ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

NTE366
Silicon NPN Transistor
RF Power Output
P_O = 25W @ 512MHz

Description:

The NTE366 is a silicon NPN transistor designed for 12.5 Volt UHF large–signal amplifier applications in industrial and commercial FM equipment operating to 512MHz.

Features:

- Specified 12.5 Volt, 470MHz Characteristic:
  Output Power = 25 Watts
  Minimum Gain = 6.2dB
  Efficiency = 60%
- Characterized with Series Equivalent Large–Signal Impedance Parameters
- Built–In Matching Network for Broadband Operation
- Tested for Load Mismatch Stress at all Phase Angles with 20:1 VSWR @ 16–volt High Line and Overdrive

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 16V
Collector–Base Voltage, V_{CBO} 36V
Emitter–Base Voltage, V_{EBO} 4V
Collector Current–Continuous, I_C 4A
Total Device Dissipation (T_C = +25°C), P_D 103W
Derate above 25°C . . . . . 590mW/°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.7°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 = 20mA, I_B = 0	16	–	–	V
	$V_{(BR)CES}$	I_C = 20mA, V_{BE} = 0	36	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 5mA, I_C = 0	4	–	–	V
Collector Cutoff Current	I_{CES}	V_{CE} = 15V, V_{BE} = 0, T_C = +25°C	–	–	10	mA

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} = 5V, I_C = 4A	40	70	100	
Dynamic Characteristics						
Output Capacitance	C_{ob}	V_{CB} = 12.5V, I_E = 0, f = 1MHz	–	90	125	pF
Functional Test						
Common–Emitter Amplifier Power Gain	G_{PE}	P_{OUT} = 25W, V_{CC} = 12.5V, $I_C$max = 3.6A, f = 470MHz	6.2	7.0	–	dB
Input Power	P_{in}	P_{OUT} = 25W, V_{CC} = 12.5V, f = 470MHz	–	5	6	W
Collector Efficiency	η		55	60	–	%
Output Mismatch Stress	ψ	V_{CC} = 16V, P_{in} = Note 1, f = 470MHz, VSWR = 20:1, All Phase Angles	No Degradation in Output Power			
Series Equivalent Input Impedance	Z_{in}	P_{OUT} = 25W, V_{CC} = 12.5V, f = 470MHz	–1.2 + j3.3 –			Ω
Series Equivalent Output Impedance	Z_{OL}		–1.9 + j2.1 –			Ω

Note 1. P_{in} = 150% of Drive Requirement for 25W output @ 12.5V.

Note 2. ψ = Mismatch stress factor – the electrical criterion established to verify the device resistance to load mismatch failure. The mismatch stress test is accomplished in a standard test fixture terminated in a 20:1 minimum load mismatch at all phase angles.