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NTE6409
Unijunction Transistor

Description:

The NTE6409 is designed for use in pulse and timing circuits, sensing circuits and thyristor trigger circuits.

Features:

- Low Peak Point Current: 2μA Max
- Low Emitter Reverse Current: 200nA Max
- 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, 30V or less

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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	0.68	–	0.82	
Interbase Resistance	r_{BB}	V_{B2B1} = 3V, I_E = 0	4.7	7.0	9.1	kΩ
Interbase Resistance Temperature Coefficient	αr_{BB}	V_{B2B1} = 3V, I_E = 0, T_A = –55° to +125°C	0.1	–	0.9	%/°C
Emitter Saturation Voltage	$V_{EB1(sat)}$	V_{B2B1} = 10V, I_E = 50mA, Note 4	–	3.5	–	V
Modulated Interbase Current	$I_{B2(mod)}$	V_{B2B1} = 10V, I_E = 50mA	–	15	–	mA
Emitter Reverse Current	I_{EB2O}	V_{B2E} = 30V, I_{B1} = 0	–	0.005	0.2	µA
Peak Point Emitter Current	I_P	V_{B2B1} = 25V	–	1	2	µA
Valley Point Current	I_V	V_{B2B1} = 20V, R_{B2} = 100Ω, Note 4	8	10	18	mA
Base–One Peak Pulse Voltage	V_{OB1}		6	7	–	V

Note 3. Intrinsic Standoff Ratio, η, is defined by the 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)

Note 4. Use pulse techniques: PW ≤ 300µs, Duty Cycle ≤ 2% to avoid internal heating due to inter-base modulation which may result in erroneous readings.