

NTE2023 Integrated Circuit General Purpose, High Current 7-Segment Display Driver

Description:

The NTE2023 is a general purpose high current transistor array in a 16-Lead DIP type package comprised of seven high current silicon NPN transistor on a common monolithic substrate. It is connected in a common-collector configuration.

Absolute Maximum Ratings:

Power Dissipation (Any One Transistor), P_D 500mW
 Operating Ambient Temperature Range, T_{opr} -40° to $+85^\circ\text{C}$

Individual Transistor Ratings:

Collector-Emitter Voltage, V_{CEO} 16V
 Collector-Base Voltage, V_{CBO} 20V
 Collector-Substrate Voltage, V_{CIO} 20V
 Emitter-Base Voltage, V_{EBO} 5V
 Collector Current, I_C 200mA
 Base Current, I_B 20mA

Note 1. The collector of each transistor in the NTE2023 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 so as to maintain isolation between transistors, and to provide normal transistor action. Undesired coupling between transistors is avoided by maintaining the substrate (5) at either DC or signal (AC) ground. An appropriate 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-Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C = 500\mu\text{A}$ | 20 | 80 | - | V |
| Collector-Substrate Breakdown Voltage | $V_{(BR)CIE}$ | $I_{CI} = 500\mu\text{A}$ | 20 | 80 | - | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 1\text{mA}$ | 16 | 40 | - | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_C = 500\mu\text{A}$ | 5 | 7 | - | V |
| Forward Current Transfer Ratio | h_{FE} | $V_{CE} = 0.5\text{V}, I_C = 30\text{mA}$ | 30 | 80 | - | |
| | | $V_{CE} = 0.8\text{V}, I_C = 50\text{mA}$ | 40 | 85 | - | |

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|-----------------------|-----|------|-----|---------------|
| Base–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 30\text{mA}$ | – | 0.75 | 1 | V |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 30\text{mA}$ | – | 0.13 | 0.5 | V |
| | | $I_C = 50\text{mA}$ | – | 0.2 | 0.7 | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 10\text{V}$ | – | – | 10 | μA |
| | I_{CBO} | $V_{CB} = 10\text{V}$ | – | – | 1 | μA |

Pin Connection Diagram

