

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°C	320mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
Thermal Resistance, Junction–to–Case, $R_{\theta JC}$	3.12 $^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
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
	I_{CEX}	$V_{CE} = 80\text{V}$, $V_{EB(off)} = 1.5\text{V}$	–	–	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
ON Characteristics (Note 1)						
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
Dynamic Characteristics						
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 $\leq 2\%$.

