

PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500 /336

DEVICES

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

LEVELS

JAN
JANTX
JANTV
JANS

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	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 Section ¹	Both Sections ²	
Total Power Dissipation @ $T_A = +25^\circ\text{C}$	P_T	200	350	mW
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$



TO-78

Note:

- Derate linearly 1.143mW/ $^\circ\text{C}$ for $T_A > +25^\circ\text{C}$ (one section)
- Derate linearly 2.00mW/ $^\circ\text{C}$ for $T_A > +25^\circ\text{C}$ (both sections)

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 100\mu\text{Adc}$	$V_{(BR)CEO}$	60		Vdc
Collector-Base Cutoff Current $V_{CB} = 50\text{Vdc}$ $V_{CB} = 60\text{Vdc}$	I_{CBO}		10 10	ηAdc μAdc
Emitter-Base Cutoff Current $V_{EB} = 4.0\text{Vdc}$ $V_{EB} = 5.0\text{Vdc}$	I_{EBO}		10 10	ηAdc μAdc



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TECHNICAL DATA SHEET

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ELECTRICAL CHARACTERISTICS (con't)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS				
Forward-Current Transfer Ratio $I_C = 10\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 100\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 1.0\text{mAdc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 10\text{mAdc}$, $V_{CE} = 5.0\text{Vdc}$ 2N3810, 2N3810L, 2N3810U	h_{FE}	100 150 150 125	450 450	
$I_C = 1.0\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 10\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 100\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 1.0\text{mAdc}$, $V_{CE} = 5.0\text{Vdc}$ $I_C = 10\text{mAdc}$, $V_{CE} = 5.0\text{Vdc}$ 2N3811, 2N3811L, 2N3811U	h_{FE}	75 225 300 300 250	900 900	
Collector-Emitter Saturation Voltage $I_C = 100\mu\text{Adc}$, $I_B = 10\mu\text{Adc}$ $I_C = 1.0\text{mAdc}$, $I_B = 100\mu\text{Adc}$	$V_{CE(sat)}$		0.2 0.25	Vdc
Base-Emitter Saturation Voltage $I_C = 100\mu\text{Adc}$, $I_B = 10\mu\text{Adc}$ $I_C = 1.0\text{mAdc}$, $I_B = 100\mu\text{Adc}$	$V_{BE(sat)}$		0.7 0.8	Vdc
Base-Emitter Non-Saturation Voltage $V_{CE} = 5.0\text{Vdc}$, $I_C = 100\mu\text{Adc}$	V_{BE}		0.7	Vdc

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio, Magnitude $I_C = 500\mu\text{Adc}$, $V_{CE} = 5.0\text{Vdc}$, $f = 30\text{MHz}$ $I_C = 1.0\text{mAdc}$, $V_{CE} = 5.0\text{Vdc}$, $f = 100\text{MHz}$	$ h_{fe} $	1.0 1.0	5.0	
Small-Signal Short Circuit Forward Current Transfer Ratio $I_C = 1.0\text{mAdc}$, $V_{CE} = 10\text{Vdc}$, $f = 1.0\text{kHz}$ 2N3810, 2N3810L, 2N3810U 2N3811, 2N3811L, 2N3811U	h_{fe}	150 300	600 900	
Small-Signal Short Circuit Input Impedance $I_C = 1.0\text{mAdc}$, $V_{CE} = 10\text{Vdc}$, $f = 1.0\text{kHz}$ 2N3810, 2N3810L, 2N3810U 2N3811, 2N3811L, 2N3811U	h_{je}	3.0 3.0	30 40	k Ω
Small-Signal Short Circuit Output Admittance $I_C = 1.0\text{mAdc}$, $V_{CE} = 10\text{Vdc}$, $f = 1.0\text{kHz}$ 2N3810, 2N3810L, 2N3810U 2N3811, 2N3811L, 2N3811U	h_{oe}	5.0	60	μmhos
Output Capacitance $V_{CB} = 5.0\text{Vdc}$, $I_E = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{obo}		5.0	pF
Input Capacitance $V_{EB} = 5.0\text{Vdc}$, $I_C = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{lbo}		8.0	pF



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DYNAMIC CHARACTERISTICS (cont.)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Noise Figure				
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 100\text{Hz}$, $R_G = 3.0\text{k}\Omega$ 2N3810, L, U	F_1		7.0	dB
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 1.0\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3810, L, U	F_2		3.0	
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 10\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3810, L, U	F_3		2.5	
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 10\text{Hz to } 15.7\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3810, L, U	F_4		3.5	
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 100\text{Hz}$, $R_G = 3.0\text{k}\Omega$ 2N3811, L, U	F_1		4.0	dB
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 1.0\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3811, L, U	F_2		1.5	
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 10\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3811, L, U	F_3		2.0	
$I_C = 100\mu\text{Adc}$, $V_{CE} = 10\text{Vdc}$, $f = 10\text{Hz to } 15.7\text{kHz}$, $R_G = 3.0\text{k}\Omega$ 2N3811, L, U	F_4		2.5	