



NTE368 Silicon NPN Transistor RF Power Output $P_O = 60W @ 512MHz$

Description:

The NTE368 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 = 60 Watts
Minimum Gain = 4.4dB
Efficiency = 55%
- 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	11A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	175W
Derate above $25^\circ C$	1.0W/ $^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.0 $^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50mA, I_B = 0$	16	—	—	V
	$V_{(BR)CES}$	$I_C = 50mA, V_{BE} = 0$	36	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 5mA, I_C = 0$	4	—	—	V
Collector Cutoff Current	I_{CES}	$V_{CE} = 15V, V_{BE} = 0, T_C = +25^\circ C$	—	—	15	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 6A$	20	70	150	
Dynamic Characteristics						
Output Capacitance	C_{ob}	$V_{CB} = 12.5V, I_E = 0, f = 1MHz$	–	130	150	pF
Functional Test						
Common-Emitter Amplifier Power Gain	G_{PE}	$P_{OUT} = 60W, V_{CC} = 12.5V, f = 470MHz$	4.4	5.0	–	dB
Input Power	P_{in}		–	19	22	W
Collector Efficiency	η		55	60	–	%
Output Mismatch Stress	ψ	$V_{CC} = 16V, P_{in} = 26W, f = 470MHz, VSWR = 20:1, \text{All Phase Angles}$	No Degradation in Output Power			

Note 1. 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.

