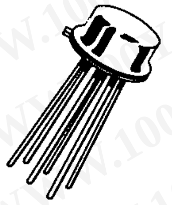
Microsemi
LAWRENCE

TECHNICAL DATA

PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500/336

Devices		*Qualified Level*
2N3810 **2N3810L** **2N3810U**	**2N3811** **2N3811L** **2N3811U**	**JAN** **JANTX** **JANTXV**



TO-78*

*See appendix A for package outline

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 Section [1]	**Both Sections**[2]	
Total Power Dissipation @ $T_A = +25^0C$	P_T	0.5	0.6	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

1) Derate linearly 2.86 mW/^0C for $T_A > +25^0C$
2) Derate linearly 3.43 mW/^0C for $T_A > +25^0C$

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

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

ELECTRICAL CHARACTERISTICS (con’t)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
Forward-Current Transfer Ratio	h_{FE}			
I_C = 10 µAdc, V_{CE} = 5.0 Vdc 2N3810, 2N3810L		100		
I_C = 100 µAdc, V_{CE} = 5.0 Vdc		150	450	
I_C = 500 µAdc, V_{CE} = 5.0 Vdc		150	450	
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc		150	450	
I_C = 10 mAdc, V_{CE} = 5.0 Vdc		125		
I_C = 1.0 µAdc, V_{CE} = 5.0Vdc 2N3811, 2N3811L		75		
I_C = 10 µAdc, V_{CE} = 5.0 Vdc		225		
I_C = 100 µAdc, V_{CE} = 5.0 Vdc		300	900	
I_C = 500 µAdc, V_{CE} = 5.0 Vdc		300	900	
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc		300	900	
I_C = 10 mAdc, V_{CE} = 5.0 Vdc		250		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			Vdc
I_C = 100 µAdc, I_B = 10 µAdc			0.2	
I_C = 1.0 mAdc, I_B = 100 µAdc			0.25	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			Vdc
I_C = 100 µAdc, I_B = 10 µAdc			0.7	
I_C = 1.0 mAdc, I_B = 100 µAdc			0.8	
Base-Emitter Non-Saturation Voltage V_{CE} = 5.0 Adc, I_C = 100 µAdc	V_{BE}		0.7	Vdc
DYNAMIC CHARACTERISTICS				
Forward Current Transfer Ratio, Magnitude	$\|h_{fe}\|$			
I_C = 500 µAdc, V_{CE} = 5.0 Vdc, f = 30 MHz		1.0		
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz		1.0	5.0	
Small-Signal Short Circuit Forward Current Transfer Ratio	h_{fe}			
I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz 2N3810, L		150	600	
2N3811, L		300	900	
Small-Signal Short Circuit Input Impedance	h_{je}			kΩ
I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz 2N3810, L		3.0	30	
2N3811, L		3.0	40	
Small-Signal Short Circuit Output Admittance I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz	h_{oe}	5.0	60	µmhos
Output Capacitance V_{CB} = 5.0 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		5.0	pF
Input Capacitance V_{EB} = 0.5 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{ibo}		8.0	pF
Noise Figure				
2N3810, L				dB
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 100 Hz, R_G = 3.0 kΩ	F_1		7.0	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 1.0 kHz, R_G = 3.0 kΩ	F_2		3.0	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 10 kHz, R_G = 3.0 kΩ	F_3		2.5	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 10 Hz to 15.7 kHz, R_G = 3.0 kΩ	F_4		3.5	
2N3811, L				dB
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 100 Hz, R_G = 3.0 kΩ	F_1		4.0	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 1.0 kHz, R_G = 3.0 kΩ	F_2		1.5	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 10 kHz, R_G = 3.0 kΩ	F_3		2.0	
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 10 Hz to 15.7 kHz, R_G = 3.0 kΩ	F_4		2.5	

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