

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: 5 μ A (Max)
- Low Emitter Reverse Current: .005 μ A (Typ)
- Passivated Surface for Reliability & Uniformity

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ 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 $+150^\circ\text{C}$

Note 1 Derate 3mW/ $^\circ\text{C}$ 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 – 10 μ F or less, 30 volts or less

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Intrinsic Standoff Ratio	η	$V_{B2B1} = 10\text{V}$, Note 3	0.56	–	0.75	–
Interbase Resistance	r_{BB}	$V_{B2B1} = 3\text{V}$, $I_E = 0$	4.7	7.0	9.1	k Ω
Interbase Resistance Temperature Coefficient	αr_{BB}		0.1	–	0.9	%/ $^\circ\text{C}$

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 @ 10 μ A)

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 $\sim 300\mu\text{s}$, duty cycle $\leq 2\%$ to avoid internal heating due to interbase modulation which may result in erroneous readings.

