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NTE2402 (NPN) & NTE2403 (PNP)
Silicon Complementary Transistors
Low Noise, UHF/VHF Amplifier

Description:

The NTE2402 (NPN) and NTE2403 (PNP) are silicon complementary transistors in an SOT–23 type surface mount package designed for use in UHF and microwave amplifiers in thick and thin–film circuits, such as in aerial amplifiers, radar systems, oscilloscopes, spectrum analysers, etc. These transistors feature low intermodulation distortion and high power gain. Due to very high transition frequency, these devices also have excellent wideband properties and low noise up to high frequencies.

Absolute Maximum Ratings:

Collector–Base Voltage, V_{CBO} 20V
Collector–Emitter Voltage, V_{CEO} 15V
Emitter–Base Voltage, V_{EBO} 2V
DC Collector Current, I_C 25mA
Total Power Dissipation ($T_A \le +60°C$, Note 1), P_{tot} 200mW
Operating Junction Temperature, T_J . . . . . +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA} 430K/W

Note 1. Mounted on a ceramic substrate of .314 (8mm) x .393 (10mm) x .027 (0.7mm).

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 10V, I_E = 0	–	–	50	nA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 14mA	25	50	–	
Transition Frequency	f_T	V_{CE} = 10V, I_C = 14mA, f = 500MHz	–	5	–	GHz
Collector Capacitance	C_c	V_{CB} = 10V, I_E = Ie = 0, f = 1MHz	–	0.75	–	pF
Emitter Capacitance	C_e	V_{EB} = 0.5V, I_C = I_c = 0, f = 1MHz	–	0.8	–	pF
Feedback Capacitance	C_{re}	V_{CE} = 10V, I_C = 2mA, f = 1MHz, T_A = +25°C	–	0.4	–	pF

Electrical Characteristics (Cont'd): (T_J = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Noise Figure (At Optimum Source Impedance)	F	V_{CE} = 10V, I_C = 2mA, f = 500MHz, T_A = +25°C	–	2.4	–	dB
Max. Unilateral Power Gain (s_{re} Assumed to be Zero)	G_{UM}	V_{CE} = 10V, I_C = 2mA, f = 500MHz, T_A = +25°C, Note 2	–	18	–	dB
Output Voltage (At d_{im} = –60dB)	V_O	V_{CE} = 10V, I_C = 14mA, R_L = 75Ω, T_A = +25°C, $f_{(p+q-r)}$ = 493,25MHz	–	150	–	mV

Note 2. $G_{UM} = 10 \log |s_{fe}|^2 / [1 - |s_{ie}|^2] [1 - |s_{oe}|^2]$.