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NTE245 (NPN) & NTE246 (PNP) Silicon Complementary Transistors Darlington Power Amplifier

Description:

The NTE245 (NPN) and NTE246 (PNP) are silicon complementary Darlington transistors in a TO3 type case designed for use as output devices in general purpose amplifier applications.

Features:

- High DC Current Gain: $h_{FE} = 4000$ Typ @ $I_C = 5A$
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors

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 | 10A |
| Base Current, I_B | 200mA |
| Total Power Dissipation ($T_C = +25^\circ C$), P_D | 150W |
| Derate Above $25^\circ C$ | 0.857W/ $^\circ C$ |
| Operating Junction Temperature Range, T_J | -55° to $+200^\circ C$ |
| Storage Temperature Range, T_{stg} | -55° to $+200^\circ C$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 1.17 $^\circ C/W$ |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---|-----------------------------------|-----|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector-Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 100mA, I_B = 0$, Note 1 | 80 | - | - | V |
| Collector-Emitter Leakage Current | I_{CEO} | $V_{CE} = 40V, I_B = 0$ | - | - | 1.0 | mA |
| | | $V_{EB} = 80V, R_{BE} = 1k\Omega$ | - | - | 1.0 | mA |
| | $V_{EB} = 80V, R_{BE} = 1k\Omega, T_C = +150^\circ C$ | - | - | 5.0 | mA | |
| Emitter Cutoff Current | I_{EBO} | $V_{BE} = 5V, I_C = 0$ | - | - | 2.0 | mA |

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

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---------------------------------------|------|-----|-----|------|
| ON Characteristics (Note 1) | | | | | | |
| DC Current Gain | h_{FE} | $V_{CE} = 3\text{V}, I_C = 5\text{A}$ | 1000 | — | — | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 5\text{A}, I_B = 20\text{mA}$ | — | — | 2.0 | V |
| | | $I_C = 10\text{A}, I_B = 50\text{mA}$ | — | — | 4.0 | V |
| Base–Emitter Voltage | V_{BE} | $V_{CE} = 3\text{V}, I_C = 5\text{A}$ | — | — | 3.0 | V |

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

