

NTE316 Silicon NPN Transistor High Gain, Low Noise Amp

Features:

- High Current Gain–Bandwidth Product
- Low Noise Figure
- High Power Gain

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CE0}	15V
Collector–Base Voltage, V_{CBO}	30V
Emitter–Base Voltage, V_{EBO}	3V
Continuous Collector Current, I_C	50mA
Total Continuous Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	200mW
Derate Above 25°C	1.14mW/ $^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 5\text{mA}, I_B = 0$	15	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 0.1\text{mA}, I_E = 0$	30	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 0.1\text{mA}, I_C = 0$	3.5	–	–	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 5\text{V}, I_E = 0$	–	–	10	nA
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	25	–	250	
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	1400	–	–	MHz
Collector–Base Capacitance	C_{cb}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{kHz}$	–	0.8	1.0	pF
Small–Signal Current Gain	h_{fe}	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 1\text{kHz}$	25	–	250	
Collector–Base Time Constant	$r_b \cdot C_c$	$V_{CE} = 5\text{V}, I_E = 2\text{mA}, f = 31.8\text{MHz}$	2	–	12	ps
Noise Figure	NF	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_S = 50\Omega, f = 450\text{MHz}$	–	–	4.5	dB
Functional Test						
Common–Emitter Amplifier Power Gain	G_{pe}	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 450\text{MHz}$	15	–	–	dB

