



## 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, $R_{thJC}$             | $3.12^\circ\text{C/W}$              |

### 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   |
|                                      | $I_{CEX}$      | $V_{CE} = 80\text{V}$ , $V_{EB(off)} = 1.5\text{V}$                              | –   | –   | 0.1 | mA   |
|                                      |                | $V_{CE} = 80\text{V}$ , $V_{EB(off)} = 1.5\text{V}$ , $T_C = +150^\circ\text{C}$ | –   | –   | 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).

