



ELECTRONICS, INC.

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NTE2349 (NPN) & NTE2350 (PNP) Silicon Darlington Transistors High Current, General Purpose

Description:

The NTE2349 (NPN) and NTE2350 (PNP) are silicon complementary Darlington transistors in a TO3 type package designed for use as output devices in general purpose amplifier applications.

Features:

- High DC Current Gain: $h_{FE} = 1000$ (Min) @ $I_C = 25A$
 $h_{FE} = 400$ (Min) @ $I_C = 50A$
- Diode Protection to Rated I_C
- Monolithic Construction ^w/Built-In Base-Emitter Shunt Resistor
- Junction Temperature to +200°C

Absolute Maximum Ratings:

| | |
|--|----------------|
| Collector-Emitter Voltage, V_{CEO} | 120V |
| Collector-Base Voltage, V_{CB} | 120V |
| Emitter-Base Voltage, V_{EB} | 5V |
| Collector Current, I_C | |
| Continuous | 50A |
| Peak | 100A |
| Continuous Base Current, I_B | 2A |
| Total Power Dissipation ($T_C = +25^\circ C$), P_D | 300W |
| Derate Above 25°C @ $T_C = +100^\circ C$ | 1.71W/°C |
| Operating Junction Temperature Range, T_J | -55° to +200°C |
| Storage Temperature Range, T_{stg} | -55° to +200°C |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 0.584°C |
| Lead Temperature (During Soldering, 10sec Max), T_L | +275°C |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------|---------------|--|-----|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 100mA, I_B = 0$ | 120 | - | - | V |
| Collector-Emitter Leakage Current | I_{CER} | $V_{CE} = 120V, R_{BE} = 1k\Omega$ | - | - | 2 | mA |
| | | $V_{CE} = 120V, R_{BE} = 1k\Omega, T_C = +150^\circ C$ | - | - | 10 | mA |
| | I_{CEO} | $V_{CE} = 50V, I_B = 0$ | - | - | 2 | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{BE} = 5V, I_C = 0$ | - | - | 2 | mA |

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} | $I_C = 25\text{A}, V_{CE} = 5\text{V}$ | 1000 | – | 18000 | |
| | | $I_C = 50\text{A}, V_{CE} = 5\text{V}$ | 400 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 25\text{A}, I_B = 250\text{mA}$ | – | – | 2.5 | V |
| | | $I_C = 50\text{A}, I_B = 500\text{mA}$ | – | – | 3.5 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 25\text{A}, I_B = 200\text{mA}$ | – | – | 3.0 | V |
| | | $I_C = 50\text{A}, I_B = 300\text{mA}$ | – | – | 4.5 | V |

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

Schematic Diagram

