NTE ELECTRONICS, INC.

NTE161
Silicon NPN Transistor
VHF–UHF Amplifier, Mixer/Osc

Features:

- High Current Gain–Bandwidth Product: f_T = 600MHz (Min) @ f = 100MHz
- Low Output Capacitance: C_{ob} = 1.7pF (Max) @ V_{CB} = 10V

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CES} 45V

Collector–Base Voltage, V_{CBO} 45V

Emitter–Base Voltage, V_{EBO} 3V

Continuous Collector Current, I_C 50mA

Total Device Dissipation (T_A = +25°C), P_D 200mW
Derate Above 25°C . . . . . 1.14mW/°C

Total Device Dissipation (T_C = +25°C), P_D 300mW
Derate Above 25°C . . . . . 1.71mW/°C

Operating Junction Temperature Range, T_J . . . . . –65° to +200°C

Storage Temperature Range, T_{stg} . . . . . –65° to +200°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 1.0μA, I_E = 0	30	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	3.0	–	–	V
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 3mA, I_B = 0	15	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 15V, I_E = 0	–	–	0.01	μA
		V_{CB} = 15V, I_E = 0, T_A = +150°C	–	–	1.0	μA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	I_C = 3mA, V_{CE} = 1V	20	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	0.4	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	1.0	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 10mA, V_{CE} = 10V, f = 100MHz, Note 1	600	–	–	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 140kHz	–	–	1.7	pF
		V_{CB} = 0, I_E = 0, f = 140kHz	–	–	3.0	pF
Input Capacitance	C_{ibo}	V_{EB} = 0.5V, I_C = 0, f = 140kHz	–	–	2.0	pF
Noise Figure	NF	I_C = 1mA, V_{CE} = 6V, R_G = 400Ω, f = 60MHz	–	–	6.0	dB
Functional Test						
Amplifier Power Gain	G_{pe}	V_{CB} = 12V, I_C = 6mA, f = 200MHz	15	–	–	dB
Power Output	P_o	V_{CB} = 15V, I_C = 8mA, f = 500MHz	30	–	–	mW
Collector Efficiency	η	V_{CB} = 15V, I_C = 8mA, f = 500MHz	25	–	–	%

Note 1. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.