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NTE210 (NPN) & NTE211 (PNP) Silicon Complementary Transistors General Purpose Output & Driver

Description:

The NTE210 (NPN) and NTE211 (PNP) are silicon complementary transistors in a TO202 type package designed for general purpose, medium voltage, medium power amplifier and driver applications such as series, shunt and switching regulators, and low and high frequency inverters and converters.

Features:

- TO202 Type Package: 2W Free Air Dissipation @ $T_A = +25^\circ\text{C}$

Absolute Maximum Ratings:

| | |
|--|-------------------------------------|
| Collector–Emitter Voltage, V_{CEO} | 75V |
| Collector–Emitter Voltage, V_{CES} | 90V |
| Emitter–Base Voltage, V_{EBO} | 5V |
| Collector Current, I_C | |
| Continuous | 1A |
| Peak (Note 1) | 2A |
| Total Power Dissipation ($T_A = +25^\circ\text{C}$, Note 2), P_D | 1.67W |
| Derate Above 25°C | 13.3mW/ $^\circ\text{C}$ |
| Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D | 6.25W |
| Derate Above 25°C | 50mW/ $^\circ\text{C}$ |
| Operating Junction Temperature Range, T_J | -55° to $+150^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -55° to $+150^\circ\text{C}$ |
| Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L | $+260^\circ\text{C}$ |
| Maximum Thermal Resistance, Junction–to–Ambient, R_{thJA} | 75 $^\circ\text{C}/\text{W}$ |
| Maximum Thermal Resistance, Junction–to–Case, R_{thJC} | 20 $^\circ\text{C}/\text{W}$ |

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$.

Note 2. The actual power dissipation capability of the TO202 type package is 2W @ $T_A = +25^\circ\text{C}$.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------------|---------------|---------------------------------|-----|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10\text{mA}$, $I_B = 0$ | 75 | – | – | V |
| Collector Cutoff Current | I_{CES} | $V_{CE} = 90\text{V}$ | – | – | 100 | nA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}$ | – | – | 100 | nA |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|--|-----|-----|-----|------|
| ON Characteristics (Note 3) | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 100\text{mA}, V_{CE} = 2\text{V}$ | 120 | – | 360 | |
| | | $I_C = 1\text{A}, V_{CE} = 2\text{V}$ | 10 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | – | – | 1.0 | V |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | – | – | 1.5 | V |
| Dynamic Characteristics | | | | | | |
| Current–Gain Bandwidth Product | f_T | $I_C = 20\text{mA}, V_{CE} = 10\text{V}, f = 20\text{MHz}$ | 75 | – | 375 | MHz |
| Collector–Base Capacitance NTE210 | C_{cb} | $V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$ | – | – | 12 | pF |
| NTE211 | | | – | – | 18 | pF |

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

