

# CA3161

## BCD-to-Seven-Segment Decoder/Driver

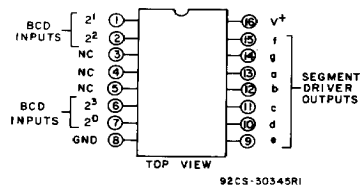
### Features:

- *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 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.

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 $T_A = +55^\circ\text{C}$ .....	1 W
Above $T_A = +55^\circ\text{C}$ .....	derate linearly at 10.5 mW/ $^\circ\text{C}$
AMBIENT TEMPERATURE RANGE:	
Operating .....	0 to $+75^\circ\text{C}$
Storage .....	-65 to $+150^\circ\text{C}$
LEAD TEMPERATURE (DURING SOLDERING):	
At distance $1/16 \pm 1/32$ inch (1.59 $\pm$ 0.79 mm) from case for 10 seconds max. ....	$+265^\circ\text{C}$

**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.

## CA3161

TRUTH TABLE

BINARY STATE	INPUTS				OUTPUTS							DISPLAY
	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>	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

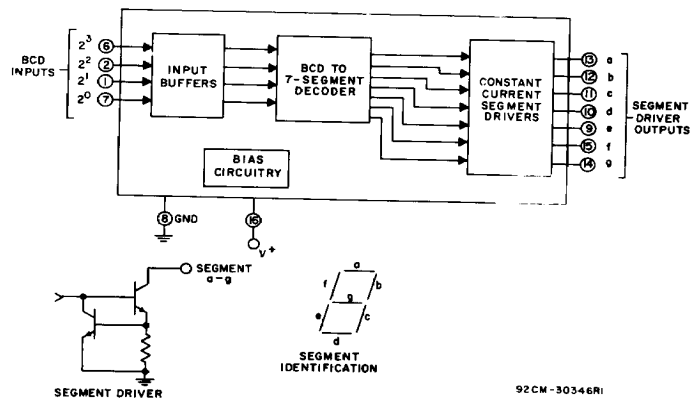
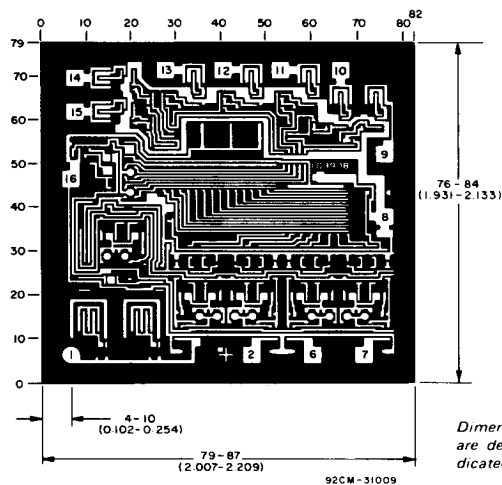


Fig. 1-Functional block diagram of the CA3161E.

ELECTRICAL CHARACTERISTICS at  $T_A = 25^\circ\text{C}$ 

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 ( $V_O = 2\text{ V}$ )	18	25	32	mA
Output Current High ( $V_O = 5.5\text{ V}$ )	—	—	250	$\mu\text{A}$
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	—	$\mu\text{A}$
Input Current Low (logic "0")	0 V	-40	—	$\mu\text{A}$
Propagation Delay Time	$t_{\text{PHL}}$	—	2.6	$\mu\text{s}$
	$t_{\text{PLH}}$	—	1.4	

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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  $57^\circ$  instead of  $90^\circ$  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.