

## 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 $25^\circ\text{C}$ .....	1.14mW/ $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
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
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$	25	–	250	
<b>Dynamic Characteristics</b>						
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	$r_b 'C_c$	$V_{CE} = 5\text{V}, I_E = 2\text{mA}, f = 31.8\text{MHz}$	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
<b>Functional Test</b>						
Common–Emitter Amplifier Power Gain	$G_{pe}$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}, f = 450\text{MHz}$	15	–	–	dB

