

## 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 $25^\circ\text{C}$ .....	14.3mW/ $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
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	$\mu\text{A}$
<b>ON Characteristics</b>						
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
<b>Dynamic Characteristics</b>						
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
<b>Functional Tests</b>						
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	$\eta$		50	70	–	%
Series Equivalent Input Impedance	$Z_{in}$		–	$14+j4.0$	–	$\Omega$
Series Equivalent Output Impedance	$Z_{out}$		–	$28-j38$	–	$\Omega$

