

## LOW POWER PNP SILICON TRANSISTOR

Qualified per MIL-PRF-19500/177

### Devices

2N1131  
2N1131L

2N1132  
2N1132L

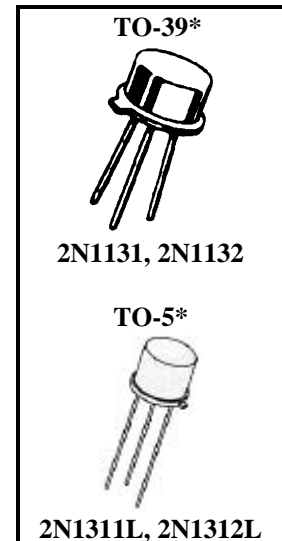
### Qualified Level

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	$P_T$	@ $T_A = +25^{\circ}\text{C}^{(1)}$ @ $T_C = +25^{\circ}\text{C}^{(2)}$	0.6 W 2.0 W
Operating & Storage Temperature Range		$T_{op}, T_j$	-65 to +200 °C

- 1) Derate linearly 3.4 mW/°C for  $T_A \geq +25^{\circ}\text{C}$
- 2) Derate linearly 11.4 mW/°C for  $T_C \geq +25^{\circ}\text{C}$



\*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	$\mu\text{Adc}$
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	$\mu\text{Adc}$

**2N1131, 2N1132 JAN, JANTX**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
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**DC CHARACTERISTICS**<sup>(3)</sup>

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

**DYNAMIC CHARACTERISTICS**

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

**SWITCHING CHARACTERISTICS**

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