



TECHNICAL DATA

PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500/336

Devices

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

Qualified Level

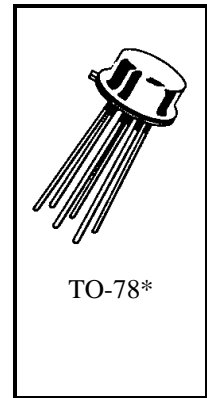
JAN
JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	Value		Unit
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
		One Section¹	Both Sections²	
Total Power Dissipation @ $T_A = +25^{\circ}C$	P_T	0.5	0.6	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^{\circ}C$

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

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



*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

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

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

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
Forward-Current Transfer Ratio $I_C = 10 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 100 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 500 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$	2N3810, 2N3810L	100 150 150 150 125	450 450 450	
$I_C = 1.0 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 100 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 500 \mu\text{A dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 10 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$	2N3811, 2N3811L	75 225 300 300 300 250	900 900 900	
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 $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$	h_{fe}	150 300	600 900	
Small-Signal Short Circuit Input Impedance $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$	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 $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 100 \text{ Hz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$ $I_C = 100 \mu\text{A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ Hz to } 15.7 \text{ kHz}, R_G = 3.0 \text{ k}\Omega$	F_1 F_2 F_3 F_4		7.0 3.0 2.5 3.5	dB
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		4.0 1.5 2.0 2.5	dB

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

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