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NTE107 Silicon NPN Transistor UHF Oscillator for Tuner TO-92 Type Package

Description:

The NTE107 is a silicon NPN planar epitaxial transistor in a TO-92 type package designed specifically for high frequency applications. This device is suitable for use as an oscillator in UHF television tuners.

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | |
|--|-------------------------------------|
| Collector-Base Voltage, V_{CBO} | 30V |
| Collector-Emitter Voltage, V_{CEO} | 12V |
| Emitter-Base Voltage, V_{EBO} | 3V |
| Collector Current, I_C | 25mA |
| Total Power Dissipation ($T_A = +25^\circ\text{C}$), P_T | 200mW |
| Derate above $+25^\circ\text{C}$ | 2.67mW/ $^\circ\text{C}$ |
| Operating Junction Temperature, T_J | $+100^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -55° to $+125^\circ\text{C}$ |
| Lead temperature (During Soldering, 1/16" \pm 1/32" from case, 10sec), T_L | $+260^\circ\text{C}$ |

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------|---------------|--|-----|-----|-----|---------------|
| Static Characteristics | | | | | | |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}$ | 30 | - | - | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_{CEO} = 3\text{mA}$, Note 1 | 12 | - | - | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 100\mu\text{A}$ | 3 | - | - | V |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 15\text{V}$, $I_E = 0$ | - | - | 0.5 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 2\text{V}$, $I_C = 0$ | - | - | 0.5 | μA |
| Forward Current Transfer Ratio | h_{FE} | $V_{CE} = 10\text{V}$, $I_C = 8\text{mA}$ | 20 | 75 | - | |
| Collector Saturation Voltage | $V_{CE(sat)}$ | $I_C = 10\text{mA}$, $I_B = 1\text{mA}$ | - | - | 0.6 | V |

Note 1. Pulse test: Pulse Width = $1\mu\text{s}$, Duty Cycle = 1%.

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------|----------|---|-----|-----|------|------|
| Dynamic Characteristics | | | | | | |
| Current Gain–Bandwidth Product | f_T | $I_C = 5\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$ | 700 | – | 2100 | MHz |
| Output Capacitance | C_{ob} | $V_{CE} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$ | 0.8 | – | 1.5 | pF |
| Noise Figure | NF | $I_C = 1\text{mA}$, $V_{CB} = 6\text{V}$, $f = 60\text{MHz}$, $R_G = 400\Omega$ | – | 4.0 | 6.5 | dB |

