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NTE916 Integrated Circuit High Current, NPN Transistor Array, Common Emitter

Description:

The NTE916 is a high current transistor array in a 16-Lead DIP type package consisting of seven silicon NPN transistors on a common monolithic substrate connected in a common-emitter configuration designed for directly driving seven-segment displays and light-emitting diodes (LED) displays. This device is also well suited for a variety of other drive applications including relay control and thyristor firing.

Features:

- Seven Transistors Permit a Wide Range of Applications
- High Collector Current: $I_C = 100\text{mA Max}$
- Low Collector-Emitter Saturation Voltage: $V_{CE(sat)} = 400\text{mV Typ @ } 50\text{mA}$

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | |
|--|-------------------------------------|
| Power Dissipation (Total Package), P_D | 750mW |
| Per Transistor | 500mW |
| Derate Linearly Above 55°C | 6.67mW/ $^\circ\text{C}$ |
| Operating Ambient Temperature Range, T_A | -55° to $+125^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -65° to $+150^\circ\text{C}$ |
| Lead Temperature (During Soldering, 1/16" from case, 10sec max), T_L | $+265^\circ\text{C}$ |

The Following Ratings Apply for Each Transistor in the Device

| | |
|---|-------|
| Collector-Emitter Voltage, V_{CEO} | 16V |
| Collector-Base Voltage, V_{CBO} | 20V |
| Collector-Substrate Voltage (Note 1), V_{CIO} | 20V |
| Emitter-Base Voltage, V_{EBO} | 5V |
| Collector Current, I_C | 100mA |
| Base Current, I_B | 20mA |

Note 1. The collector of each transistor of the NTE916 is isolated from the substrate by an integral diode. The substrate must be connected to a voltage which is more negative than any collector voltage in order to maintain isolation between transistors and provide normal transistor action. To avoid undesired coupling between transistors, the substrate terminal (Pin5) should be maintained at either DC or signal (AC) ground. A suitable bypass capacitor can be used to establish a signal ground.

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|---------------|---|-----|------|-----|---------------|
| Collector–Base Breakdown Voltage | $V_{(BR)CES}$ | $I_C = 500\mu\text{A}, I_E = 0$ | 20 | 60 | – | V |
| Collector–Substrate Breakdown Voltage | $V_{(BR)CIO}$ | $I_{CI} = 500\mu\text{A}, I_E = 0, I_B = 0$ | 20 | 60 | – | V |
| Collector–Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 1\text{mA}, I_B = 0$ | 16 | 24 | – | V |
| Emitter–Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_C = 500\mu\text{A}$ | 5.0 | 6.9 | – | V |
| DC Forward Current Transfer Ratio | h_{FE} | $V_{CE} = 500\text{mV}, I_C = 30\text{mA}$ | 30 | 68 | – | |
| | | $V_{CE} = 800\text{mV}, I_C = 50\text{mA}$ | 40 | 70 | – | |
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 30\text{mA}, I_B = 1\text{mA}$ | – | 0.87 | 1.0 | V |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 30\text{mA}, I_B = 1\text{mA}$ | – | 0.27 | 0.5 | V |
| | | $I_C = 50\text{mA}, I_B = 5\text{mA}$ | – | 0.4 | 0.7 | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 10\text{V}, I_B = 0$ | – | – | 10 | μA |
| | I_{CBO} | $V_{CB} = 10\text{V}, I_E = 0$ | – | – | 1 | μA |

Pin Connection Diagram

