



ELECTRONICS, INC.

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## NTE470 Silicon NPN Transistor RF Power Output

### Description:

The NTE470 is a silicon NPN RF transistor in a W52 type package designed primarily for application as a high-power linear amplifier from 2.0 to 30MHz.

### Features:

- Specified 12.5V, 30MHz Characteristics:  
Output Power = 100W (PEP)  
Minimum Gain = 10dB  
Efficiency = 40%
- Intermodulation Distortion @ 100W (PEP): IMD = -30dB Min
- 100% Tested for Load Mismatch at all Phase Angles with 30:1 VSWR

### Absolute Maximum Ratings:

Collector-Emitter Voltage, $V_{CEO}$	20V
Collector-Base Voltage, $V_{CBO}$	45V
Emitter-Base Voltage, $V_{EBO}$	3V
Continuous Collector Current, $I_C$	20A
Withstand Current (10s)	30A
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$	290W
Derate Above $25^\circ\text{C}$	1.66W/ $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$	-65° to +150°C
Thermal Resistance, Junction-to-Case, $R_{thJC}$	0.6°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50\text{mA}, I_B = 0$	20	-	-	V
	$V_{(BR)CES}$	$I_C = 200\text{mA}, V_{BE} = 0$	45	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 200\text{mA}, I_E = 0$	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\text{mA}, I_C = 0$	3	-	-	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 16\text{V}, V_{BE} = 0, T_C = +25^\circ\text{C}$	-	-	10	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$I_C = 5A, V_{CE} = 5V$	10	30	—	
<b>Dynamic Characteristics</b>						
Output Capacitance	$C_{ob}$	$V_{CB} = 12.5V, I_E = 0, f = 1MHz$	—	650	800	pF
<b>Functional Tests</b>						
Common-Emitter Amplifier Power Gain	$G_{PE}$	$V_{CC} = 12.5V, P_{out} = 100W,$ $I_C(max) = 10A, I_{CQ} = 150mA,$ $f = 30, 30.001MHz$	10	12	—	dB
Collector Efficiency	$\eta$		40	—	—	%
Intermodulation Distortion (Note 1)	IMD		—	-33	-30	dB

Note 1. To proposed EIA method of measurement. Reference peak envelope power.

