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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° 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
Static Characteristics						
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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}$, $I_C = 0$	–	–	0.5	μA
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
Dynamic Characteristics						
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

