

## NTE184 (NPN) & NTE185 (PNP) Silicon Complementary Transistors Audio Power Amp, Switch

### **Description:**

The NTE184 (NPN) and NTE185 (PNP) are silicon complementary transistors in a TO126 plastic package designed for use in power amplifier and switching circuits.

### **Features:**

- Excellent Safe Area Limits

### **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 ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	40W
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, $R_{thJC}$ .....	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	$V_{CEO(sus)}$	$I_C = 0.1\text{A}$ , $I_B = 0$ , 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
	$V_{CE} = 80\text{V}$ , $V_{EB(off)} = 1.5\text{V}$ , $T_C = +150^\circ\text{C}$	–	–	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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics</b> (Note 1)						
DC Current Gain	$h_{FE}$	$I_C = 1.5\text{A}, V_{CE} = 2\text{V}$	20	–	80	
		$I_C = 4\text{A}, V_{CE} = 2\text{V}$	7	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5\text{A}, I_B = 0.15\text{A}$	–	–	0.6	V
		$I_C = 4\text{A}, I_B = 1\text{A}$	–	–	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>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 1\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2.0	–	–	MHz

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

Note 2. NTE184MP is a matched pair of NTE184 with their DC Current Gain ( $h_{FE}$ ) matched to within 10% of each other.

Note 3. NTE185MCP is a matched complementary pair containing 1 each of NTE184 (NPN) and NTE185 (PNP).

