



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089
<http://www.nteinc.com>

2N6385 Silicon NPN Transistor Darlington Power Amplifier TO-3 Type Package

Description:

The 2N6385 is a silicon NPN Darlington transistor in a TO-3 type case designed for use in low and medium frequency power applications such as power switching, audio amplifier, hammer driver, and shunt and series regulator.

Features:

- High Gain Darlington Performance
- DC Current Gain: $h_{FE} = 3000$ (Typ) @ $I_C = 5A$

Absolute Maximum Ratings:

| | |
|--|-------------------------------|
| Collector-Emitter Voltage, V_{CEO} | 80V |
| Collector-Base Voltage, V_{CBO} | 80V |
| Emitter-Base Voltage, V_{EBO} | 5V |
| Collector Current, I_C | |
| Continuous | 10A |
| Peak | 15A |
| Base Current, I_B | 250mA |
| Total Power Dissipation ($T_C = +25^\circ C$), P_D | 100W |
| Derate Above $25^\circ C$ | 0.571W/ $^\circ C$ |
| Operating Junction Temperature Range, T_J | -65° to $+200^\circ C$ |
| Storage Temperature Range, T_{stg} | -65° to $+200^\circ C$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 1.75 $^\circ C/W$ |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|--|-----|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector-Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 200mA, I_B = 0$, Note 1 | 80 | - | - | V |
| Collector-Emitter Leakage Current | I_{CEO} | $V_{CE} = 80V, I_B = 0$ | - | - | 1.0 | mA |
| | | $V_{CE} = 80V, V_{BE(off)} = 1.5V$ | - | - | 0.3 | mA |
| | | $V_{CE} = 80V, V_{BE(off)} = 1.5V, T_C = +125^\circ C$ | - | - | 3.0 | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5V, I_C = 0$ | - | - | 10 | 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 | - | 20000 | |
| | | $V_{CE} = 3\text{V}, I_C = 10\text{A}$ | 100 | - | - | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 5\text{A}, I_B = 10\text{mA}$ | - | - | 2.0 | V |
| | | $I_C = 10\text{A}, I_B = 100\text{mA}$ | - | - | 3.0 | V |
| Base-Emitter ON Voltage | $V_{BE(on)}$ | $I_C = 5\text{A}, V_{CE} = 3\text{V}$ | - | - | 2.8 | V |
| | | $I_C = 10\text{A}, V_{CE} = 3\text{V}$ | - | - | 4.5 | V |
| Dynamic Characteristics | | | | | | |
| Small-Signal Current Gain | h_{fe} | $V_{CE} = 5\text{V}, I_C = 1\text{A}, f = 1\text{KHz}$ | 1000 | - | - | |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | - | - | 200 | pF |

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

