

PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500/336

Devices

2N3810	2N3811
2N3810L	2N3811L
2N3810U	2N3811U

Qualified Level

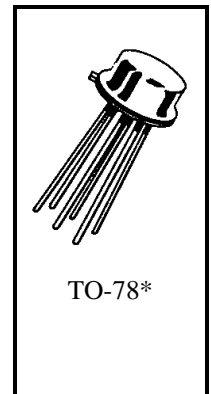
JAN
JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	Value		Unit
		One Section ¹	Both Sections ²	
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
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$	P_T	0.5	0.6	W
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
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	ηAdc
Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{Vdc}$	I_{EBO}		10	ηAdc

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

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit	
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio $I_C = 10 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 100 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 500 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 100 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 500 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$	2N3810, 2N3810L 2N3811, 2N3811L	h_{FE}	100 150 150 150 125 75 225 300 300 300 300 250	450 450 450	
Collector-Emitter Saturation Voltage $I_C = 100 \mu\text{A dc}, I_B = 10 \mu\text{A dc}$ $I_C = 1.0 \text{ mA dc}, I_B = 100 \mu\text{A dc}$	$V_{CE(sat)}$		0.2 0.25	Vdc	
Base-Emitter Saturation Voltage $I_C = 100 \mu\text{A dc}, I_B = 10 \mu\text{A dc}$ $I_C = 1.0 \text{ mA dc}, I_B = 100 \mu\text{A dc}$	$V_{BE(sat)}$		0.7 0.8	Vdc	
Base-Emitter Non-Saturation Voltage $V_{CE} = 5.0 \text{ V dc}, I_C = 100 \mu\text{A dc}$	V_{BE}		0.7	Vdc	

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio, Magnitude $I_C = 500 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}, f = 30 \text{ MHz}$ $I_C = 1.0 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}, f = 100 \text{ MHz}$	$ h_{fe} $	1.0 1.0	5.0	
Small-Signal Short Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$ 2N3810, L 2N3811, L	h_{fe}	150 300	600 900	
Small-Signal Short Circuit Input Impedance $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$ 2N3810, L 2N3811, L	h_{je}	3.0 3.0	30 40	k Ω
Small-Signal Short Circuit Output Admittance $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$	h_{oe}	5.0	60	μmhos
Output Capacitance $V_{CB} = 5.0 \text{ V dc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		5.0	pF
Input Capacitance $V_{EB} = 0.5 \text{ V dc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{ibo}		8.0	pF
Noise Figure 2N3810, L $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 100 \text{ Hz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ Hz to } 15.7 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ 2N3811, L $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 100 \text{ Hz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ Hz to } 15.7 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$	F_1 F_2 F_3 F_4 F_1 F_2 F_3 F_4	7.0 3.0 2.5 3.5 4.0 1.5 2.0 2.5		dB

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