

HEX7 IC

BCD or Hexadecimal to Seven Segment Controller

General Description

The HEX7 IC is a two digit BCD or hexadecimal to seven segment converter. Eight bits of parallel input is converted to drive two seven segment displays. Output polarity control is provided. The HEX7 IC has internal pull resistors on inputs to minimize additional parts. A .1 uF bypass capacitor is suggested across the VDD and VSS pins. The part uses the standard 28 pin .3 inch width SOIC and DIP packages.

Features

- Hexadecimal to seven segment display converter.
- BCD to seven segment display converter.
- No external parts required.
- Low power consumption 5 mA typical.
- Supply voltage 2.4 to 5.25 volts.
- On chip input resistors.
- Output polarity select.
- TTL and CMOS compatible.
- Part is in full production.
- SOIC and DIP 28 Pin Package.
- ROHS Compliant.
- Low EMI.

Applications

- Numeric Displays .
- Controls .
- Price Signs .

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POL

Polarity input. If this pin is open or high, the “on” segments will have a high level on the SEG outputs of the chip. If this pin is low or grounded “on” segments will output as a low on the SEG pins. This pin is read once at power up and has a built in pull up resistor.

SEGLA, SEGLB, SEGLC, SEGLD, SEGLE, SEGLF, SEGLG SEGRA, SEGRB, SEGRC, SEGRD, SEGRE, SEGRF, SEGRG

SEGL is the left hand of the two displays.

SEGR is the right hand of the two displays

If the POL pin is open or hi, this SEG outputs will be high when a segment is on.
If the POL pin is low or grounded, the SEG outputs will be low when a segment is on.

These are the seven segment outputs to each individual display. An external driver or current limiting resistor is required for each segment. If you are using only a resistor, it must be sized to limit source current to 5 mA maximum per pin or sink current to 9 mA per pin.

See also the segment table, and the seven segment translation table.

L1, L2, L4, L8

R1, R2, R4, R8

Parallel input of the data to be displayed. L1-4 is the left digit, R1-4 is the right digit. 1's are least significant bit, and 8's are most significant bit.

VSS

Connect to system ground.

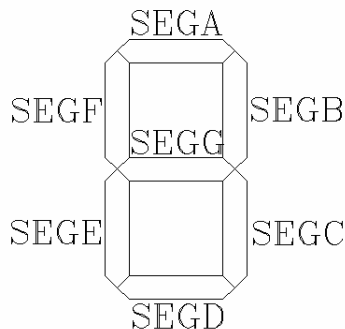
VDD

Connect to supply voltage of 2.4 to 5 volts. A .1 uF decoupling capacitor to ground is recommended.

NOTES:

Make no connection to the NC pins. Pins 9 and 19 must be left unconnected.

Segment Identification Table

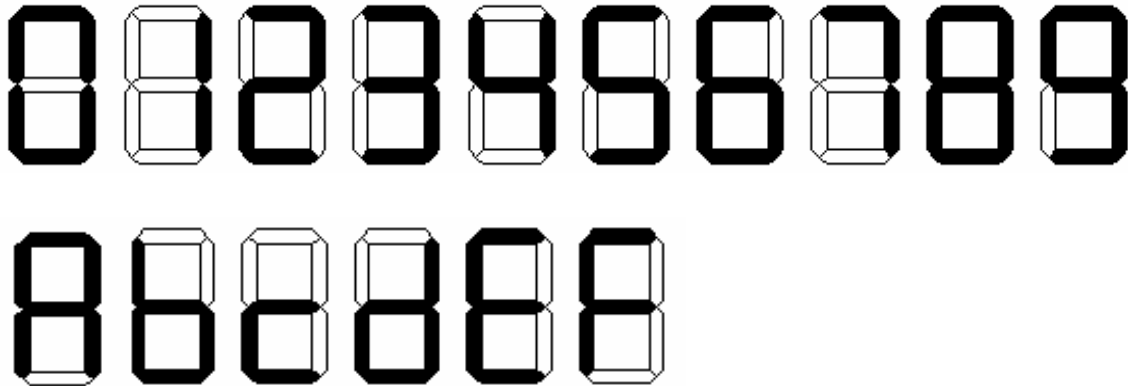


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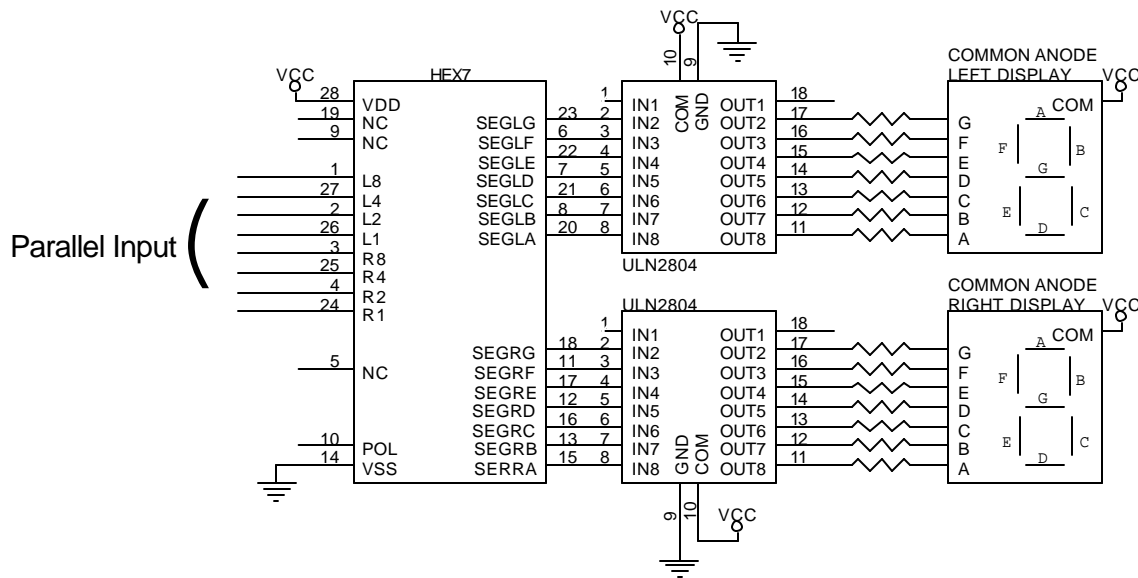
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Seven Segment Translation Table



Using Drivers For Brighter Displays



Absolute Maximum Ratings

Symbol	Description	Min	Typical	Max	Units	Notes
T _{stg}	Storage Temperature	-55	25	+100	°C	
T _a	Operating Temperature	-40		+85	°C	
V _{dd}	V _{dd} - V _{ss} Voltage	-0.5		+6.0	V	
V _{io}	Input Voltage	V _{ss} - 0.5		V _{dd} + 0.5	V	
I _{mio}	Maximum current into any pin	-25		+50	mA	
ESD	Electrostatic Discharge Voltage	2000			V	Human Body Model ESD
LU	Latch up current			200	mA	



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DC Electrical Characteristics

Symbol	Description	Min	Typical	Max	Units	Notes
V _{dd}	Supply Voltage	2.4		5.25	V	
I _{dd}	Supply Current		5	8	mA	Note 1
V _{oh}	High Output Level	V _{dd} - 1.0			V	Note 2
V _{ol}	Low Output Voltage			0.75	V	Note 3
V _{ih}	Input High Level	2.1			V	
V _{il}	Input Low Level			0.8	V	
I _{oh}	High Level Source Current			10	mA	Note 2
I _{ol}	Low Level Sink Current			25	mA	Note 3
C _{io}	Capacitive load		3.5	10	pF	
I _{ij}	Input leakage		1		nA	
R _{pu}	Pull Up Resistors On Inputs	4	5.6	8	k?	

Note 1: V_{dd}=5VDC, all inputs and outputs open

Note 2 I_{oh}=10 mA max per pin, 80 mA maximum all pins combined

Note 3 I_{ol}=25 mA max per pin 150 mA maximum all pins combined

Theory Of Operation

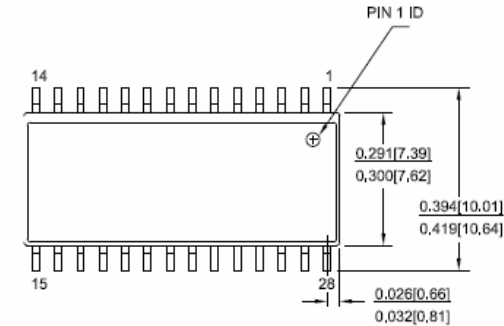
The HEX7 IC is a custom programmed microprocessor designed to monitor a parallel input and convert the received data to seven segment format. The device allows the outputs to be inverted if necessary to simplify driver construction. The IC displays in decimal (0-9) or hexadecimal (0-F) characters.

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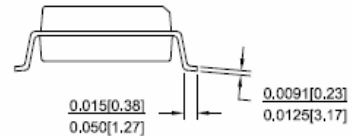
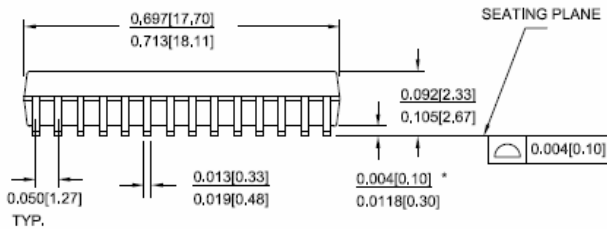
Physical Dimensions SOIC-28



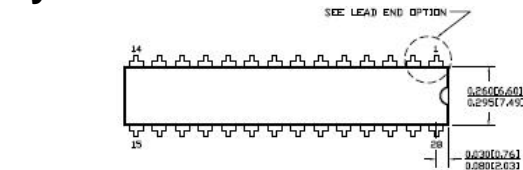
AT THE MOLD PARTING LINE. MOLD PROTRUSION/END FLASH SHALL NOT EXCEED 0.010 in (0.254 mm) PER SIDE

3. DIMENSIONS IN INCHES MIN.
MAX.

PART #	
S28,3	STANDARD PKG.
SZ28,3	LEAD FREE PKG.
SX28,3	LEAD FREE PKG.

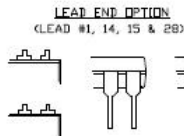
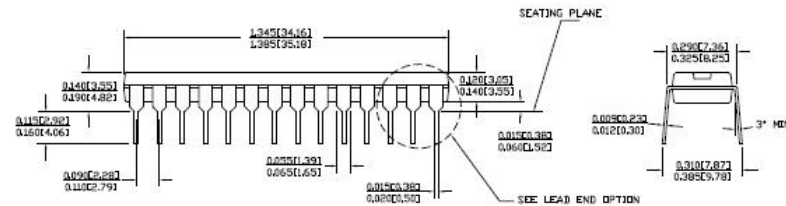


Physical Dimensions 28 Pin Dip Package (-DIP Suffix)



DIMENSIONS IN INCHES/MIN. MAX.
REFERENCE JEDEC MO-095
PACKAGE WEIGHT: 2.15gms

PART #	
P28,3	STANDARD PKG.
PZ28,3	LEAD FREE PKG.



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