

LOW POWER PNP SILICON TRANSISTOR

Qualified per MIL-PRF-19500/177

Devices

2N1131
2N1131L

2N1132
2N1132L

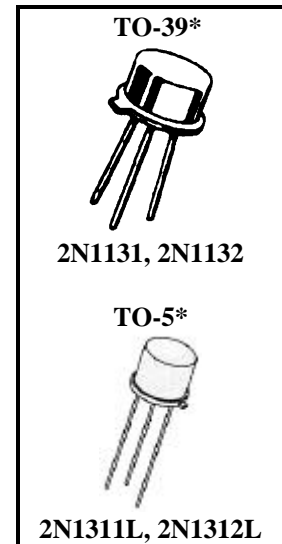
Qualified Level

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 | @ $T_A = +25^{\circ}\text{C}^{(1)}$ | 0.6 W |
| | | @ $T_C = +25^{\circ}\text{C}^{(2)}$ | 2.0 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 $T_C \geq +25^{\circ}\text{C}$



*See appendix A for package outline

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

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

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 |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

DC CHARACTERISTICS⁽³⁾

| | | | | |
|---|---|----|-----|-----|
| 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 | | |
| | 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 | | |
| | 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 | μmho |
| | $I_C = 5.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}$ | | 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 | Ω |
| | $I_C = 5.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}$ | | 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 | ηs |
|---|--------------------|--|----|----------------|

