

NTE486 Silicon NPN Transistor RF High Frequency Amplifier

Description:

The NTE486 is a silicon NPN high frequency RF transistor in a TO39 type package designed for use in 12.5V UHF large-signal applications required in industrial equipment.

Features:

- Specified 12.5V, 470MHz Characteristics:
Output Power = 0.75W
Minimum Gain = 8dB
Efficiency = 50%
- S Parameter Data from 100MHz to 1GHz

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	20V
Collector-Base Voltage, V_{CBO}	35V
Emitter-Base Voltage, V_{EBO}	4V
Continuous Collector Current, I_C	150mA
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	2.5W
Derate Above 25°C	14.3mW/ $^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 5\text{mA}$, $I_B = 0$	20	—	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	35	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	4	—	—	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 15\text{V}$, $I_B = 0$	—	—	10	μA
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}$, $I_C = 50\text{mA}$	20	60	150	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 50\text{mA}$, $I_B = 5\text{mA}$	—	—	0.5	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 100\text{mA}, f = 200\text{MHz}$	1800	2000	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 12.5\text{V}, I_E = 0, f = 1\text{MHz}$	–	3.5	4.0	pF
Functional Tests						
Common–Emitter Amplifier Power Gain	G_{PE}	$V_{CC} = 12.5\text{V}, P_O = 0.75\text{W}, f = 470\text{MHz}$	8.0	8.5	–	dB
Collector Efficiency	η		50	70	–	%
Series Equivalent Input Impedance	Z_{in}		–	$14+j4.0$	–	Ω
Series Equivalent Output Impedance	Z_{out}		–	$28-j38$	–	Ω

