Microsemi LAWRENCE

TECHNICAL DATA

PNP SILICON DUAL TRANSISTOR

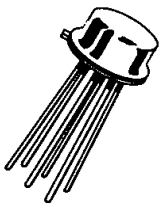
Qualified per MIL-PRF-19500/336

Devices		*Qualified Level*
2N3810	**2N3811**	**JAN**
2N3810L	**2N3811L**	**JANTX**
2N3810U	**2N3811U**	**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 Section [1]	Both Sections[2]	
Total Power Dissipation @ T_A = +25^{0}C	P_T	0.5	0.6	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^{0}C

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



TO-78*

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Base Breakdown Voltage I_C = 10 µAdc	$V_{(BR)CBO}$	60		Vdc
Collector-Emitter Breakdown Current I_C = 10 mAdc	$V_{(BR)CEO}$	60		Vdc
Emitter-Base Breakdown Voltage I_E = 10 µAdc	$V_{(BR)EBO}$	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					
I_C = 10 µAdc, V_{CE} = 5.0 Vdc	2N3810, 2N3810L	h_{FE}	100	450	
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		
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					
I_C = 100 µAdc, I_B = 10 µAdc		$V_{CE(sat)}$		0.2	Vdc
I_C = 1.0 mAdc, I_B = 100 µAdc				0.25	
Base-Emitter Saturation Voltage					
I_C = 100 µAdc, I_B = 10 µAdc		$V_{BE(sat)}$		0.7	Vdc
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					
I_C = 500 µAdc, V_{CE} = 5.0 Vdc, f = 30 MHz		$\lvert h_{fe} \rvert$	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					
I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz	2N3810, L	h_{fe}	150	600	
	2N3811, L		300	900	
Small-Signal Short Circuit Input Impedance					
I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz	2N3810, L	h_{je}	3.0	30	kΩ
	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				
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 100 Hz, R_G = 3.0 kΩ		F_1		7.0	dB
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				
I_C = 100 µAdc, V_{CE} = 10 Vdc, f = 100 Hz, R_G = 3.0 kΩ		F_1		4.0	dB
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%.