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# NTE253 (NPN) & NTE254 (PNP)
# Silicon Complementary Transistors
# Darlington Power Amplifier

**Description:**

The NTE253 (NPN) and NTE254 (PNP) are silicon complementary Darlington transistors in a TO126 type case designed for general–purpose amplifier and low–speed switching applications.

**Features:**

- High DC Current Gain: $h_{FE}$ = 2000 (Typ) @ $I_C$ = 2A
- Monolithic Construction with Built–In Base–Emitter Resistors to Limit Leakage Multiplication

**Absolute Maximum Ratings:** ($T_A$ = +25°C unless otherwise specified)

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, $I_B$ . . . . . 100mA
Total Power Dissipation ($T_C$ = +25°C), $P_D$ . . . . . 40W
Derate Above 25°C . . . . . 0.32W/°C
Operating Junction Temperature Range, $T_J$ . . . . . –65° to +150°C
Storage Temperature Range, $T_{stg}$ . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Case, $R_{thJC}$ . . . . . 3.23°C/W

**Electrical Characteristics:** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF Characteristics** | | | | | | |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$ = 50mA, $I_B$ = 0, Note 1 | 80 | – | – | V |
| Collector Cutoff Current | $I_{CEO}$ | $V_{CE}$ = 80V, $I_B$ = 0 | – | – | 100 | μA |
| | $I_{CBO}$ | $V_{CE}$ = 80V, $I_E$ = 0 | – | – | 100 | μA |
| | | $V_{CE}$ = 80V, $I_E$ = 0, $T_C$ = +100°C | – | – | 500 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{BE}$ = 5V, $I_C$ = 0 | – | – | 2.0 | mA |

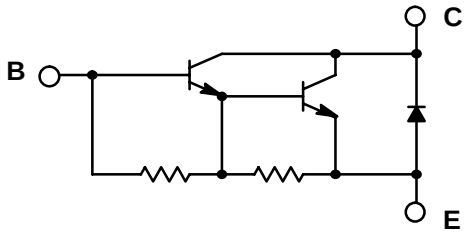
**Electrical Characteristics (Cont'd):** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **ON Characteristics** (Note 1) | | | | | | |
| DC Current Gain<br>NTE253 | $h_{FE}$ | $V_{CE}$ = 3V, $I_C$ = 1.5A | 750 | 2000 | – | |
| NTE254 | | $V_{CE}$ = 3V, $I_C$ = 2A | 750 | 2000 | – | |
| NTE253 & NTE253 | | $V_{CE}$ = 3V, $I_C$ = 4A | 100 | – | – | |
| Collector–Emitter Saturation Voltage<br>NTE253 | $V_{CE(sat)}$ | $I_C$ = 1.5A, $I_B$ = 30mA | – | – | 2.5 | V |
| NTE254 | | $I_C$ = 2.0A, $I_B$ = 40mA | – | – | 2.8 | V |
| NTE253 & NTE254 | | $I_C$ = 4.0A, $I_B$ = 40mA | – | – | 3.0 | V |
| Base–Emitter ON Voltage<br>NTE253 | $V_{BE(on)}$ | $V_{CE}$ = 3V, $I_C$ = 1.5A | – | – | 2.5 | V |
| NTE254 | | $V_{CE}$ = 3V, $I_C$ = 2.0A | – | – | 2.5 | V |
| NTE253 & NTE254 | | $V_{CE}$ = 3V, $I_C$ = 4.0A | – | – | 3.0 | V |
| **Dynamic Characteristics** | | | | | | |
| Small–Signal Current Gain | $\|h_{fe}\|$ | $V_{CE}$ = 3V, $I_C$ = 1.5A, f = 1MHz | 1.0 | – | – | |

Note 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Note 2. NTE253MCP is a matched complementary pair containing 1 each of NTE253 (NPN) and NTE254 (PNP).

**NTE253**




**NTE254**