



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089
<http://www.nteinc.com>

NTE2402 (NPN) & NTE2403 (PNP) Silicon Complementary Transistors Low Noise, UHF/VHF Amplifier SOT-23 Type Package

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

Collector-Base Voltage, V_{CB0}	20V
Collector-Emitter Voltage, V_{CEO}	
NTE2402	12V
NTE2403	15V
Emitter-Base Voltage, V_{EBO}	
NTE2402	3V
NTE2403	2V
DC Collector Current, I_C	
NTE2402	100mA
NTE2403	25mA
Total Power Dissipation ($T_A \leq +60^\circ\text{C}$, 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: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current NTE2402	I_{CBO}	$V_{CB} = 10V, I_E = 0$	-	-	1	μA
NTE2403			-	-	50	nA
Emitter Cutoff Current NTE2402 Only	I_{EBO}	$V_{EB} = 1V, I_C = 0$	-	-	1	μA

Rev. 01-23



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

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
DC Current Gain NTE2402	h_{FE}	$V_{CE} = 10\text{V}$	$I_C = 20\text{mA}$	80	-	250	
NTE2403			$I_C = 14\text{mA}$	25	50	-	
Transition Frequency NTE2402	f_T	$V_{CE} = 10\text{V}, I_C = 20\text{mA}$		-	7	-	GHz
NTE2403		$V_{CE} = 10\text{V}, I_C = 14\text{mA}, f = 500\text{MHz}$		-	5	-	GHz
Collector Capacitance NTE2403 Only	C_c	$V_{CB} = 10\text{V}, I_E = I_C = 0, f = 1\text{MHz}$		-	0.75	-	pF
Emitter Capacitance NTE2403 Only	C_e	$V_{EB} = 0.5\text{V}, I_C = I_E = 0, f = 1\text{MHz}$		-	0.8	-	pF
Feedback Capacitance NTE2402	C_{re}	$V_{CB} = 10\text{V}, I_C = 20\text{mA}$		-	0.55	1.0	pF
NTE2403		$V_{CE} = 10\text{V}, I_C = 2\text{mA}, f = 1\text{MHz}$		-	0.4	-	pF
Insertion Power Gain NTE2402	$ S_{21e} ^2$	$V_{CE} = 10\text{V}$	$I_C = 20\text{mA}, f = 1\text{GHz}$	-	11.5	-	dB
NTE2403			$I_C = 2\text{mA}, f = 500\text{MHz}$	-	18	-	dB
Noise Figure NTE2402	NF	$V_{CE} = 10\text{V}$	$I_C = 7\text{mA}, f = 1\text{GHz}$	-	1.1	2.0	dB
NTE2403			$I_C = 2\text{mA}, f = 500\text{MHz}$	-	2.4	-	dB
Output Voltage (At $d_{im} = -60\text{dB}$) NTE2403 Only	V_O	$V_{CE} = 10\text{V}, I_C = 14\text{mA}, R_L = 75\Omega,$ $T_A = +25^\circ\text{C}, f_{(p+q-r)} = 493,25\text{MHz}$		-	150	-	mV

