +175°C
Lead Temperature (Soldering, 10sec) ..... +300°C

	One Side	Both Sides
Power Dissipation	500mW	600mW
Derate above 25°C	3.3W/°C	4.0mW/°C

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ORDERING INFORMATION

Part	Package	Temperature Range
2N3810	Hermetic TO-78	-55°C to +175°C
X2N3810	Sorted Chips in Carriers	-55°C to +175°C
2N3810A	Hermetic TO-78	-55°C to +175°C
X2N3810A	Sorted Chips in Carriers	-55°C to +175°C
2N3811	Hermetic TO-78	-55°C to +175°C
X2N3811	Sorted Chips in Carriers	-55°C to +175°C
2N3811A	Hermetic TO-78	-55°C to +175°C
X2N3811A	Sorted Chips in Carriers	-55°C to +175°C

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

SYMBOL	PARAMETER	2N3810 / A		2N3811 / A		UNITS	TEST CONDITIONS	
		MIN	MAX	MIN	MAX			
BV_{CBO}	Collector-Base Breakdown Voltage	-60		-60		V	I_C = -10µA, I_E = 0	
BV_{CEO}	Collector-Emitter Breakdown Voltage (Note 2)	-60		-60		V	I_C = -10mA, I_B = 0	
BV_{EBO}	Emitter-Base Breakdown Voltage	-5		-5		V	I_E = -10µA, I_C = 0	
$I_{C(off)}$	Collector Cutoff Current		-10		-10	nA	V_{CB} = -50V, I_E = 0	
			-10		-10	µA	T_A = +150°C	
$I_{E(off)}$	Emitter Cutoff Current		-20		-20	nA	V_{BE} = 4V, I_C = 0	
h_{FE}	Static Forward Current Transfer Ratio	100		225			V_{CE} = -5V	I_C = -10µA
		150	450	300	900			I_C = -100µA to -1mA
		125		250				I_C = 10mA (Note 2)
		75		150				I_C = 100µA, T_A = -55°C

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ELECTRICAL CHARACTERISTICS (Continued) (T_A = 25°C unless otherwise specified)

SYMBOL	PARAMETER	2N3810 / A		2N3811 / A		UNITS	TEST CONDITIONS	
		MIN	MAX	MIN	MAX			
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		-0.7		-0.7	V	I_C = -100µA, I_B = -10µA	
			-0.8		-0.8		I_C = -1.0µA, I_B = -100µA	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (Note 2)		-0.2		-0.2		I_B = -10µA, I_C = -100µA	
			-0.25		-0.25		I_B = -100µA, I_C = -1mA	
h_{ie}	Input Impedance (Note 4)	3	30	10	40	kΩ	V_{CE} = -10V I_C = -1mA f = 1kHz	
h_{fe}	Forward Current Transfer Ratio (Note 4)	150	600	300	900			
h_{re}	Reverse Voltage Transfer Ratio (Note 4)		0.25		0.25			
h_{oe}	Output Admittance (Note 4)	5	60	5	60	µs		
$\lvert h_{fe} \rvert$	Magnitude of small signal current gain (Note 4)	1	5	1	5		V_{CE} = -5V	I_C = -1mA, f = 100MHz
		1		1				I_C = -500µA, f = 30MHz
C_{obo}	Output Capacitance (Note 4)		4		4	pF	V_{CB} = -5V, I_E = 0, f = 1MHz	
C_{ibo}	Input Capacitance (Note 4)		8		8		V_{CB} = -0.5V, I_C = 0, f = 1MHz	
h_{FE_1}/h_{FE_2}	DC Current Gain Ratio	0.9	1.0	0.9	1.0		V_{CE} = -5V, I_C = 100µA	
	A devices	0.95	1.0	0.95	1.0			
$\lvert V_{BE_1} - V_{BE_2} \rvert$	Base-Emitter Voltage Differential		-5		-5	mV	V_{CE} = -5V	I_C = 10µA to 10mA
	A devices		-2.5		-2.5			
			-3		-3			I_C = 100µA
	A devices		-1.5		-1.5			
$\frac{\Delta V_{BE_1} - V_{BE_2}}{\Delta T}$	Base-Emitter Voltage Differential Gradient		10		10	µV/°C	V_{CE} = -5V, I_C = 100µA	
	A devices		5		5			
NF	Spot Noise Figure (Note 4)		7		4	dB	V_{CE} = -10V, I_C = -100µA, R_G = 3kΩ, f = 100Hz, Noise Bandwidth = 20Hz	
			3		1.5		V_{CE} = -10V, I_C = -100µA, R_G = 3kΩ, f = 1kHz, Noise Bandwidth = 200kHz	
			2.5		1.5		V_{CE} = -10V, I_C = -100µA, R_G = 3kΩ, f = 10kHz, Noise Bandwidth = 2kHz	
			3.5		2.5		V_{CE} = -10V, I_C = -100µA, R_G = 3kΩ, Noise Bandwidth = 15.7kHz (Note 3)	

NOTES: 1. Per transistor.
2. Pulse width ≤300µs, duty cycle ≤2.0%.
3. 3dB down at 10Hz and 10kHz.
4. For design reference only, not 100% rested.