

LOW POWER PNP SILICON TRANSISTOR

Qualified per MIL-PRF-19500/177

Devices

2N1131
2N1131L

2N1132
2N1132L

Qualified Level

JAN
JANTX

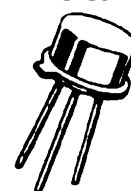
MAXIMUM RATINGS

Ratings	Symbol	All Units	Units
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Base Voltage	V_{CBO}	50	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	600	mAdc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}^{(1)}$ @ $T_C = +25^{\circ}\text{C}^{(2)}$	P_T	0.6 2.0	W W
Operating & Storage Temperature Range	T_{op}, T_j	-65 to +200	$^{\circ}\text{C}$

1) Derate linearly 3.4 mW/ $^{\circ}\text{C}$ for $T_A \geq +25^{\circ}\text{C}$

2) Derate linearly 11.4 mW/ $^{\circ}\text{C}$ for $T_C \geq +25^{\circ}\text{C}$

TO-39*



2N1131, 2N1132

TO-5*



2N1131L, 2N1132L

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 10 \text{ mAdc}$	$V_{(BR)CEO}$		40	Vdc
Collector-Base Breakdown Voltage $I_C = 10 \mu\text{Adc}$	$V_{(BR)CBO}$		50	Vdc
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$	I_{EBO}		100	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 50 \text{ Vdc}$, $R_{BE} \leq 10 \text{ ohms}$	I_{CER}		10	mAdc
Collector-Base Cutoff Current $V_{CB} = 50 \text{ Vdc}$ $V_{CB} = 30 \text{ Vdc}$	I_{CBO}		10 1.0	μAdc

2N1131, 2N1132 JAN, JANTX

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽³⁾

Forward Current Transfer Ratio $I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ 2N1131, L 2N1132, L $I_C = 5.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ 2N1131, L 2N1132, L	h_{FE}	20 30 15 25	45 90	
Collector-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$	$V_{CE(sat)}$		1.3	Vdc
Base-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$	$V_{BE(sat)}$		1.5	Vdc

DYNAMIC CHARACTERISTICS

Small-Signal Short Circuit Forward-Current Transfer Ratio $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 1 \text{ kHz}$ 2N1131, L 2N1132, L $I_C = 5.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1 \text{ kHz}$ 2N1131, L 2N1132, L	h_{fe}	15 30 20 30	50 90	
Small-Signal Open-Circuit Output Admittance $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 5.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	h_{ob}		1.0 5.0	μmho
Small-Signal Short-Circuit Input Impedance $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 5.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	h_{ib}	25	35 10	Ω
Magnitude of Common Emitter Small-Signal Short Circuit Forward-Current Transfer Ratio $I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 20 \text{ MHz}$ 2N1131, L 2N1132, L	$ h_{fe} $	2.5 3.0	20 20	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		45	pF
Input Capacitance $V_{EB} = 0.5 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{ibo}		80	pF

SWITCHING CHARACTERISTICS

Turn-On Time + Turn-Off Time (See figure 2 of MIL-PRF-19500/177)	$t_{on} + t_{off}$		50	ηs
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