

## NTE241 (NPN) & NTE242 (PNP) Silicon Complementary Transistors Audio Power Amplifier, Switch

**Description:**

The NTE241 (NPN) and NTE242 (PNP) are silicon complementary transistors in a TO220 type package designed for use in power amplifier and switching circuits.

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	80V
Collector–Base Voltage, $V_{CB}$ .....	80V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Collector Current, $I_C$ .....	4A
Base Current, $I_B$ .....	1A
Total Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	60W
Derate Above $25^\circ\text{C}$ .....	320mW/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction–to–Case, $R_{\theta JC}$ .....	3.12 $^\circ\text{C}/\text{W}$

**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 Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100\text{mA}$ , $I_B = 0$ , Note 1	80	–	–	V
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 80\text{V}$ , $I_B = 0$	–	–	1.0	mA
		$V_{CE} = 80\text{V}$ , $V_{EB(off)} = 1.5\text{V}$	–	–	0.1	mA
	$V_{CE} = 80\text{V}$ , $V_{EB(off)} = 1.5\text{V}$ , $T_C = +125^\circ\text{C}$	–	–	2.0	mA	
	$I_{CBO}$	$V_{CB} = 80\text{V}$ , $I_E = 0$	–	–	0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5\text{V}$ , $I_C = 0$	–	–	1.0	mA

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$I_C = 1.5\text{A}, V_{CE} = 2\text{V}$	20	-	80	
		$I_C = 4.0\text{A}, V_{CE} = 2\text{V}$	7	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5\text{A}, I_B = 150\text{mA}$	-	-	0.6	V
		$I_C = 4.0\text{A}, I_B = 1\text{A}$	-	-	1.4	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 1.5\text{A}, V_{CE} = 2\text{V}$	-	-	1.2	V
<b>Dynamic Characteristics</b>						
Small-Signal Current Gain	$h_{fe}$	$I_C = 100\text{mA}, V_{CE} = 2\text{V}, f = 1\text{kHz}$	25	-	-	
Current-Gain Bandwidth Product	$f_T$	$I_C = 1\text{A}, V_{CE} = 4\text{V}, f = 1\text{MHz}$	2.5	-	-	MHz

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

