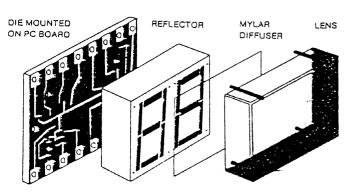
# 324-905/917/929/930



THREE-FIVE SYSTEMS, INC.

### MULTIDIGIT LED NUMERIC DISPLAYS TSB SERIES



Part Number	Digit Size	Part Number	Digit Size		
TSB373	0.3"	TSB3882	0.3"		
TSB374	0.3"	TSB3883	0.3"		
TSB381	0.3"	TSB5382	0.5"		
TSB382	0.3"	TSB5388	0.5"		
TSB581	0.5"	TSB5881	0.5"		
TSB582	0.5"	TSB5882	0.5"		
TSB583	0.5"	TSB5931	0.5"		
TSB584	0.5"	TSB7881	0.7"		
TSB3881	0.3"	TSB7882	0.7"		

### **ABSOLUTE MAXIMUM RATINGS**

Average Current/Segment: 20mA Max.
Peak Current/Segment: 75mA Max.
Reverse Voltage/Segment: 3.0V Min.

Operating and Storage

Temperature: -20°C to +70°C

Relative Humidity at 35°C: 98%

Lead Soldering Time

@ 230° C: 5 seconds

### **FEATURES**

- Wide Format Range of RED LED Displays
- TSB3883 is YELLOW LED
- End Stackability of 2-Digit & 4-Digit Displays
- Prematched Light Intensity Within Each Digit
- PCB Mounting for Easy Installation
- Easy to Read Display with Wide Viewing Angle
- Excellent ON-OFF Contrast

### **APPLICATIONS**

- Industrial Controls
- Data Terminals
- **■** Test Equipment
- Point Of Sale
- Mini-computer Readout
- Home Consumer Product Application

### DESCRIPTION

A broad application spectrum is covered with the multiple formats and digit sizes offered by this series of LED displays. These 18 types are available as standard products. Three-Five Systems is able to provide other non-standard formats on request. Contact your local representative.

### **ELECTRICAL AND OPTICAL CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Segment Light Intensity	10mA/Seq.	0.10	0.30		mcd
Digit and DP Light Intensity	10mA/Seg.	0.80	1.60		mcd
Segment Forward Voltage	10mA/Seg.	0.00	1.70	2.00	· mca
Segment Reverse Voltage	100uA/Seq.	3.00		2.00	V
Peak Wavelength—Red	i i i i i i i i i i i i i i i i i i i	3.00	8.00		V
-Yellow	• · · · · · · · · · · · · · · · · · · ·	}	660		nm
Spectral Width, Half-Intensity	;	İ	585		nm
Viewing Angle Off A			40		nm
Viewing Angle, Off Axis			60		degrees
Intensity Matching	10mA/Seg. Avg.		±33		%



THREE-FIVE SYSTEMS, INC.

Optoelectronics Group

TEL: 602-496-0035; FAX: 602-496-0168

THREE-FIVE SYSTEMS, LTD.

Swindon, U.K.

## MULTIDIGIT LED NUMERIC DISPLAYS—TSB SERIES

Part Number	Digit Size	Format	Drive	Digit Intensity (Typ.)	Forward Voltage (Typ.)	Package Code	
Mulliper	3120		Red LED Numeric Displays				
TSB373 TSB374 TSB381 TSB382	0.3"	58 No DP 58 No DP 58 58	Common Cathode—Direct Common Anode—Direct Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	А	
TSB581 TSB582 TSB583 TSB584	0.5"	8.8 8.8 8.8 8.9	Common Cathode—Multiplexed Common Anode—Multiplexed Common Cathode—Direct Common Anode—Direct	1.6mcd	1.7V @ 10mA peak	В	
TSB3881 TSB3882	0.3"	.8888 8888	Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	C	
TSB5382 TSB5388 TSB5881	0.5"	4888 4888 8888 8888	Common Anode—Multiplexed Common Cathode—Multiplexed Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	E E D D	
TSB5882	0.5"	888888	Common Cathode—Multiplexed	1.6mcd	1.7V @ 10mA peak	G	
TSB5931 TSB7881 TSB7882	0.5"	8888	Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	F	
	L	1	Yellow LED Numeric Display		1 A	C	
TSB3883	0.3"	8888	Common Cathode—Multiplexed	1.6mcd	1.7V @ 10mA peak		



### PIN OUT SPECIFICATIONS

Segment Designation

Pin	TSB 373	TSB 374	TSB 381	TSB 382	TSB 581	TSB 582	TSB 583	TSB 584	TSB 3881& 3883	TSB 3882	TSB 5382	TSB 5388	TSB 5881	TSB 5882	TSB 5931	TSB 7881	TSB 7882
No.  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Ga1* Ea1 Da1 Ca1 Ga2 Ea2 Da2 Ca2 C1&2† Ba2 Aa2 Fa2 Ba1 Aa1 Fa1 NC	Gc1 Ec1 Dc1 Cc1 Gc2 Ec2 Dc2 Cc2	Ga Ea NC c1 Da c2 DPa RC NC NC AA NC NC NC NC NC NC NC NC	Ec a1 NC Cc a2 Dc DPc Gc Bc NC NC Ac NC Fc NC	Ga c1 Ea NC NC Da DPa C2 Ba NC	Gc a1 Ec C C C C C C C C C C C C C C C C C C	Ea1 NC Da1 DPa1 Ga2 Ea2 Da2 DPa2 Ca2 c1&2 Ba2 Aa2 Fa2 Ba1 Aa1 NC Fa1 NC Ga1	Ec1 NC Dc1 Cc1 DPc1 Gc2 Ec2 Dc2 Cc2 DPc2 a1&2 Bc2 Ac2 Fc2 Bc1 Ac1 NC Fc1	NC Ea C1 C1 C2 C2 C3 C3 C4 C4 C4 C4	NC E a 1 NC a 2 D G C N A 3 B A C C A 4 D C C	AC NC a1 Jc1 Hc1 a2 CC NC a3 B C Ec a4 DPc Gc	Ga1 Gc1 Ha1§ Jc1§ DPa1 DPa2 DPa3 DPa4 Da Ca Ea C1 C2 C3 C4	Aa NC Da c1 NC c2 Ca NC c3 Ba Fa Ea c4 DPa Ga	AC NC a1 NC A2 CC NC A3 BC FC EC A4 DPC GC	c1 c2 c3 Aa Fa Ba C4 Da Ca Ea DPa c5 c6	NC NC c1 Fa c2 Ca DPa Ea c3 Ba Aa c4 Da	NC NC a1 Fc a2 Cc DPc Ec a3 Bc Ac a4 Dc

Segment, Polarity, Digit. a = Anode, c = Cathode.

\*Anode G of Digit 1. †Common Cathode of Digits 1 and 2. §Segments H & J (vertical bar of + sign) internally connected in series.



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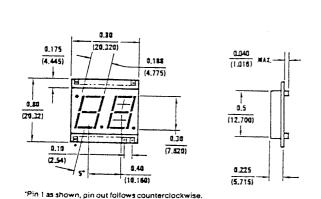
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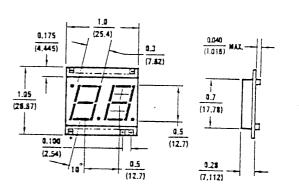
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## MULTIDIGIT LED NUMERIC DISPLAYS-TSB SERIES

### PACKAGE OUTLINES

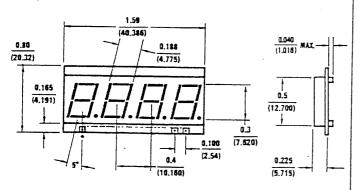


Outline A



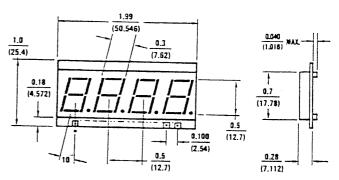
\*Pin 1 as shown, pin out follows counterclockwise.

#### Outline B



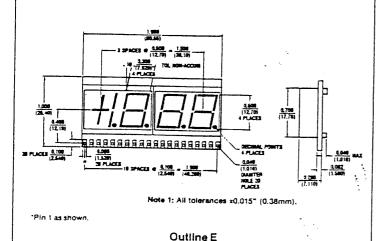
Pin 1 as shown.

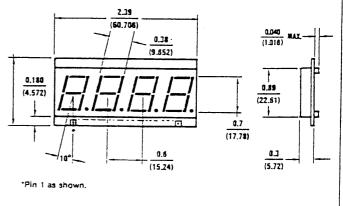
Outline C



\*Pin 1 as shown.

Outline D





**Outline F** 



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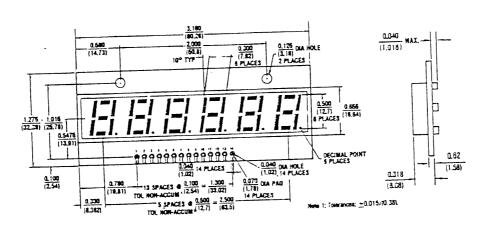
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Swindon, U.K.

## MULTIDIGIT LED NUMERIC DISPLAYS—TSB SERIES



Outline G

## RECOMMENDED ARRAY DISPLAYS PROCESSING

The TSB series array is constructed on a standard printed circuit board substrate and covered with a plastic lens.

The edge connector's tab will withstand 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.

It is recommended that the back of the display be masked off with low tack masking tape during flux and clean operations, to prevent condensation of flux or cleaner on the underside of the lens.

It is also recommended that only localized cleaning with a cotton swab on external surfaces be performed after soldering.

Only rosin core solder, solid core solder and low temperature mildly activated flux are recommended. Recommended post solder 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 the display.



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