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NTE6400 & NTE6400A
Unijunction Transistor

Description:

The NTE6400 & NTE6400A Silicon Unijunction Transistors are three terminal devices having a stable "N" type negative resistance characteristic over a wide temperature range. A stable peak point voltage, a low peak point current, and a high pulse pulse current make these devices useful in oscillators, timing circuits, trigger circuits, and pulse generators where they can serve the purpose of two conventional silicon or germanium transistors.

These devices are intended for applications where circuit economy is of primary importance.

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

RMS Power Dissipation, P_D
- Unstabilized 450mW
- Stabilized 600mW
  - Derate Above 25°C . . . . . 3.9mW/°C

RMS Emitter Current, I_E 50mA
Peak Emitter Current (T_J = +150°C), $I_{E(peak)}$ 2A
Emitter Reverse Voltage (T_J = +150°C) 60V
Interbase Voltage, V_{BB}
- NTE6400 . . . . . 35V
- NTE6400A 55V

Operating Temperature Range, T_{opr}
- Unstabilized . . . . . –65° to +140°C
- Stabilized . . . . . –65° to +175°C

Storage Temperature Range, T_{stg} . . . . . –65° to +175°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 0.16°C/mW

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Intrinsic Standoff Ratio	η	V_{BB} = 10V, Note 1				
NTE6400			0.4	–	0.80	
NTE6400A			54	–	0.67	
Interbase Resistance	R_{BBO}	V_{BB} = 3V, I_E = 0, Note 1	4	–	12	kΩ
Modulated Interbase Current	$I_{B2(MOD)}$	V_{BB} = 10V, I_E = 50mA	6.8	–	30	mA
Emitter Reverse Current	I_{EO}	V_{B2E} = 30V, I_{B1} = 0				µA
NTE6400			–	–	12	
NTE6400A			–	–	1	
Peak Point Emitter Current	I_P	V_{BB} = 25V	–	–	25	µA
Valley Point Current	I_V	V_{BB} = 20V, R_{B2} = 100Ω	8	–	–	mA
Base–One Peak Pulse Voltage	V_{OB1}		3	–	–	V

Note 1. The intristic standoff ratio, η, is essentially constant with temperature and interbase voltage. It is defined by the following equation:

$$V_P = \eta\, V_{BB} + \frac{200}{T_j}$$

Where V_P = Peak point emitter voltage
V_{BB} = Interbase voltage
T_j = Junction Temperature (Degrees Kelvin)

Note 2. The interbase resistance is nearly ohmic and increases with temperature in a well–defined manner. The temperature coefficient at +25°C is approximately 0.8%/°C.