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NTE76
Silicon NPN Transistor
Broadband CATV Amplifier

Description:

The NTE76 is an NPN transistor in a TO117 type case designed to be utilized in broadband linear amplifier circuitry such as CATV trunk, bridger, and line extender amplifiers.

Features:

- High Gain–Bandwidth Product: f_T = 1.5GHz

- Low Intermodulation, Low Cross–Modulation Distortion: X–MOD = −50dB

- Low Noise Figure: NF = 2.7dB

- High Power Gain: G_{VE} = 10dB

Absolute Maximum Ratings: (T_C = +25°C)

Collector–Base Voltage, V_{CBO} 50V
Collector–Emitter Voltage, V_{CEO} 30V
Emitter–Base Voltage, V_{EBO} 5V
Maximum Collector Current, I_C 400mA
Total Device Dissipation (T_A = +25°C), P_{tot} 5W
Junction Temperature, T_J . . . . +200°C
Storage Temperature Range, T_{stg} . . . . −65° to +150°C
Thermal Resistance, Junction to Case, $R_{\Theta JC}$ . . . . +35°C/W

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 5mA, I_B = 0, Note 1	30	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 0.1mA, I_E = 0	50	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 0.1mA, I_C = 0	5	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} =, 20V, I_B = 0	–	–	0.1	mA

Note 1. Pulsed through 25mH Inductor.

Electrical Characteristics (Cont'd): (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	V_{CE} = 20V, I_C = 70mA	30	–	300	
Dynamic Characteristics						
Collector Output Capacitance	C_{ob}	V_{CB} = 30V, I_E = 0, f = 1MHz	–	2.6	4.0	pF
Collector Input Capacitance	C_{ib}	V_{EB} = 0.5V, I_C = 0, f = 1MHz	–	8.0	10	pF
Functional Test						
Noise Figure Narrow Band	NF_{NB}	V_{CE} = 10V, I_C = 10mA, f = 200MHz	–	2.7	–	dB
Broad Band	NF_{BB}	V_{CE} = 22V, I_C = 70mA, f = 216MHz	–	7.5	9.0	dB
Power Gain at Optimum Noise Figure	G_{VE}	V_{CE} = 22V, I_C = 70mA, f = 260MHz	10	11	–	dB
Cross–Modulation	X–MOD	V_{CE} = 22V, I_C = 70mA, P_O = +50dBmV, Note 2	–	–53	–50	dB
Second Order Distortion	2nd O	V_{CE} = 22V, I_C = 70mA, P_O = +50dBmV, Note 3	–	–55	–50	dB

Note 2. 12 Channel Flat –– NCTA Channel 2 through 12 100% Mod (Square wave) Channel 13CW

Note 3. Channel 2 and Channel G Intermod Product on Channel 13