Microsemi LAWRENCE

TECHNICAL DATA

NPN LOW POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/253

Devices	*Qualified Level*
2N930	**JAN JANTX JANTXV**

MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	45	Vdc
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current	I_C	30	mAdc
Total Power Dissipation @ $T_A = +25^0C$(1) @ $T_C = +25^0C$(2)	P_T	300 600	mW
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200	^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	97	$^0C/W$

1) Derate linearly 2.0 mW/^{0}C above $T_A = +25^0C$
2) Derate linearly 4.0 mW/^{0}C above $T_C = +25^0C$

TO- 18*
(TO-206AA)

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage I_C = 10 mAdc	$V_{(BR)CEO}$	45		Vdc
Collector-Base Cutoff Current V_{CB} = 60 Vdc V_{CB} = 45 Vdc	I_{CBO}		10 10	µAdc ηAdc
Emitter-Base Cutoff Current V_{EB} = 6.0 Vdc V_{EB} = 5.0 Vdc	I_{EBO}		10 5.0	µAdc ηAdc
Collector-Emitter Cutoff Current V_{CE} = 45 Vdc	I_{CES}		2.0	ηAdc
Collector-Base Cutoff Current V_{CE} = 5.0 Vdc	I_{CEO}		2.0	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 I_C = 500 μAdc, V_{CE} = 5.0 Vdc I_C = 10 mAdc, V_{CE} = 5.0 Vdc	h_{FE}	 100 150	 300 600	
Collector-Emitter Saturation Voltage I_C = 10 mAdc, I_B = 0.5 mAdc	$V_{CE(sat)}$		 1.0	Vdc
Base-Emitter Saturation Voltage I_C = 10 mAdc, I_B = 0.5 mAdc	$V_{BE(sat)}$	 0.6	 1.0	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 500 μAdc, V_{CE} = 5.0 Vdc, f = 30 MHz	$\lvert h_{fe} \rvert$	 1.5	 6.0	
Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz	h_{fe}	 150	 600	
Small-Signal Short-Circuit Input Impedance V_{CB} = 5.0 Vdc, I_E = 1.0 mAdc, f = 1.0 kHz	h_{ib}	 25	 32	Ω
Small-Signal Short-Circuit Output Admittance V_{CB} = 5.0 Vdc, I_E = 1.0 mAdc, f = 1.0 kHz	h_{ob}		 1.0	μΩ
Output Capacitance V_{CB} = 5.0 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		 8.0	pF
Noise Figure V_{CE} = 5 Vdc; I_C = 10 μAdc; R_g =10kΩ Test 1: f = 100 Hz Test 2: f = 1.0 kHz Test 3: f = 10 kHz	NF		 5 3 3	dB

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