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# NTE2032
# Integrated Circuit
# BCD–to–Seven–Segment Decoder Driver

**Description:**

The NTE2032 is a monolithic integrated circuit in a 16–Lead DIP type package that performs the BCD–to–seven–segment decoding function and features constant–current segment drivers. When used with the NTE2054 A/D converter, the NTE2032 provides a complete digital readout system with a minimum number of external parts.

**Features:**

- TTL Compatible Input Logic Levels
- 25mA (Typ) Constant Current Segment Outputs
- Eliminates Need for Output Current Limiting Resistors
- Pin Compatible with Other Industry Standard Decoders
- Low Standby Power Dissipation: 18mW Typ

**Absolute Maximum Ratings:**

DC Supply Voltage (Between Pin1 and Pin10), V+ . . . . . 7V

Input Voltage (Pin1, Pin2, Pin6, and Pin7), $V_{IN}$ . . . . . 5.5V

Output Voltage, $V_O$

Output “OFF” . . . . . 7V

Output “ON” (Note 1) . . . . . 10V

Device Dissipation ($T_A \leq +55°C$), $P_D$ . . . . . 1W

Derate Above 55°C . . . . . 10.5mW/°C

Operating Ambient Temperature Range, $T_{opr}$ . . . . . 0° to +75°C

Storage Temperature Range, $T_{stg}$ . . . . . –65° to +150°C

Lead Temperature (During Soldering, 1.16” ±1/32” (1.59mm ±0.79mm), 10sec max), $T_L$ . . +265°C

Note 1. This is the maximum output voltage for any single output. The output voltage must be consistent with the maximum dissipation and worst case conditions. Example: All segments “ON”, 100% duty cycle.

**Electrical Characteristics:** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage Operating Range | V+ | | 4.5 | 5.0 | 5.5 | V |
| Supply Current | I+ | All Inputs High | – | 3.5 | 8.0 | mA |
| Output Current Low | | $V_O$ = 2V | 18 | 25 | 32 | mA |
| Output Current High | | $V_O$ = 5.5V | – | – | 250 | µA |
| Input Voltage High (Logic “1” Level) | | | 2 | – | – | V |
| Input Voltage Low (Logic “0” Level) | | | – | – | 0.8 | V |
| Input Current High (Logic “1”) | | 2V | –30 | – | – | µA |
| Input Current Low (Logic “0”) | | 0V | –40 | – | – | µA |
| Propagation Delay Time | $t_{PHL}$ | | – | 2.6 | – | µs |
| | $t_{PLH}$ | | – | 1.4 | – | µs |

**Truth Table:**

| Binary State | Inputs | | | | Outputs | | | | | | | Displays |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $2^3$ | $2^2$ | $2^1$ | $2^0$ | a | b | c | d | e | f | g | |
| 0 | L | L | L | L | L | L | L | L | L | L | H | 0 |
| 1 | L | L | L | H | H | L | L | H | H | H | H | 1 |
| 2 | L | L | H | L | L | L | H | L | L | H | L | 2 |
| 3 | L | L | H | H | H | L | L | L | H | H | L | 3 |
| 4 | L | H | L | L | L | L | L | H | H | L | L | 4 |
| 5 | L | H | L | H | H | H | L | L | H | L | L | 5 |
| 6 | L | H | H | L | L | H | L | L | L | L | L | 6 |
| 7 | L | H | H | H | H | L | L | H | H | H | H | 7 |
| 8 | H | L | L | L | L | L | L | L | L | L | L | 8 |
| 9 | H | L | L | H | H | L | L | L | H | L | L | 9 |
| 10 | H | L | H | L | L | H | H | H | H | H | L | – |
| 11 | H | L | H | H | H | H | H | L | L | L | L | E |
| 12 | H | H | L | L | L | L | L | H | L | L | L | H |
| 13 | H | H | L | H | H | H | H | L | L | L | H | L |
| 14 | H | H | H | L | L | L | H | H | L | L | L | P |
| 15 | H | H | H | H | H | H | H | H | H | H | H | Blank |

**Pin Connection Diagram**