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NTE367
Silicon NPN Transistor
RF Power Amplifier
P_O = 45W @ 512MHz

Description:

The NTE367 is a silicon NPN RF power transistor in a W65 type package designed for 12.5V UHF large-signal amplifier applications in industrial and commercial FM equipment operating to 512MHz.

Features:

- Specified 12.5V, 470MHz Characteristics:
 Output Power: 45W
 Minimum Gain: 4.8dB
 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 @ 16V High Line and 50% Overdrive

Absolute Maximum Ratings:

Collector-Emitter Voltage, V _{CEO}	16V
Collector-Base Voltage, V _{CBO}	36V
Emitter-Base Voltage, V _{EBO}	4V
Continuous Collector Current, I _C	9A
Total Device Dissipation (T _C = +25°C), P _D	117W
Derate Above 25°C	670mW/°C
Storage Temperature Range, T _{stg}	-65° to +150°C
Thermal Resistance, Junction to Case, R _{θJC}	1.5°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): ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	$I_C = 4\text{A}, V_{CE} = 5\text{V}$	20	70	150	
Dynamic Characteristics						
Output Capacitance	C_{ob}	$V_{CB} = 12.5\text{V}, I_E = 0, f = 1\text{MHz}$	–	90	125	pF
Functional Tests						
Common-Emitter Amplifier Power Gain	G_{pe}	$V_{CC} = 12.5\text{V}, P_O = 45\text{W}, I_C(\text{Max}) = 5.8\text{A}, f = 470\text{MHz}$	4.8	5.4	–	dB
Collector Efficiency	η		55	60	–	%
Input Power	P_{in}	$V_{CC} = 12.5\text{V}, P_O = 45\text{W}, f = 470\text{MHz}$	–	13	15	W
Load Mismatch Stress	ψ	$V_{CC} = 16\text{V}, f = 470\text{MHz}, \text{VSWR} = 20:1, \text{All Phase Angles}, \text{Note 1, Note 2}$	No Degradation in Output Power			
Series Equivalent Input Impedance	Z_{in}	$V_{CC} = 12.5\text{V}, P_O = 45\text{W}, f = 470\text{MHz}$	–	$1.4+j4.0$	–	Ω
Series Equivalent Output Impedance	Z_{OL}		–	$1.2+j2.8$	–	Ω

Note 1. $P_{in} = 150\%$ of Drive Requirement for 45W 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.

