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NTE338F Silicon NPN Transistor RF Power Amp, Driver

Description:

The NTE338F is a silicon NPN transistor in a W52K type package designed primarily for use as a power linear amplifier from 2 to 30MHz.

Features:

- Specified 12.5V, 30MHz Characteristics:
Output Power = 20W (PEP)
Minimum Gain = 12dB
Efficiency = 45%
- Intermodulation Distortion @ 20W (PEP):
IMD = -30dB Min
- 100% Tested for Load Mismatched at all Phase Angle with 30:1 VSWR

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	20V
Collector-Base Voltage, V_{CBO}	40V
Emitter-Base Voltage, V_{EBO}	4V
Continuous Collector Current, I_C	4A
Withstand Current (t = 5s)	12A
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	80W
Derate Above 25°C	0.46W/ $^\circ\text{C}$
Operating Junction Temperature, T_J	+200 $^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65 $^\circ$ to +150 $^\circ\text{C}$
Thermal Resistance, Junction-to-Case, R_{thJC}	2.2 $^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50\text{mA}$, $I_B = 0$	20	—	—	V
	$V_{(BR)CES}$	$I_C = 50\text{mA}$, $V_{BE} = 0$	40	—	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 50\text{mA}$, $I_E = 0$	40	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\text{mA}$, $I_C = 0$	4	—	—	V
Collector Cutoff Current	I_{CES}	$V_{CE} = 12.5\text{V}$, $V_{BE} = 0$	—	—	5	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}	$I_C = 1\text{A}$, $V_{CE} = 5\text{V}$	10	35	—	
Dynamic Characteristics						
Output Capacitance	C_{ob}	$V_{CB} = 12.5\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	—	15	200	pF
Functional Tests ($V_{CC} = 12.5\text{V}$ unless otherwise specified)						
Common-Emitter Amplifier Power Gain	G_{PE}	$P_{out} = 20\text{W (PEP)}$, $I_{Cmax} = 1.75\text{A}$, $I_{CQ} = 25\text{mA}$, $f = 30, 30.001\text{MHz}$	12	15	—	dB
Power Output	P_{out}	$V_{CE} = 12.5\text{V}$, $f = 30\text{MHz}$	20	—	—	W
Collector Efficiency	η	$P_{out} = 20\text{W (PEP)}$, $I_{Cmax} = 1.75\text{A}$, $I_{CQ} = 25\text{mA}$, $f = 30, 30.001\text{MHz}$	45	—	—	%
Intermodulation Distortion	IMD	$V_{CE} = 12.5\text{V}$, $P_{out} = 20\text{W (PEP)}$, $I_{Cmax} = 1.75\text{A}$, $I_{CQ} = 25\text{mA}$, $f = 30, 30.001\text{MHz}$	—	-35	-30	dB
Load Mismatch		$P_{out} = 20\text{W (PEP)}$, $I_{Cmax} = 1.75\text{A}$, $I_{CQ} = 25\text{mA}$, $f = 30, 30.001\text{MHz}$	> 30:1 All Phase Angles			

