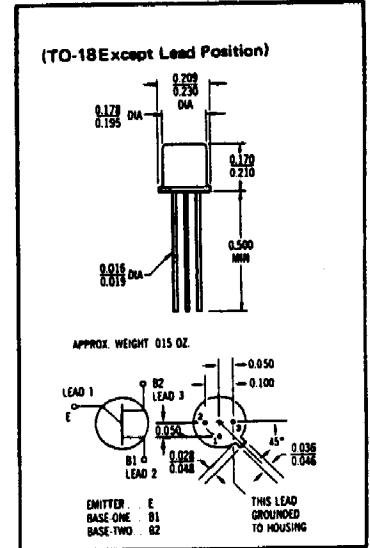


2N4948 2N4949 Silicon annular unijunction transistors

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

| Rating | Symbol | Value | Unit |
|------------------------------|-----------|-------------|------------------|
| RMS Power Dissipation* | P_D | 360* | mW |
| RMS Emitter Current | I_e | 50 | mA |
| Peak Pulse Emitter Current** | i_e | 1.0** | Amp |
| Emitter Reverse Voltage | V_{B2E} | 30 | Volts |
| Storage Temperature Range | T_{stg} | -65 to +200 | $^\circ\text{C}$ |



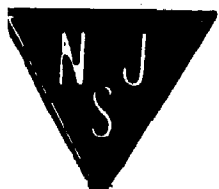
* Derate 2.4 mW/ $^\circ\text{C}$ increase in ambient temperature. Total power dissipation (available power to Emitter and Base-Two) must be limited by external circuitry. Interbase voltage (V_{B2B1}) limited by power dissipation,

$$V_{B2B1} = \sqrt{R_{BB} \cdot P_D}$$

** Capacitance discharge current must fall to 0.37 Amp within 3.0 ms and PRR ≤ 10 PPS.

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|-----------------|--------------|------------|--------------|---------------------------------|
| Intrinsic Standoff Ratio ($V_{B2B1} = 10$ V) Note 1 | η | 0.55 0.74 | - | 0.82 0.86 | - |
| Interbase Resistance ($V_{B2B1} = 3.0$ V, $I_E = 0$) | R_{BB} | 4.0 | 7.0 | 12.0 | k ohms |
| Interbase Resistance Temperature Coefficient ($V_{B2B1} = 3.0$ V, $I_E = 0$, $T_A = -65^\circ\text{C}$ to $+100^\circ\text{C}$) | αR_{BB} | 0.1 | - | 0.9 | $^\circ\text{C}/^\circ\text{C}$ |
| Emitter Saturation Voltage ($V_{B2B1} = 10$ V, $I_E = 50$ mA) Note 2 | $V_{EB1(sat)}$ | - | 2.5 | 3.0 | Volts |
| Modulated Interbase Current ($V_{B2B1} = 10$ V, $I_E = 50$ mA) | $I_{B2(mod)}$ | 12 | 15 | - | mA |
| Emitter Reverse Current ($V_{B2E} = 30$ V, $I_{B1} = 0$) ($V_{B2E} = 30$ V, $I_{B1} = 0$, $T_A = 125^\circ\text{C}$) | I_{EB2O} | - | 5.0 | 10 | nA μA |
| Peak Point Emitter Current ($V_{B2B1} = 25$ V) | I_P | - | 0.6 0.6 | 2.0 1.0 | μA |
| Valley Point Current ($V_{B2B1} = 20$ V, $R_{B2} = 100$ ohms) Note 2 | I_V | 2.0 | 4.0 | - | mA |
| Base-One Peak Pulse Voltage (Note 3, Figure 3) | V_{OB1} | 3.0 6.0 | 5.0 8.0 | - | Volts |
| Maximum Oscillation Frequency (Figure 4) | $f_{(max)}$ | - | 1.25 | - | MHz |



NOTES

1. Intrinsic standoff ratio:

η is defined by equation:

$$\eta = \frac{V_p - V_{i(SB)}}{V_{B2B1}}$$

Where V_p - Peak Point Emitter Voltage

V_{B2B1} - Interbase Voltage

$V_{i(SB)}$ - Emitter to Base One Junction Diode Drop
(0.5 V @ 10 μ A)

2. Use pulse techniques: PW = 300 μ s duty cycle = 2% to avoid internal heating due to interbase modulation which may result in erroneous readings.

3. Base-One Peak Pulse Voltage is measured in circuit of Figure 3. This specification is used to ensure minimum pulse amplitude for applications in SCR firing circuits and other types of pulse circuits.

FIGURE 1 — UNIJUNCTION TRANSISTOR SYMBOL AND NOMENCLATURE

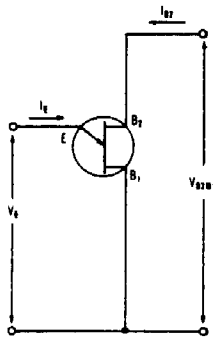


FIGURE 2 — STATIC EMITTER CHARACTERISTICS CURVES
(Exaggerated to Show Details)

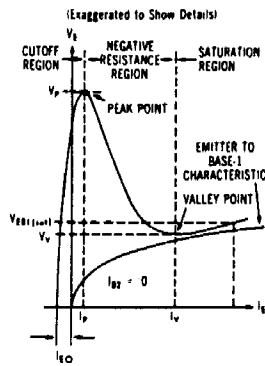


FIGURE 3 — V_{OB1} TEST CIRCUIT
(Typical Relaxation Oscillator)

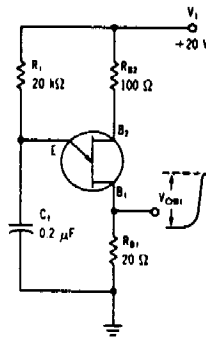


FIGURE 4 — $f_{(max)}$ MAXIMUM FREQUENCY TEST CIRCUIT

