



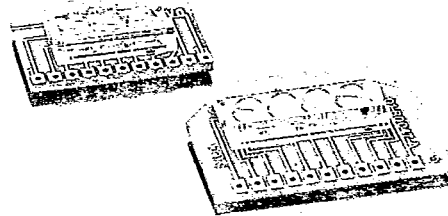
LTB-1400 SERIES

T-41-33

RED 7-SEGMENT MAGNIFIED
MONOLITHIC NUMERIC DISPLAYS

FEATURES

- INTEGRATED MAGNIFIER LENS.
- LOW POWER REQUIREMENTS.
- MONOLITHIC CONSTRUCTION FOR MAXIMUM BRIGHTNESS AT MINIMUM POWER.
- COMMON CATHODE FOR SIMPLICITY OF MULTIPLEXING.
- CATEGORIZED FOR BRIGHTNESS UNIFORMITY.



DESCRIPTION

The LTB-0022/0028/0038/0047 & LTB-1466/1468/1488/1498 are red numeric LED displays. Low cost is achieved through minimum use of monolithic GaAsP material and magnification to full height using a simple integrated lens construction.

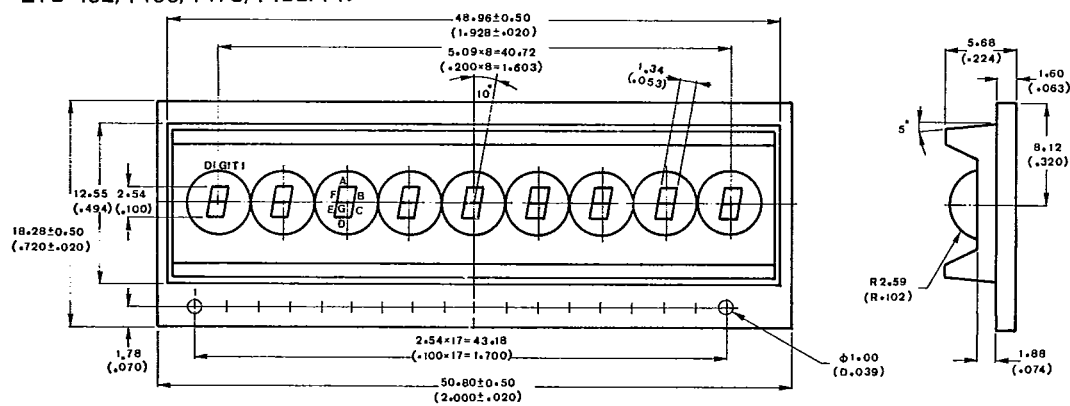
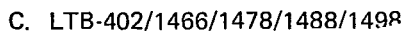
These displays are designed for multiplex operation the desired digit being displayed by selecting the appropriate cathode. A right hand decimal point is provided. All devices are optimized for low power portable battery operated equipment using MOS and CMOS integrated logic circuits.

DEVICES

PART NO. LTB--	DESCRIPTION	DISPLAY FONT	CIRCUIT	PIN CODE	P.D.
0022	2	Bx8	MPX	A	A
0028	2	x8B.	MPX	B	A
0038	3	BBB.	MPX	C	A
0047	4	BBBB	MPX	D	B
1466	6	xxBBBBBBx	MPX	E	C
1478	7	xBBBBBBBx	MPX	E	C
1488	8	xBBBBBBBBB.	MPX	E	C
1498	9	BBBBBBBBBB.	MPX	E	C



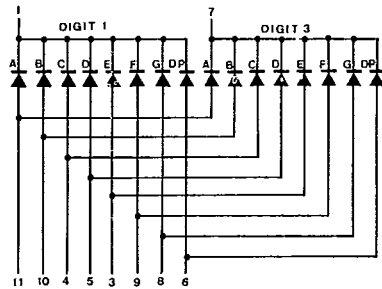
A. LTB-0022/0028/0038



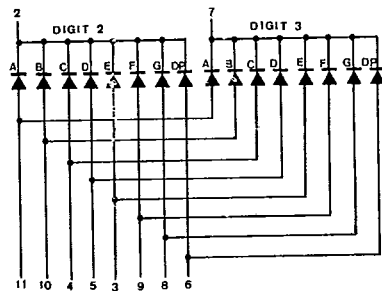
6-151 NOTE: All dimensions are in $\frac{\text{millimeters}}{(\text{inches})}$, tolerance is $\frac{0.25\text{mm}}{(0.010'')}$ unless otherwise noted.

INTERNAL CIRCUIT DIAGRAM

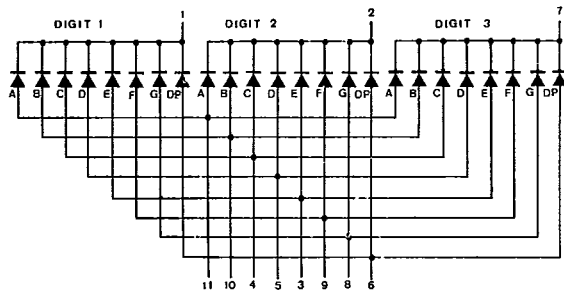
A. LTB-0022



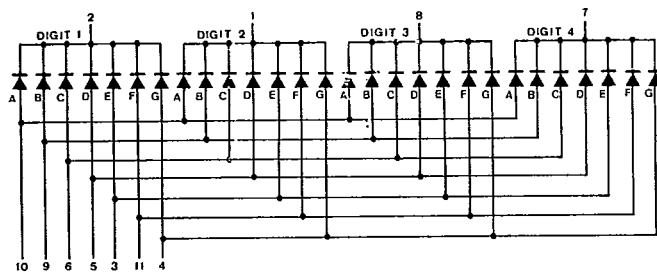
B. LTB-0028



C. LTB-0038



D. LTB-0047



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PIN NO.	LTA-1498	LTA-1488	LTA-1478	LTA-1466	CATHODE	ANODE
1	NC	NC	NC	NC	NC	
2	Digit 1	NC	NC	NC	V	
3	Segment C	Segment C	Segment C	Segment C		V
4	Digit 2	Digit 1	Digit 1	NC	V	
5	DP	DP	DP	DP		V
6	Digit 3	Digit 2	Digit 2	Digit 1	V	
7	Segment A	Segment A	Segment A	Segment A		V
8	Digit 4	Digit 3	Digit 3	Digit 2	V	
9	Segment E	Segment E	Segment E	Segment E		V
10	Digit 5	Digit 4	Digit 4	Digit 3	V	
11	Segment D	Segment D	Segment D	Segment D		V
12	Digit 6	Digit 5	Digit 5	Digit 4	V	
13	Segment G	Segment G	Segment G	Segment G		V
14	Digit 7	Digit 6	Digit 6	Digit 5	V	
15	Segment B	Segment B	Segment B	Segment B		V
16	Digit 8	Digit 7	Digit 7	Digit 6	V	
17	Segment F	Segment F	Segment F	Segment F		
18	Digit 9	Digit 8	NC	NC	V	

ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

PARAMETER	SYMBOL	MAXIMUM RATING	UNIT
Average Forward Current Per Segment/D.P. Direct Drive Current	I_{CF}	5	mA
Peak Forward Current Per Segment/D.P. (Duty 1/10 1 KHz)	I_{PF}	40	mA
Reverse Voltage (Segment or Decimal Point)	V_R	3	V
Operating Temperature Range	T_{opr}	-25°C to 60°C	
Storage Temperature Range	T_{stg}	-25°C to 70°C	
Power Dissipation per Digit	P_D	50	mW
Max. Solder Temperature 260°C From 3 Seconds at 2mm From the Case or Reflector Edge			

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
Luminous Intensity per Digit	I_v		100		μcd	$I_F = 5\text{ mA}$
Peak Emission Wavelength	λ_p		655		nm	$I_F = 5\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 5\text{ mA}$
Forward Voltage	V_F		1.6			$I_F = 5\text{ mA}$
Reverse Current	I_R			100	μA	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$				2:1	$I_F = 5\text{ mA}$

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

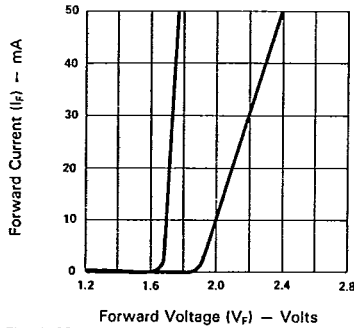


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

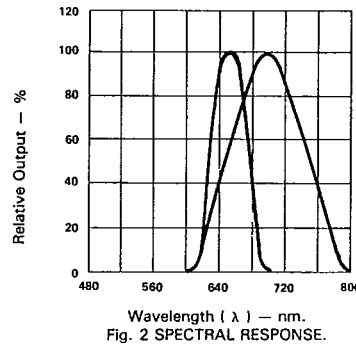


Fig. 2 SPECTRAL RESPONSE.

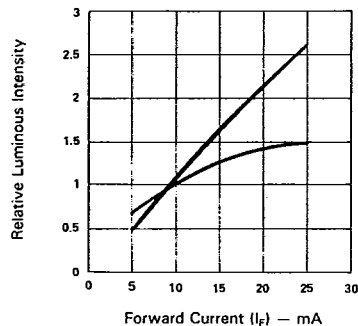


Fig. 3 RELATIVE, LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

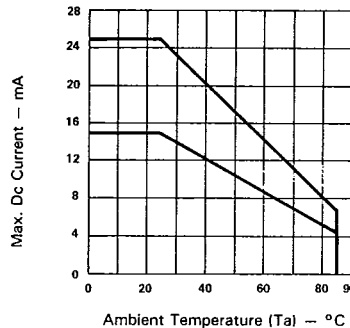


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

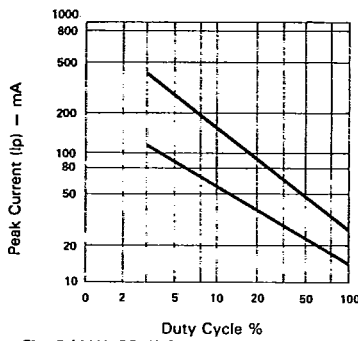


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE. % (REFRESH RATE - F = 1 KHz)

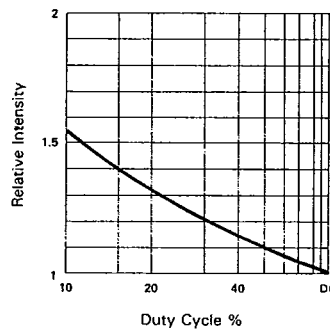


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE % (AVERAGE I_f = 10mA PER SEG.)

