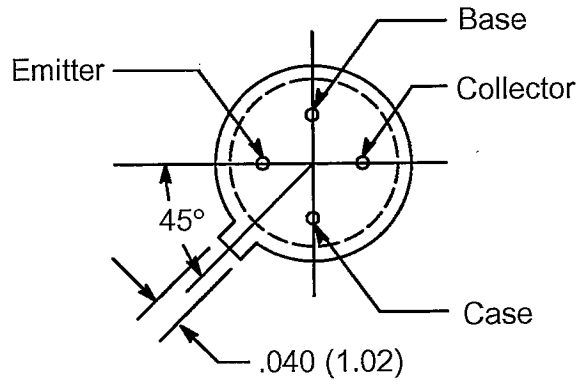
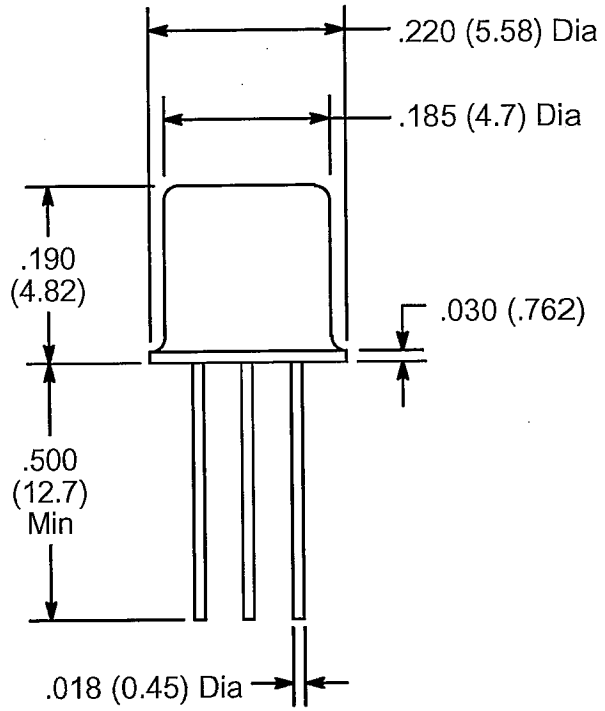
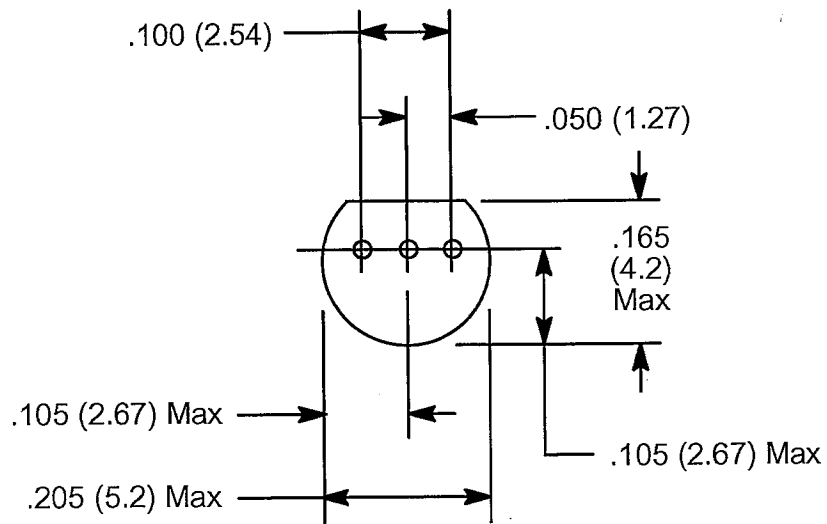
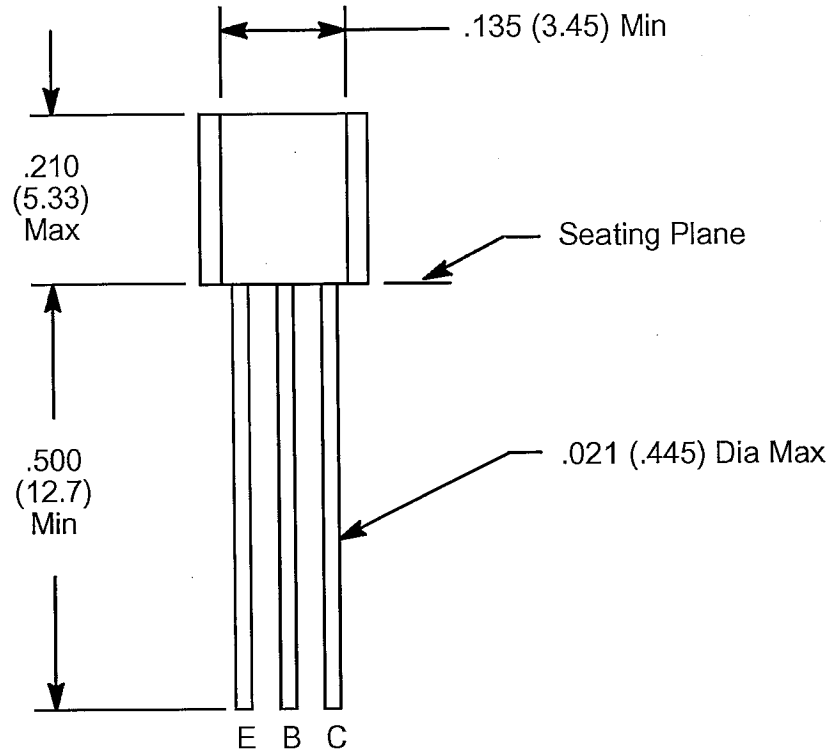


Q1 NTE316



Q2, 5, 6, 7, 8, 9, 10, 11

NTE123AP

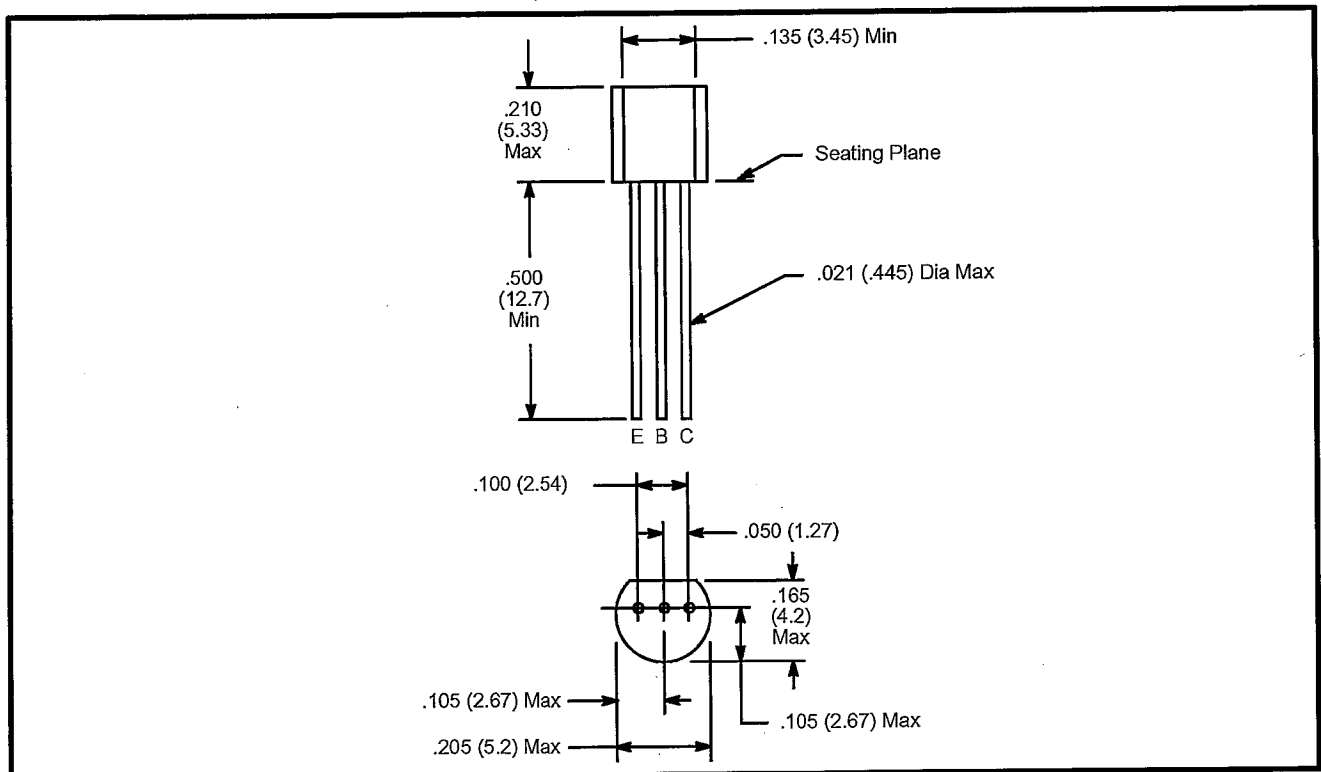


Q3 NTE108

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	$I_C = 3\text{mA}, V_{CE} = 1\text{V}, \text{Note 2}$	20	—	—	
		$I_C = 8\text{mA}, V_{CE} = 10\text{V}, \text{Note 2}$	20	—	200	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	—	—	0.4	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	—	—	1.0	V
Small-Signal Characteristics						
Current Gain-Bandwidth Product	f_T	$I_C = 4\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}, \text{Note 2}$	600	—	—	MHz
Output Capacitance	C_{obo}	$V_{CB} = 0\text{V}, I_E = 0, f = 140\text{kHz}$	—	—	3.0	pF
		$V_{CB} = 10\text{V}, I_E = 0, f = 140\text{kHz}$	—	—	1.7	pF
Input Capacitance	C_{ibo}	$V_{EB} = 0.5\text{V}, I_C = 0, f = 140\text{kHz}$	—	—	2.0	pF
Noise Figure	NF	$I_C = 1\text{mA}, V_{CE} = 6\text{V}, R_S = 400\Omega, f = 60\text{MHz}$	—	—	6	dB
Functional Test						
Common-Emitter Amplifier Power Gain	G_{pe}	$I_C = 6\text{mA}, V_{CB} = 12\text{V}, f = 200\text{MHz} (G_{fd} + G_{re} < -20\text{dB})$	15	—	—	dB
Power Output	P_{out}	$I_C = 8\text{mA}, V_{CB} = 15\text{V}, f = 500\text{MHz}$	30	—	—	mW
Oscillator Collector Efficiency	η	$I_C = 8\text{mA}, V_{CB} = 15\text{V}, P_{out} = 30\text{mW}, f = 500\text{MHz}$	25	—	—	%

Note 2. Pulse Test: Pulse Width $< 300\mu\text{s}$, Duty Cycle $< 1\%$.



Q4 NTE161

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

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

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

