ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

NTE63
Silicon NPN Transistor
High Gain, Low Noise Amp

Description:

The NTE63 is a silicon NPN high frequency transistor designed primarily for use in high–gain, low noise tuned and wiseband small–signal amplifiers and applications requiring fast switching times.

Features:

- High Current Gain–Bandwidth Product: f_T = 5GHz Typ @ f = 1GHz
- High Power Gain: G_{pe} = 12.5dB Min @ f = 1GHz

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 12V
Collector–Base Voltage, V_{CBO} 20V
Emitter–Base Voltage, V_{EBO} 2V
Continuous Collector Current, I_C 40mA
Total Device Dissipation (T_L = +50°C), P_D 400mW
Derate Above 50°C . . . . . 4.0mW/°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Lead, R_{thJL} . . . . . 250°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	12	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 0.1mA, I_E = 0	20	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 0.1mA, I_C = 0	2	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 15V, I_E = 0	–	–	50	nA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	I_C = 30mA, V_{CE} = 10V	30	–	200	
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 30mA, V_{CE} = 10V, f = 1GHz	–	5.0	–	GHz
Collector–Base Capacitance	C_{cb}	V_{CB} = 10V, I_E = 0, f = 1MHz	–	0.6	1.0	pF
Functional Tests						
Noise Figure	NF_{MIN}	I_C = 5mA, V_{CE} = 10V, f = 1GHz	–	2.5	–	dB
		I_C = 5mA, V_{CE} = 10V, f = 2GHz	–	4.0	–	dB
Power Gain at Optimum Noise Figure	G_{NF}	I_C = 5mA, V_{CE} = 10V, f = 1GHz	–	10	–	dB
		I_C = 5mA, V_{CE} = 10V, f = 2GHz	–	6	–	dB
Maximum Available Power Gain (Note 1)	G_{max}	I_C = 30mA, V_{CE} = 10V, f = 1GHz	–	12.5	–	dB
		I_C = 30mA, V_{CE} = 10V, f = 2GHz	–	7.5	–	dB

Note1. $G_{max} = |S_{21}|^2 / (I - |S_{11}|^2)(I - |S_{22}|^2)$