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## NTE107 Silicon NPN Transistor UHF Oscillator for Tuner

**Description:**

The NTE107 is a silicon NPN planar epitaxial transistor in a TO92 type package designed specifically for high frequency applications. This device is suitable for use as an oscillator in UHF television tuners.

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector–Base Voltage, $V_{CBO}$ .....	30V
Collector–Emitter Voltage, $V_{CEO}$ .....	12V
Emitter–Base Voltage, $V_{EBO}$ .....	3V
Collector Current, $I_C$ .....	25mA
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_T$ .....	200mW
Derate above $+25^\circ\text{C}$ .....	2.67mW/ $^\circ\text{C}$
Operating Junction Temperature, $T_J$ .....	$+100^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+125^\circ\text{C}$
Lead temperature (During Soldering, 1/16" $\pm$ 1/32" from case, 10sec), $T_L$ .....	$+260^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$	30	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_{CEO} = 3\text{mA}$ , Note 1	12	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$	3	–	–	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 15\text{V}$ , $I_E = 0$	–	–	0.5	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 2\text{V}$ , $I_C = 0$	–	–	0.5	$\mu\text{A}$
Forward Current Transfer Ratio	$h_{FE}$	$V_{CE} = 10\text{V}$ , $I_C = 8\text{mA}$	20	75	–	
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}$ , $I_B = 1\text{mA}$	–	–	0.6	V

Note 1. Pulse test: Pulse Width =  $1\mu\text{s}$ , Duty Cycle = 1%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 5\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	700	–	2100	MHz
Output Capacitance	$C_{ob}$	$V_{CE} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	0.8	–	1.5	pF
Noise Figure	NF	$I_C = 1\text{mA}, V_{CB} = 6\text{V}, f = 60\text{MHz}, R_G = 400\Omega$	–	4.0	6.5	dB

