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NTE365 Silicon NPN Transistor RF Power Output $P_O = 15W @ 512MHz$

Description:

The NTE365 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 = 15 Watts
 Minimum Gain = 7.8dB
 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 @ 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	3A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	50W
Derate above $25^\circ C$	250mW/ $^\circ C$
Storage Temperature Range, T_{stg}	-65° to +150°C
Thermal Resistance, Junction-to-Case, R_{thJC}	4.0°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	$V_{(BR)CEO}$	$I_C = 20mA, I_B = 0$	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}	$V_{CE} = 15V, V_{BE} = 0, T_C = +25^\circ C$	-	-	5.0	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}	$V_{CE} = 5V, I_C = 1A$	30	70	150	
Dynamic Characteristics						
Output Capacitance	C_{ob}	$V_{CB} = 12.5V, I_E = 0, f = 1MHz$	-	40	60	pF
Functional Test						
Common-Emitter Amplifier Power Gain	G_{PE}	$P_{OUT} = 15W, V_{CC} = 12.5V, f = 470MHz$	7.8	8.5	-	dB
Collector Efficiency	η	$P_{OUT} = 15W, V_{CC} = 12.5V, f = 470MHz$	55	60	-	%
Output Mismatch Stress	ψ	$V_{CC} = 16V, P_{in} = 3W, f = 470MHz, VSWR = 20:1, \text{All Phase Angles}$	No Degradation in Output Power			

