

PNP SILICON DUAL TRANSISTOR

Qualified per MIL-PRF-19500/336

Devices

| | |
|----------------|----------------|
| 2N3810 | 2N3811 |
| 2N3810L | 2N3811L |
| 2N3810U | 2N3811U |

Qualified Level

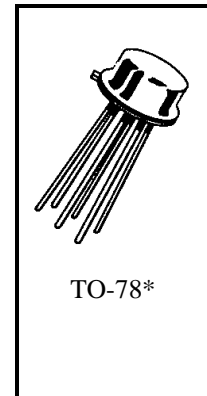
JAN
JANTX
JANTXV

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 Section¹ | Both Sections² | |
| Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ | P_T | 0.5 | 0.6 | W |
| Operating & Storage Junction Temperature Range | T_J, T_{stg} | -65 to +200 | | $^{\circ}\text{C}$ |

1) Derate linearly 2.86 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly 3.43 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$



*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-Base Breakdown Voltage $I_C = 10 \mu\text{Adc}$ | $V_{(BR)CBO}$ | 60 | | Vdc |
| Collector-Emitter Breakdown Current $I_C = 10 \text{mAdc}$ | $V_{(BR)CEO}$ | 60 | | Vdc |
| Emitter-Base Breakdown Voltage $I_E = 10 \mu\text{Adc}$ | $V_{(BR)EBO}$ | 5.0 | | Vdc |
| Collector-Base Cutoff Current $V_{CB} = 50 \text{Vdc}$ | I_{CBO} | | 10 | ηAdc |
| Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{Vdc}$ | I_{EBO} | | 10 | ηAdc |

2N3810, 2N3810L, 2N3811, 2N3811L JAN SERIES

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 = 100 μAdc, V _{CE} = 5.0 Vdc I _C = 500 μAdc, V _{CE} = 5.0 Vdc I _C = 1.0 mAdc, V _{CE} = 5.0 Vdc I _C = 10 mAdc, V _{CE} = 5.0 Vdc I _C = 1.0 μAdc, V _{CE} = 5.0Vdc I _C = 10 μAdc, V _{CE} = 5.0 Vdc I _C = 100 μAdc, V _{CE} = 5.0 Vdc I _C = 500 μAdc, V _{CE} = 5.0 Vdc I _C = 1.0 mAdc, V _{CE} = 5.0 Vdc I _C = 10 mAdc, V _{CE} = 5.0 Vdc | 2N3810, 2N3810L 2N3811, 2N3811L | h _{FE} | 100 150 150 150 125 75 225 300 300 300 250 | 450 450 450 | |
| Collector-Emitter Saturation Voltage I _C = 100 μAdc, I _B = 10 μAdc I _C = 1.0 mAdc, I _B = 100 μAdc | V _{CE(sat)} | | 0.2 0.25 | Vdc | |
| Base-Emitter Saturation Voltage I _C = 100 μAdc, I _B = 10 μAdc I _C = 1.0 mAdc, I _B = 100 μAdc | V _{BE(sat)} | | 0.7 0.8 | Vdc | |
| Base-Emitter Non-Saturation Voltage V _{CE} = 5.0 Vdc, 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 I _C = 1.0 mAdc, V _{CE} = 5.0 Vdc, f = 100 MHz | h _{fe} | 1.0 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 2N3811, L | h _{fe} | 150 300 | 600 900 | |
| Small-Signal Short Circuit Input Impedance I _C = 1.0 mAdc, V _{CE} = 10 Vdc, f = 1.0 kHz 2N3810, L 2N3811, L | h _{je} | 3.0 3.0 | 30 40 | kΩ |
| 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 I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 1.0 kHz, R _G = 3.0 kΩ I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 10 kHz, R _G = 3.0 kΩ I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 10 Hz to 15.7 kHz, R _G = 3.0 kΩ 2N3811, L I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 100 Hz, R _G = 3.0 kΩ I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 1.0 kHz, R _G = 3.0 kΩ I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 10 kHz, R _G = 3.0 kΩ I _C = 100 μAdc, V _{CE} = 10 Vdc, f = 10 Hz to 15.7 kHz, R _G = 3.0 kΩ | F ₁ F ₂ F ₃ F ₄ F ₁ F ₂ F ₃ F ₄ | 7.0 3.0 2.5 3.5 4.0 1.5 2.0 2.5 | | dB dB |

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