CA3161

BCD-to-Seven-Segment Decoder/Driver

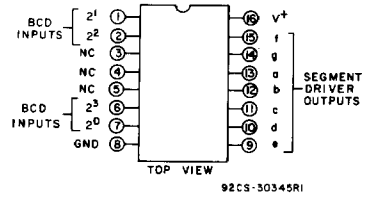
Features:

- *TTL-compatible input logic levels*
- *25-mA [typ.] constant-current segment outputs*
- *Eliminates need for output current-limiting resistors*
- *Pin compatible with other industry standard decoders*
- *Low standby power dissipation - 18 mW (typ.)*

The RCA-CA3161E is a monolithic intergrated 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.

The CA3161 is supplied in the 16-lead dual-in-line plastic package (E suffix). The CA3161 is also available in chip form (H suffix).

*The CA3162E is described in RCA data bulletin File No. 1080.



TERMINAL ASSIGNMENT
CA3161E

MAXIMUM RATINGS, *Absolute-Maximum Values:*

DC SUPPLY VOLTAGE (between terminals 1 and 10) ..... +7 V

INPUT VOLTAGE (terminals 1, 2, 6, 7) ..... +5.5 V

OUTPUT VOLTAGE:

Output "Off" ..... +7 V

Output "On" (See note 1) ..... +10 V

DEVICE DISSIPATION:

Up to T_A = +55°C ..... 1 W

Above T_A = +55°C ..... derate linearly at 10.5 mW/°C

AMBIENT TEMPERATURE RANGE:

Operating ..... 0 to +75°C

Storage ..... -65 to +150°C

LEAD TEMPERATURE (DURING SOLDERING):

At distance 1/16 ± 1/32 inch (1.59 ± 0.79 mm) from case for 10 seconds max. ..... +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 derating curve for worst-case conditions. Example: All segments "on", 100% duty cycle.

File Number **1079**

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	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	L	L	L	L	H	H	L	3
4	L	H	L	L	H	L	L	H	H	L	L	4
5	L	H	L	H	L	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	L	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	L	L	L	L	H	L	L	9
10	H	L	H	L	H	H	H	H	H	H	L	—
11	H	L	H	H	L	H	H	L	L	L	L	E
12	H	H	L	L	H	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

CA3161

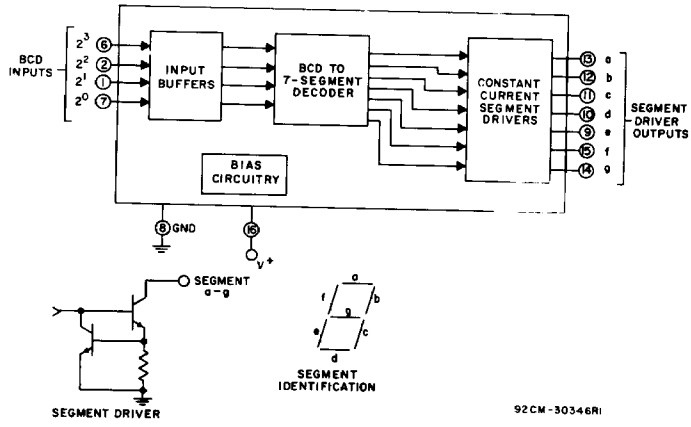
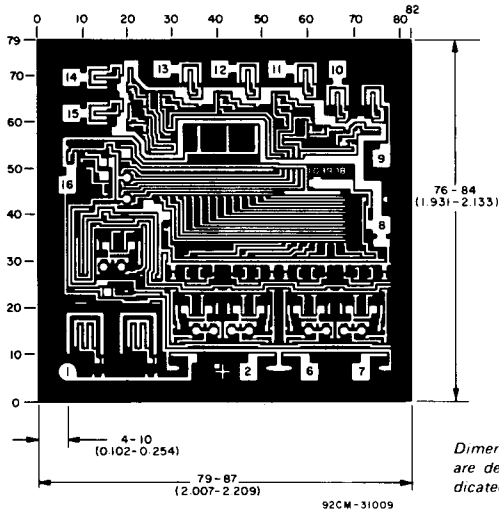


Fig. 1-Functional block diagram of the CA3161E.

ELECTRICAL CHARACTERISTICS at $T_A = 25°C$

CHARACTERISTIC		LIMITS			UNITS
		Min.	Typ.	Max.	
Supply Voltage Operating Range, V^+		4.5	5	5.5	V
Supply Current, I^+ (all inputs high)		–	3.5	8	mA
Output Current Low (V_O = 2 V)		18	25	32	mA
Output Current High (V_O = 5.5 V)		–	–	250	μA
Input Voltage High (logic "1" level)		2	–	–	V
Input Voltage Low (logic "0" level)		–	–	0.8	V
Input Current High (logic "1")	2 V	–30	–	–	μA
Input Current Low (logic "0")	0 V	–40	–	–	μA
Propagation Delay Time	t_{PHL}	–	2.6	–	μs
	t_{PLH}	–	1.4	–	



The photographs and dimensions represent a chip when it is part of the wafer. When the wafer is cut into chips, the cleavage angles are 57° instead of 90° with respect to the face of the chip. Therefore, the isolated chip is actually 7 mils (0.17 mm) larger in both dimensions.

Dimensions in parentheses are in millimeters and are derived from the basic inch dimensions as indicated. Grid graduations are in mils (10^{-3} inch).

Dimensions and pad layout for the CA3161H.