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NTE54 (NPN) & NTE55 (PNP) Silicon Complementary Transistors High Frequency Driver for Audio Amplifier

Description:

The NTE54 (NPN) and NTE55 (PNP) are silicon complementary transistors in a TO220 type case designed for use as a high frequency driver in audio amplifier applications.

Features:

- DC Current Gain Specified to 4A:
 $h_{FE} = 40 \text{ Min @ } I_C = 3A$
 $= 20 \text{ Min @ } I_C = 4A$
- Collector–Emitter Sustaining Voltage: $V_{CEO(sus)} = 150V \text{ Min}$
- High Current Gain–Bandwidth Product: $f_T = 30MHz \text{ Min @ } I_C = 500mA$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	150V
Collector–Base Voltage, V_{CBO}	150V
Emitter–Base Voltage, V_{EB})	5V
Collector Current, I_C	
Continuous	8A
Peak	16A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	50W
Derate Above $25^\circ C$	0.04W/ $^\circ C$
Total Power Dissipation ($T_A = +25^\circ C$), P_D	2W
Derate Above $25^\circ C$	0.016W/ $^\circ C$
Operating Junction Temperature, T_J	-65° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Thermal Resistance, Junction–to–Case, R_{thJC}	$+2.5^\circ C/W$
Thermal Resistance, Junction–to–Ambient, R_{thJA}	$+62.5^\circ C/W$

Note 1. Matched complementary pairs are available upon request (NTE55MCP). Matched complementary pairs have their gain specification (h_{FE}) matched to within 10% of each other.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CE(sus)}$	$I_C = 10\text{mA}, I_B = 0$, Note 2	150	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 150\text{V}, I_B = 0$	–	–	0.1	mA
	I_{CBO}	$V_{CE} = 150\text{V}, I_E = 0$	–	–	10	μA
Emitter Cutoff Current	I_{EBO}	$V_{CE} = 150\text{V}, I_C = 0$	–	–	10	μA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$V_{CE} = 2\text{V}, I_C = 0.1\text{A}$	40	–	–	
		$V_{CE} = 2\text{V}, I_C = 2\text{A}$	40	–	–	
		$V_{CE} = 2\text{V}, I_C = 0.1\text{A}$	40	–	–	
		$V_{CE} = 2\text{V}, I_C = 0.1\text{A}$	20	–	–	
DC Current Gain Linearity	h_{FE}	V_{CE} from 2V to 20V, I_C from 0.1A to 3A	–	2	–	
		NPN to PNP	–	3	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 0.1\text{A}$	–	–	0.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 2\text{V}, I_C = 1\text{A}$	–	–	1	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_t	$V_{CE} = 10\text{V}, I_C = 500\text{mA},$ $f_{test} = 10\text{MHz}$, Note 3	30	–	–	MHz

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Note 3. $f_T = |h_{fe}| \cdot f_{test}$

