NTE ELECTRONICS, INC.
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NTE278
Silicon NPN Transistor
Broadband RF Amp

Description:

The NTE278 is a silicon NPN transistor in a TO39 type package designed specifically for broadband applications requiring good linearity. Usable as a high frequency current mode switch to 200mA.

Features:

- Low Noise Figure: NF = 3.0dB Typ @ f = 200MHz
- High Current–Gain Bandwidth Product: f_T = 1200MHz Min @ I_C = 50mA

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 20V
Collector–Base Voltage, V_{CBO} 40V
Emitter–Base Voltage, V_{EBO} 3V
Continuous Collector Current, I_C 400mA
Continuous Base Current, I_B 400mA
Total Device Dissipation (T_C = +75°C, Note 1), P_D 2.5W
Derate Above 25°C . . . . . 20mW/°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C

Note 1. Total Device Dissipation at T_A = +25°C is 1 Watt.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 5mA, I_B = 0	20	–	–	V
	$V_{CER(sus)}$	I_C = 5mA, R_{BE} = 10Ω, Note 2	40	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 15V, I_B = 0	–	–	20	µA
	I_{CEX}	V_{CE} = 15V, V_{BE} = –1.5V, T_C = +150°C	–	–	5	mA
		V_{CE} = 35V, V_{BE} = –1.5V	–	–	5	mA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 3V, I_C = 0	–	–	100	µA

Note 2. Pulsed through a 25mH inductor; 50% Duty Cycle.

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}	I_C = 360mA, V_{CE} = 5V	5	–	–	
		I_C = 50mA, V_{CE} = 15V	40	–	120	
Dynamic Characteristics						
Current–Gain Bandwidth Product	f_T	I_C = 50mA, V_{CE} = 15V, f = 200MHz	1200	–	–	MHz
Collector–Base Capacitance	C_{cb}	V_{CB} = 15V, I_E = 0, f = 1MHz	–	1.8	3.5	pF
Noise Figure	NF	I_C = 10mA, V_{CE} = 15V, f = 200MHz	–	3	–	dB
Functional Test						
Common–Emitter Amplifier Voltage Gain	G_{ve}	I_C = 50mA, V_{CC} = 15V, f = 50 to 216MHz	11	–	–	dB
Power Input	P_{in}	I_C = 50mA, V_{CC} = 15V, R_S = 50Ω, P_{out} = 1.26mW, f = 200MHz	–	–	0.1	mW