

CA3161

BCD to Seven Segment Decoder/Driver

FN1079
Rev.3.00
Aug 1997

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 Dissipation18mW (Typ)

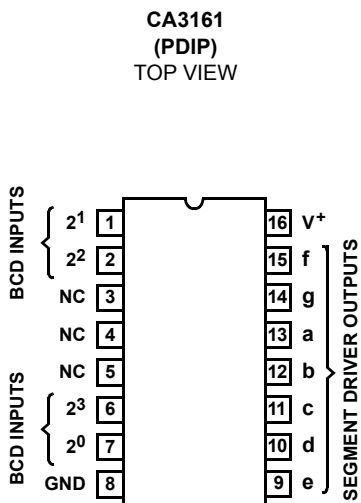
Description

The CA3161E is a monolithic integrated circuit that performs the BCD to seven segment decoding function and features constant current segment drivers. When used with the CA3162E A/D Converter the CA3161E provides a complete digital readout system with a minimum number of external parts.

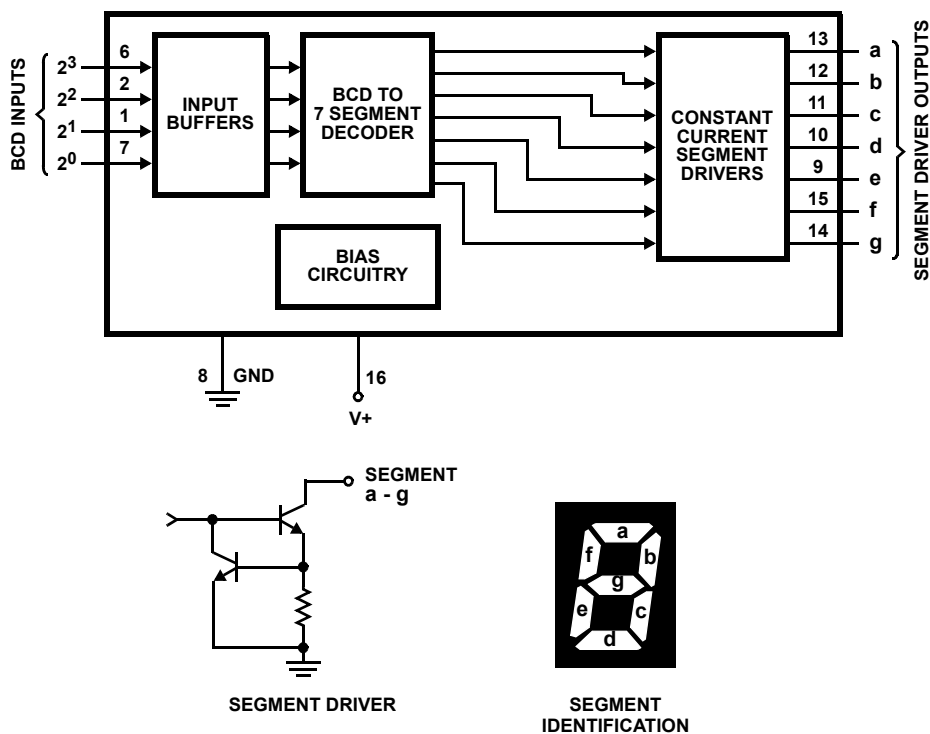
Ordering Information

| PART NUMBER | TEMP. RANGE (°C) | PACKAGE | PKG. NO. |
|-------------|------------------|------------|----------|
| CA3161E | 0 to 70 | 16 Ld PDIP | E16.3 |

Pinout



Functional Block Diagram



Absolute Maximum Ratings

| | |
|--|-------|
| DC V_{SUPPLY} (Between Terminals 1 and 10) | +7.0V |
| Input Voltage (Terminals 1, 2, 6, 7) | +5.5V |
| Output Voltage | |
| Output "Off" | +7V |
| Output "On" (Note 1) | +10V |

Thermal Information

| | |
|--|----------------------|
| Thermal Resistance (Typical, Note 2) | θ_{JA} (°C/W) |
| PDIP Package | 100 |
| Maximum Junction Temperature | 150°C |
| Maximum Storage Temperature Range | -65°C to 150°C |
| Maximum Lead Temperature (Soldering 10s) | 300°C |

Operating Conditions

Temperature Range 0°C to 75°C

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

NOTES:

1. This is the maximum output voltage for any single output. The output voltage must be consistent with the maximum dissipation and derating curve for worst case conditions. Example: All segments "ON", 100% duty cycle.
2. θ_{JA} is measured with the component mounted on an evaluation PC board in free air.

Electrical Specifications $T_A = 25^\circ\text{C}$

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---|-----------------|-----|-----|-----|---------------|
| V_{SUPPLY} Operating Range, V^+ | | 4.5 | 5 | 5.5 | V |
| Supply Current, I^+ (All Inputs High) | | - | 3.5 | 8 | 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 |

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TRUTH TABLE

| BINARY STATE | INPUTS | | | | OUTPUTS | | | | | | | DISPLAY | |
|--------------|----------------|----------------|----------------|----------------|---------|---|---|---|---|---|---|---------|-------|
| | 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 | L | H | 0 |
| 1 | L | L | L | H | H | L | L | H | H | H | H | H | 1 |
| 2 | L | L | H | L | L | L | H | L | L | L | H | L | 2 |
| 3 | L | L | H | H | L | L | L | L | H | H | H | L | 3 |
| 4 | L | H | L | L | H | L | L | H | H | L | L | L | 4 |
| 5 | L | H | L | H | L | H | L | L | H | L | L | L | 5 |
| 6 | L | H | H | L | L | H | L | L | L | L | L | L | 6 |
| 7 | L | H | H | H | L | L | L | H | H | H | H | H | 7 |
| 8 | H | L | L | L | L | L | L | L | L | L | L | L | 8 |
| 9 | H | L | L | H | L | L | L | L | H | L | L | L | 9 |
| 10 | H | L | H | L | H | H | H | H | H | H | H | L | - |
| 11 | H | L | H | H | L | H | H | L | L | L | L | L | E |
| 12 | H | H | L | L | H | L | L | H | L | L | L | L | H |
| 13 | H | H | L | H | H | H | H | L | L | L | L | H | L |
| 14 | H | H | H | L | L | L | H | H | L | L | L | L | P |
| 15 | H | H | H | H | H | H | H | H | H | H | H | H | BLANK |