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NTE354 Silicon NPN Transistor RF Power Output $P_O = 15W @ 175MHz$

Description:

The NTE354 is designed for 12.5 Volt VHF large-signal amplifier applications required in military and industrial equipment operating to 250MHz.

Features:

- Balanced Emitter Construction with Isothermal Resistor Design to Provide the Designer with the Optimum in Transistor Ruggedness.
- Low lead Inductance Stripline Packaging for Easier Design and Increased Broadband Capabilities
- Flange Package for Easy Mounting and Better Thermal Conductivity to Heat Sink.
- Exceptional Power Output Stability versus Temperature.

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	18V
Collector-Base Voltage, V_{CBO}	36V
Emitter-Base Voltage, V_{EBO}	4V
Collector Current-Continuous, I_C	2.5A
Total Device Dissipation ($T_C = +25^\circ C$, Note 1), P_D	20W
Derate Above $25^\circ C$	114mW/ $^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$

Note 1. This device is designed for RF operation. The total device dissipation rating applies only when the device is operated as an RF amplifier.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 20mA, I_B = 0$	18	-	-	V
	$V_{(BR)CES}$	$I_C = 10mA, V_{BE} = 0$	36	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 2mA, I_C = 0$	4	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 15V, I_E = 0$	-	-	250	μA
	I_{CES}	$V_{CE} = 15V, V_{BE} = 0, T_C = +55^\circ C$	-	-	500	μA

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}	$V_{CE} = 5V, I_C = 500mA$	15	-	-	
Dynamic Characteristics						
Output Capacitance	C_{ob}	$V_{CB} = 12.5V, I_E = 0, f = 100kHz$	-	90	120	pF
Functional Test						
Common-Emitter Amplifier Power Gain	G_{PE}	$P_{OUT} = 15W, V_{CC} = 12.5V, I_{Cmax} = 1.9A, f = 175MHz$	6.3	-	-	dB
Collector Efficiency	η	$P_{OUT} = 15W, V_{CC} = 12.5V, f = 175MHz$	55	-	-	%

