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NTE6401 Unijunction Transistor

Description:

The NTE6401 is designed for use in pulse and timing circuits, sensing circuits and thyristor trigger circuits.

Features:

- Low Peak Point Current: 5μA (Max)
- Low Emitter Reverse Current: .005μA (Typ)
- Passivated Surface for Reliability & Uniformity

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

| | |
|--|----------------|
| Power Dissipation (Note 1), P _D | 300mW |
| RMS Emitter Current, I _{E(RMS)} | 50mA |
| Peak Pulse Emitter Current (Note 2), i _E | 2A |
| Emitter Reverse Voltage, V _{B2E} | 30V |
| Interbase Voltage, V _{B2B1} | 35V |
| Operating Junction Temperature Range, T _J | -65° to 125°C |
| Storage Temperature Range, T _{stg} | -65° to +150°C |

Note 1 Derate 3mW/°C increase in ambient temperature. The total power dissipation (available power to Emitter and Base-Two) must be limited by the external circuitry.

Note 2 Capacitor discharge – 10μF or less, 30 volts or less

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|------------------|--|------|-----|------|------|
| Intrinsic Standoff Ratio | η | V _{B2B1} = 10V, Note 3 | 0.56 | – | 0.75 | – |
| Interbase Resistance | r _{BB} | V _{B2B1} = 3V, I _E = 0 | 4.7 | 7.0 | 9.1 | kΩ |
| Interbase Resistance Temperature Coefficient | αr _{BB} | | 0.1 | – | 0.9 | %/°C |

Note 3. Intrinsic standoff ratio, η is defined by equation:

$$\eta = \frac{V_P - V_F}{V_{B2B1}}$$

where V_P = Peak Point Emitter Voltage
 V_{B2B1} = Interbase Voltage
 V_F = Emitter to Base-One Junction Diode Drop (~ 0.45V @ 10μA)

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------------------------|----------------|---|-----|-------|-----|---------------|
| Emitter Saturation Voltage | $V_{EB1(sat)}$ | $V_{B2B1} = 10\text{V}, I_E = 50\text{mA}$, Note 4 | – | 3.5 | – | V |
| Modulated Interbase Current | $I_{B2(mod)}$ | $V_{B2B1} = 10\text{V}, I_E = 50\text{mA}$ | – | 15 | – | mA |
| Emitter Reverse Current | I_{EB20} | $V_{B2E} = 30\text{V}, I_{B1} = 0$ | – | 0.005 | 12 | μA |
| Peak Point Emitter Current | I_P | $V_{B2B1} = 25\text{V}$ | – | 1 | 5 | μA |
| Valley Point Current | I_V | $V_{B2B1} = 20\text{V}, R_{B2} = 100\Omega$ | 4 | 6 | – | mA |
| Base–One Peak Pulse Voltage | V_{OB1} | | 3 | 5 | – | V |

Note 4. Use pulse techniques: Pulse Width ~ 300 μs , duty cycle $\leq 2\%$ to avoid internal heating due to interbase modulation which may result in erroneous readings.

