

## PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500/336

### Devices

<b>2N3810</b>	<b>2N3811</b>
<b>2N3810L</b>	<b>2N3811L</b>
<b>2N3810U</b>	<b>2N3811U</b>

### Qualified Level

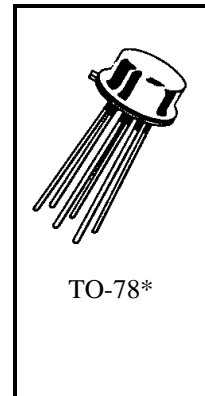
**JAN**  
**JANTX**  
**JANTXV**

### MAXIMUM RATINGS

Ratings	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	$I_C$	50	mAdc
		<b>One Section<sup>1</sup></b>	<b>Both Sections<sup>2</sup></b>
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$	$P_T$	0.5	0.6
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	
			$^{\circ}\text{C}$

1) Derate linearly 2.86 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$

2) Derate linearly 3.43 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$



\*See appendix A for package outline

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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#### OFF CHARACTERISTICS

Collector-Base Breakdown Voltage $I_C = 10 \mu\text{Adc}$	$V_{(BR)CBO}$	60		Vdc
Collector-Emitter Breakdown Current $I_C = 10 \text{mAdc}$	$V_{(BR)CEO}$	60		Vdc
Emitter-Base Breakdown Voltage $I_E = 10 \mu\text{Adc}$	$V_{(BR)EBO}$	5.0		Vdc
Collector-Base Cutoff Current $V_{CB} = 50 \text{Vdc}$	$I_{CBO}$		10	$\eta\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{Vdc}$	$I_{EBO}$		10	$\eta\text{Adc}$

2N3810, 2N3810L, 2N3811, 2N3811L JAN SERIES

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS (3)</b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 10 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 500 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 5.0 Vdc  I <sub>C</sub> = 1.0 μAdc, V <sub>CE</sub> = 5.0Vdc I <sub>C</sub> = 10 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 500 μAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 5.0 Vdc	2N3810, 2N3810L       2N3811, 2N3811L	h <sub>FE</sub>	100 150 150 150 125  75 225 300 300 300 250	450 450 450
Collector-Emitter Saturation Voltage I <sub>C</sub> = 100 μAdc, I <sub>B</sub> = 10 μAdc I <sub>C</sub> = 1.0 mAdc, I <sub>B</sub> = 100 μAdc	V <sub>CE(sat)</sub>		0.2 0.25	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 100 μAdc, I <sub>B</sub> = 10 μAdc I <sub>C</sub> = 1.0 mAdc, I <sub>B</sub> = 100 μAdc	V <sub>BE(sat)</sub>		0.7 0.8	Vdc
Base-Emitter Non-Saturation Voltage V <sub>CE</sub> = 5.0 Adc, I <sub>C</sub> = 100 μAdc	V <sub>BE</sub>		0.7	Vdc

**DYNAMIC CHARACTERISTICS**

Forward Current Transfer Ratio, Magnitude I <sub>C</sub> = 500 μAdc, V <sub>CE</sub> = 5.0 Vdc, f = 30 MHz I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 5.0 Vdc, f = 100 MHz	h <sub>fe</sub>	1.0 1.0	5.0	
Small-Signal Short Circuit Forward Current Transfer Ratio I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz 2N3810, L 2N3811, L	h <sub>fe</sub>	150 300	600 900	
Small-Signal Short Circuit Input Impedance I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz 2N3810, L 2N3811, L	h <sub>je</sub>	3.0 3.0	30 40	kΩ
Small-Signal Short Circuit Output Admittance I <sub>C</sub> = 1.0 mAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz	h <sub>oe</sub>	5.0	60	μmhos
Output Capacitance V <sub>CB</sub> = 5.0 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		5.0	pF
Input Capacitance V <sub>EB</sub> = 0.5 Vdc, I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>ibo</sub>		8.0	pF
Noise Figure 2N3810, L I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 100 Hz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 10 kHz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 10 Hz to 15.7 kHz, R <sub>G</sub> = 3.0 kΩ  2N3811, L I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 100 Hz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 10 kHz, R <sub>G</sub> = 3.0 kΩ I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 10 Vdc, f = 10 Hz to 15.7 kHz, R <sub>G</sub> = 3.0 kΩ	F <sub>1</sub> F <sub>2</sub> F <sub>3</sub> F <sub>4</sub>  F <sub>1</sub> F <sub>2</sub> F <sub>3</sub> F <sub>4</sub>	7.0 3.0 2.5 3.5  4.0 1.5 2.0 2.5		dB

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.