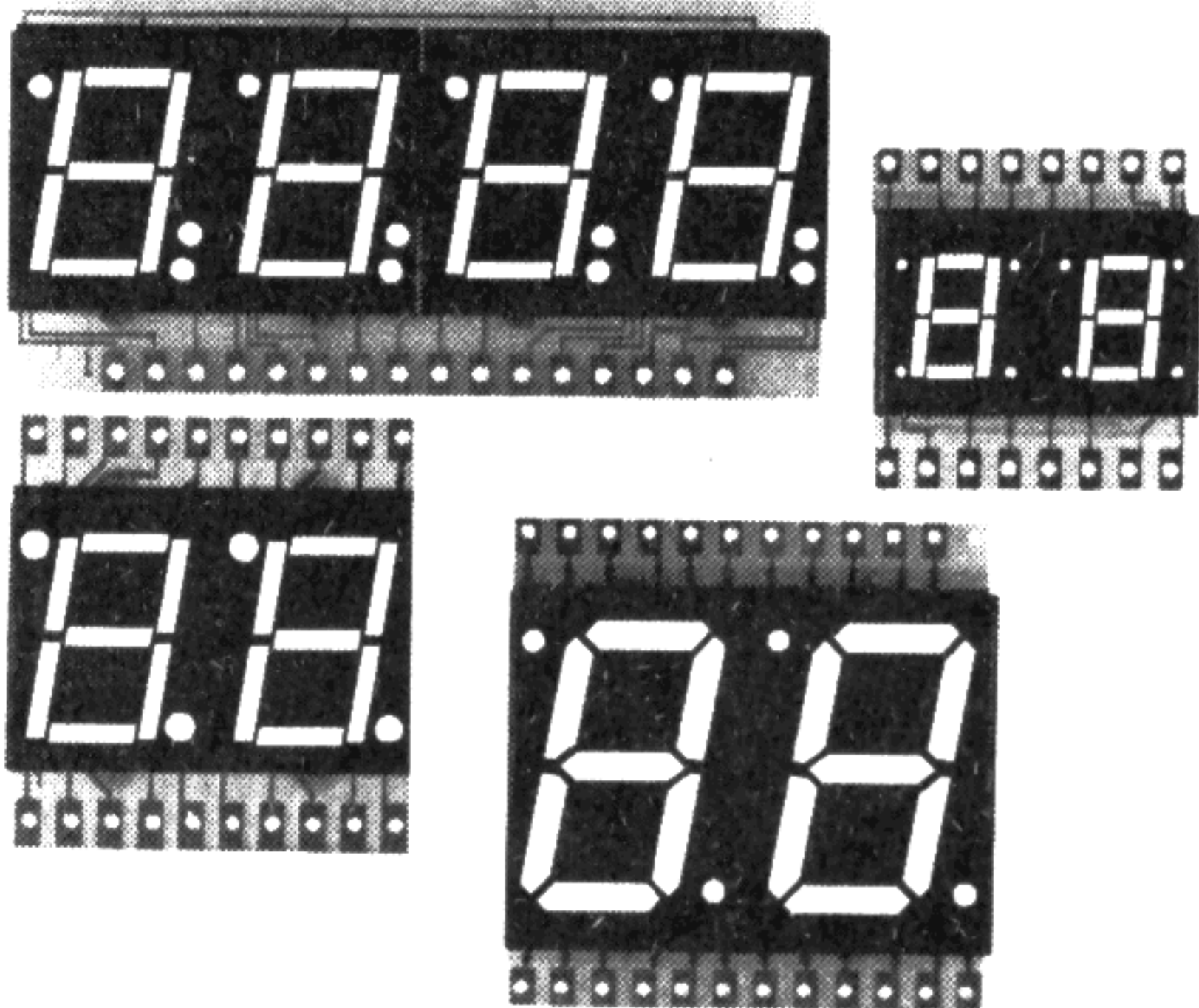




# Displays

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## multidigit LED numeric series

### general description

Multidigit GaAsP LED reflective displays from National Semiconductor, represent the latest in design advances in 0.3", 0.5" and 0.7" formats. The series provides the designer with an effective, easy to implement answer to the need for an inexpensive large numeric display.

Basically 2-digit and 4-digit displays, the units are end stackable for applications requiring additional digits. When combined with the options for overflow, polarity and other indications, virtually all display requirements can be satisfied. Versatility is offered the designer with direct drive and multiplex versions in both the common anode and common cathode forms. Electrical contact is by PCB type terminals on the edges of the display.

The optical design of this display series, creates a distinct easy-to-read display with a wide viewing angle, excellent "ON-OFF" contrast and segment uniformity.

### applications

- Test and measurement equipment
- Consumer products
- Instrumentation
- Industrial controls
- Digital instruments
- Desk top calculator
- Clocks
- Elevator floor indicator
- TV channel indicator

### absolute ratings

Average Current/Segment	20 mA max
Peak Current/Segment	75 mA max
Reverse Voltage/Segment	3.0V max
Operating and Storage Temperature	-20°C to +70°C
Relative Humidity at 35°C	98%
Terminal Temperature (Soldering, 5 seconds)	230°C

## electrical and optical characteristics $T_A = 25^{\circ}\text{C}$

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Segment Light Intensity (Peak)	10 mA/Seg. Peak	0.10	0.20		mcd
Digit and D.P. Light Intensity (Peak)	10 mA/Seg. Peak	0.80	1.6		mcd
Segment Forward Voltage	10 mA/Seg. Peak		1.7	2.0	V
Segment Reverse Voltage	100 $\mu$ A/Seg.	3.0	8.0		V
Peak Wavelength			660		nm
Spectral Width, Half-Intensity			40		nm
Viewing Angle, Off Axis			60		degrees
Intensity Matching	10 mA/Seg. Avg.		$\pm 33$		%



recommended display processing

The multidigit series display is constructed on a standard printed circuit board substrate and covered with a plastic lens. The edge connector tab will stand a temperature of 230°C for 5 seconds. The display lens area must not be elevated in temperature above 70°C. To do so will result in permanent damage to the display. Since the display is not hermetic, immersion of the entire package during flux and clean operations may cause condensation of flux or cleaner on the underside of the lens. It is

recommended that only the edge connectors be immersed. Only rosin core solder, solid core solder, and low activity organic fluxes are recommended. Cleaning solvents are Freon TF, Isopropanol, Methanol, or Ethanol. These solvents are recommended only at room temperature and for short time periods. The use of other solvents or elevated temperature use of the recommended solvents may cause permanent damage to the lens or display.

available display formats (Dual Digits)

DIGIT SIZE

CODE

FORMAT

CODE

DRIVE

CODE

0.3" 3

0.5" 5

0.7" 7

+1.8.

8.8

8.8.

3

7

8

10 mA COMMON CATHODE - MULTIPLEXED

10 mA COMMON ANODE - MULTIPLEXED

10 mA COMMON CATHODE - DIRECT

10 mA COMMON ANODE - DIRECT

1

2

3

4

NSN X

X

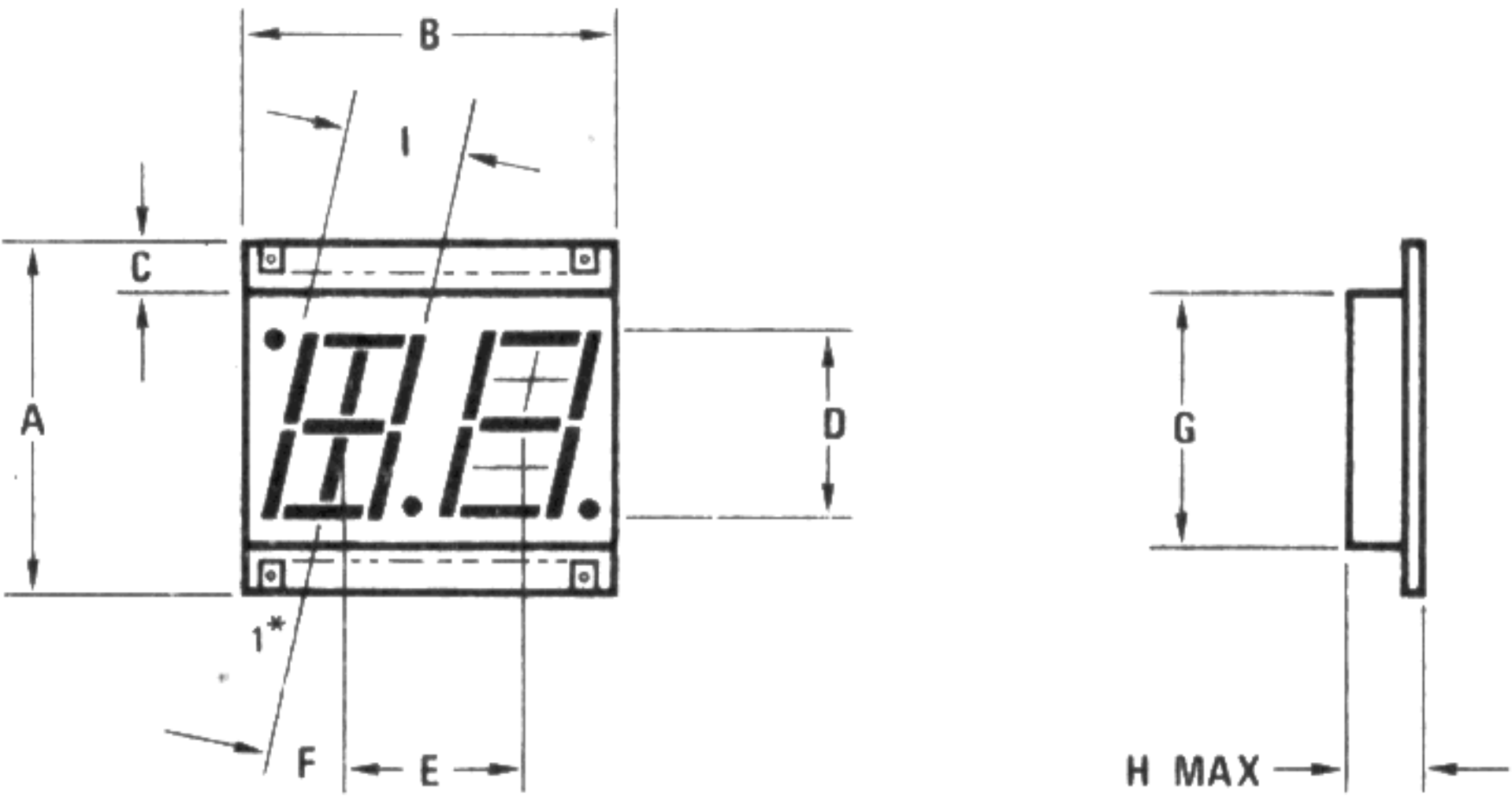
X

DEVICES CURRENTLY AVAILABLE

NSN334	+1.8.
NSN381	8.8.
NSN382	8.8.
NSN373	8.8
NSN374	8.8
NSN534	+1.8.
NSN581	8.8.
NSN582	8.8.
NSN583	8.8.
NSN584	8.8.
NSN734	+1.8.
NSN781	8.8.
NSN782	8.8.
NSN783	8.8.
NSN784	8.8.

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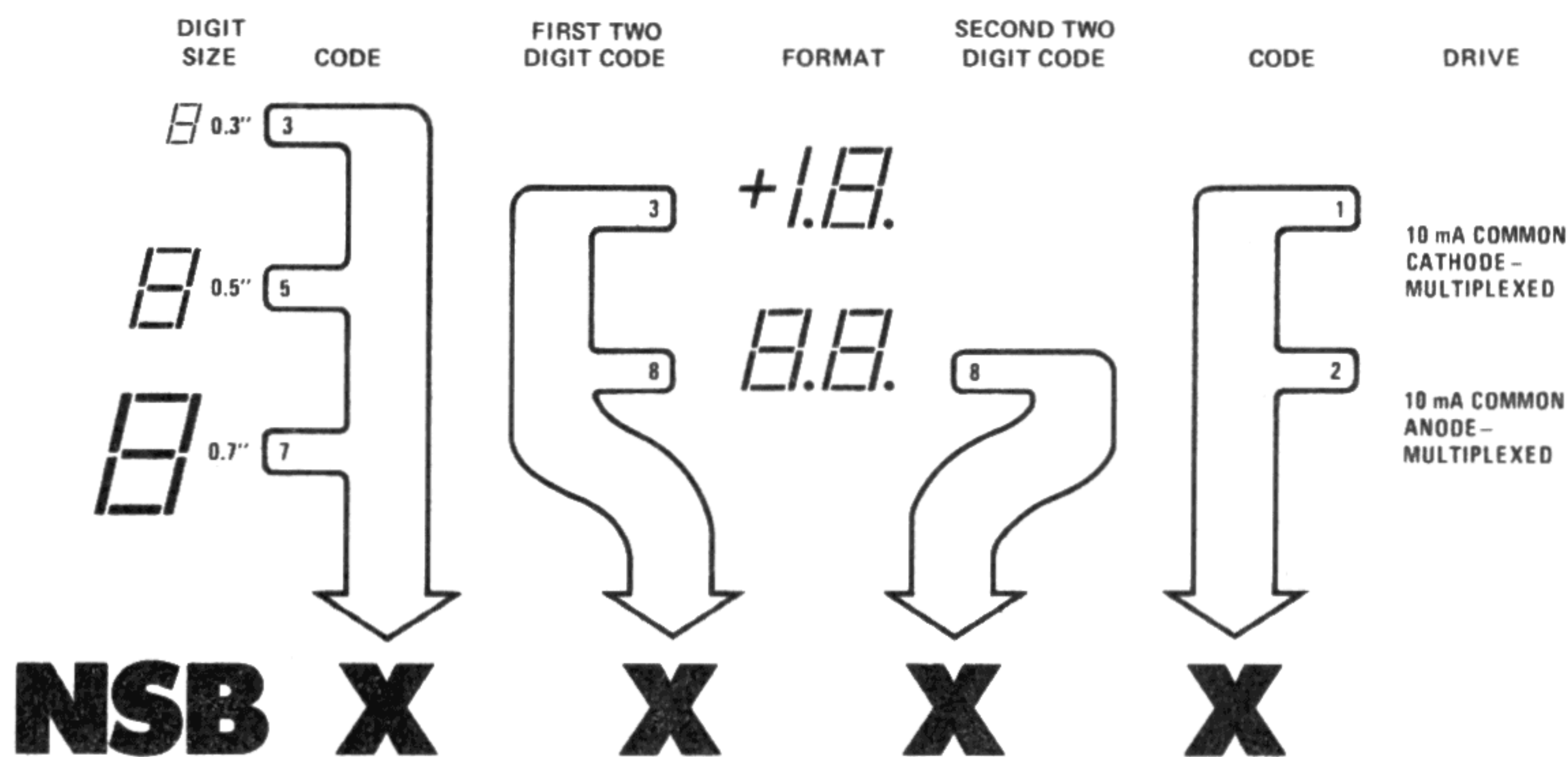
physical dimensions



\*Pin 1 as shown, pin out follows counterclockwise

DIMENSIONS									
DIGIT SIZE	A	B	C	D	E	F	G	H	I
0.3	0.85	0.8	0.175	0.3	0.4	5°	0.5	0.225	0.188
0.5	1.05	1.0	0.175	0.5	0.5	10°	0.7	0.28	0.3
0.7	1.25	1.2	0.180	0.7	0.6	10°	0.89	0.3	0.38

available display formats (Quad Digits)

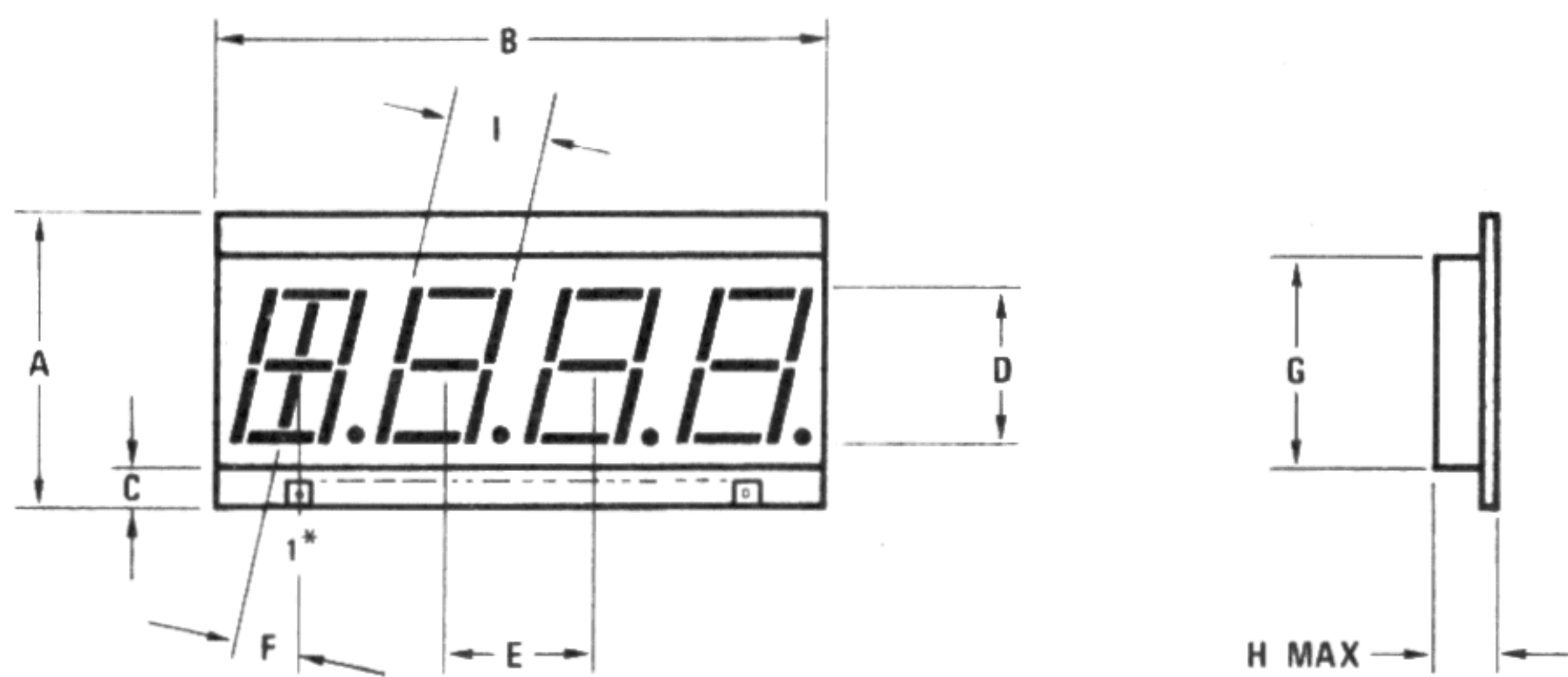


DEVICES CURRENTLY AVAILABLE

- NSB3382 +1.8.8.8.
- NSB3881 8.8.8.8.
- NSB3882 8.8.8.8.
- NSB5382 +1.8.8.8.
- NSB5881 8.8.8.8.
- NSB5882 8.8.8.8.
- NSB7382 +1.8.8.8.
- NSB7881 8.8.8.8.
- NSB7882 8.8.8.8.

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physical dimensions



\*Pin 1 as shown, pin out follows counterclockwise

DIMENSIONS									
DIGIT SIZE	A	B	C	D	E	F	G	H	I
0.3	0.83	1.59	0.165	0.3	0.4	5°	0.5	0.225	0.188
0.5	1.0	1.99	0.180	0.5	0.5	10°	0.7	0.28	0.3
0.7	1.15	2.39	0.180	0.7	0.6	10°	0.89	0.3	0.38



**connection tables** (Dual Digits)

PIN NUMBER	NSN334	NSN373	NSN374	NSN381	NSN382
1	Cathode J Digit 1	Anode G Digit 1	Cathode G Digit 1	Anode G	Cathode E
2	Cathode C Digit 1	Anode E Digit 1	Cathode E Digit 1	Anode E	Common Anode Digit 1
3	Cathode D.P. Digit 1	Anode D Digit 1	Cathode D Digit 1	NC	NC
4	Cathode G Digit 2	Anode C Digit 1	Cathode C Digit 1	Common Cathode Digit 1	Cathode C
5	Cathode E Digit 2	Anode G Digit 2	Cathode G Digit 2	Anode D	Common Anode Digit 2
6	Cathode D Digit 2	Anode E Digit 2	Cathode E Digit 2	Common Cathode Digit 2	Cathode D
7	Cathode C Digit 2	Anode D Digit 2	Cathode D Digit 2	Anode DP	Cathode DP
8	Cathode D.P. Digit 2	Anode C Digit 2	Cathode C Digit 2	Anode C	Cathode G
9	Cathode B Digit 2	Common Cathode Digits 1 and 2	Common Anode Digits 1 and 2	Anode B	Cathode B
10	NC	Anode B Digit 2	Cathode B Digit 2	NC	NC
11	Cathode A Digit 2	Anode A Digit 2	Cathode A Digit 2	NC	NC
12	Cathode F Digit 2	Anode F Digit 2	Cathode F Digit 2	NC	NC
13	Cathode B Digit 1	Anode B Digit 1	Cathode B Digit 1	Anode A	Cathode A
14	Common Anode Digits 1 and 2	Anode A Digit 1	Cathode A Digit 1	NC	NC
15	Cathode H Digit 1	Anode F Digit 1	Cathode F Digit 1	Anode F	Cathode F
16	Cathode G Digit 1	NC	NC	NC	NC

**segment identification**
[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

**connection tables** (Continued) (Dual Digits)

PIN NUMBER	NSN534	NSN581	NSN582	NSN583	NSN584
1	NC	Anode G	Cathode G	Anode E Digit 1	Cathode E Digit 1
2	Cathode J Digit 1	Common Cathode Digit 1	Common Anode Digit 1	NC	NC
3	NC	Anode E	Cathode E	Anode D Digit 1	Cathode D Digit 1
4	Cathode C Digit 1	NC	NC	Anode DP Digit 1	Cathode C Digit 1
5	Cathode D.P. Digit 1	NC	NC	Anode C Digit 1	Cathode D.P. Digit 1
6	Cathode G Digit 2	NC	NC	Anode G Digit 2	Cathode G Digit 2
7	Cathode E Digit 2	Anode D	Cathode D	Anode E Digit 2	Cathode E Digit 2
8	Cathode D Digit 2	Anode D.P.	Cathode D.P.	Anode D Digit 2	Cathode D Digit 2
9	Cathode C Digit 2	Anode C	Cathode C	Anode D.P. Digit 2	Cathode C Digit 2
10	Cathode D.P. Digit 2	Common Cathode Digit 2	Common Anode Digit 2	Anode C Digit 2	Cathode D.P. Digit 2
11	Common Anode Digits 1 and 2	Anode B	Cathode B	Common Cathode Digits 1 and 2	Common Anode Digit 1 and 2
12	Cathode B Digit 2	NC	NC	Anode B Digit 2	Cathode B Digit 2
13	Cathode A Digit 2	NC	NC	Anode A Digit 2	Cathode A Digit 2
14	Cathode F Digit 2	NC	NC	Anode F Digit 2	Cathode F Digit 2
15	Cathode B Digit 1	NC	NC	Anode B Digit 1	Cathode B Digit 1
16	NC	NC	NC	Anode A Digit 1	Cathode A Digit 1
17	Cathode H Digit 1	Anode A	Cathode A	NC	NC
18	NC	Anode F	Cathode F	Anode F Digit 1	Cathode F Digit 1
19	NC	NC	NC	NC	NC
20	Cathode G Digit 1	NC	NC	Anode G Digit 1	Cathode G Digit 1



**connection tables** (Continued) (Dual Digits)

PIN NUMBER	NSN734	NSN781	NSN782	NSN783	NSN784
1	NC	Anode G	Cathode G	Anode E Digit 1	Cathode E Digit 1
2	Cathode J Digit 1	Common Cathode Digit 1	Common Anode Digit 1	NC	NC
3	NC	Anode E	Cathode E	Anode D Digit 1	Cathode D Digit 1
4	Cathode C Digit 1	NC	NC	Anode C Digit 1	Cathode C Digit 1
5	Common Anode Digit 1	NC	NC	Common Cathode Digit 1	Common Anode Digit 1
6	Cathode D.P. Digit 1	NC	NC	Anode D.P. Digit 1	Cathode D.P. Digit 1
7	NC	NC	NC	NC	NC
8	Cathode E Digit 2	NC	NC	Anode E Digit 2	Cathode E Digit 2
9	Cathode D Digit 2	Anode D	Cathode D	Anode D Digit 2	Cathode D Digit 2
10	Cathode C Digit 2	Common Cathode Digit 2	Common Anode Digit 2	Anode C Digit 2	Cathode C Digit 2
11	Common Anode Digit 2	Anode D.P.	Cathode D.P.	Common Cathode Digit 2	Common Anode Digit 2
12	Cathode D.P. Digit 2	Anode C	Cathode C	Anode D.P. Digit 2	Cathode D.P. Digit 2
13	Cathode B Digit 2	Anode B	Cathode B	Anode B Digit 2	Cathode B Digit 2
14	Cathode A Digit 2	NC	NC	Anode A Digit 2	Cathode A Digit 2
15	Cathode F Digit 2	NC	NC	Anode F Digit 2	Cathode F Digit 2
16	Cathode G Digit 2	NC	NC	Anode G Digit 2	Cathode G Digit 2
17	NC	NC	NC	NC	NC
18	Cathode G Digit 1	Anode A	Cathode A	Anode G Digit 1	Cathode G Digit 1
19	Cathode B Digit 1	NC	NC	Anode B Digit 1	Cathode B Digit 1
20	NC	NC	NC	Anode A Digit 1	Cathode A Digit 1
21	Cathode H Digit 1	NC	NC	NC	NC
22	NC	NC	NC	Anode F Digit 1	Cathode F Digit 1
23	NC	Anode F	Cathode F	NC	NC
24		NC	NC		

**connection tables** (Continued) (Quad Digits)[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

PIN NUMBER	NSB3382	NSB3881	NSB3882
1	NC	NC	NC
2	Cathode E	Anode E	Cathode E
3	Common Anode Digit 1	Common Cathode Digit 1	Common Anode Digit 1
4	Cathode J Digit 1	NC	NC
5	Cathode H Digit 1	NC	NC
6	Common Anode Digit 2	Common Cathode Digit 2	Common Anode Digit 2
7	Cathode D	Anode D	Cathode D
8	Cathode G	Anode G	Cathode G
9	NC	NC	NC
10	Common Anode Digit 3	Common Cathode Digit 3	Common Anode Digit 3
11	Cathode B	Anode B	Cathode B
12	Cathode A	Anode A	Cathode A
13	Cathode F	Anode F	Cathode F
14	Common Anode Digit 4	Common Cathode Digit 4	Common Anode Digit 4
15	Cathode D.P.	Anode D.P.	Cathode D.P.
16	Cathode C	Anode C	Cathode C

PIN NUMBER	NSB5382	NSB5881	NSB5882
1	Cathode A	Anode A	Cathode A
2	NC	NC	NC
3	Cathode D	Anode D	Cathode D
4	Common Anode Digit 1	Common Cathode Digit 1	Common Anode Digit 1
5	Cathode J Digit 1	NC	NC
6	Cathode H Digit 1	NC	NC
7	Common Anode Digit 2	Common Cathode Digit 2	Common Anode Digit 2
8	Cathode C	Anode C	Cathode C
9	NC	NC	NC
10	Common Anode Digit 3	Common Cathode Digit 3	Common Anode Digit 3
11	Cathode B	Anode B	Cathode B
12	Cathode F	Anode F	Cathode F
13	Cathode E	Anode E	Cathode E
14	Common Anode Digit 4	Common Cathode Digit 4	Common Anode Digit 4
15	Cathode D.P.	Anode D.P.	Cathode D.P.
16	Cathode G	Anode G	Cathode G



**connection tables** (Continued) (Quad Digits)

PIN NUMBER	NSB7382	NSB7881	NSB7882
1	NC	NC	NC
2	Cathode H Digit 1	NC	NC
3	Cathode J Digit 1	NC	NC
4	Common Anode Digit 1	Common Cathode Digit 1	Common Anode Digit 1
5	Cathode F	Anode F	Cathode F
6	Common Anode Digit 2	Common Cathode Digit 2	Common Anode Digit 2
7	Cathode C	Anode C	Cathode C
8	Cathode D.P.	Anode D.P.	Cathode D.P.
9	Cathode G	Anode G	Cathode G
10	Cathode E	Anode E	Cathode E
11	Common Anode Digit 3	Common Cathode Digit 3	Common Anode Digit 3
12	Cathode B	Anode B	Cathode B
13	Cathode A	Anode A	Cathode A
14	Common Anode Digit 4	Common Cathode Digit 4	Common Anode Digit 4
15	Cathode D	Anode D	Cathode D

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