

## 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, $T_J$ .....	$-65^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ 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
<b>OFF Characteristics</b>						
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	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{CE} = 150\text{V}, I_C = 0$	–	–	10	$\mu\text{A}$
<b>ON Characteristics (Note 2)</b>						
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
<b>Dynamic Characteristics</b>						
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.  $f_T = |h_{fe}| \cdot f_{test}$

