12-Digit Telephone-Calculator Display

FLB1208X1

Optoelectronic Products

General Description
The FLB1208X1 is a non-multiplexed liquid crystal display that is hermetically sealed with glass frit. It interfaces with elastomeric connectors, is available in four polarizer options and operates at the standard temperature range of −20°C to +60°C. Applications include telephone, calculator and general instrumentation requiring multiple digits.

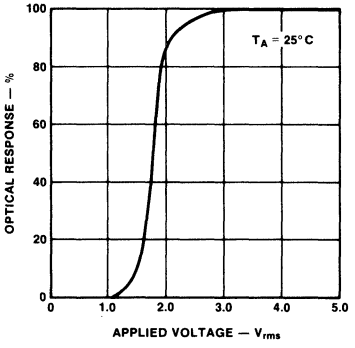
0.3-Inch Digits (7.6 mm)
12 Decimal Points
Four Polarizer Options
Glass-Frit Seal for High Reliability

Electrical Characteristics Measured at 25°C with drive voltage of 5.0 V, square wave at 32 Hz.

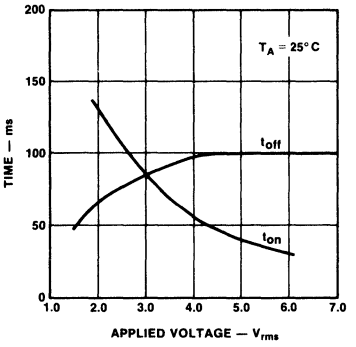
Characteristic	Min	Typ	Max	Units
Operating Voltage	2.8	5.0	12.0	V_{RMS}
Saturation Voltage	2.0	2.2	2.4	V_{RMS}
Operating Frequency Range	30	32	1000	Hz
Drive Current at 3.0 V, All Segments On			10	μA
Contrast Ratio		20:1		
Response Times: t_{on} (Includes Delay Time)		70	150	ms
t_{off} (Includes Delay Time)		100	150	ms
Operating Temperature Range (Note)	−20		60	°C
Storage Temperature Range	−20		80	°C
Humidity	50/60			°C/RH
Life Time		50k		hrs
DC Drive Component Allowable			50	mV

Note
Display may be operated beyond these limits for short periods of time. Extended periods of operation at high temperatures and humidities cause polarizer degradation resiting in reduced contrast. Higher operating temperature is available. Contact factory.

Voltage Characteristics



Response Time

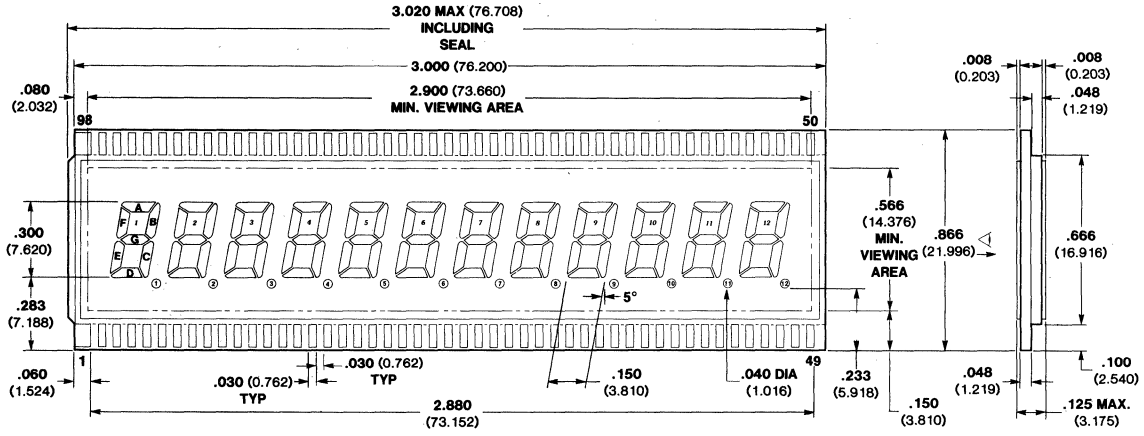


6

Package Outline
Pin Assignments

FLB1208X1

Package Outline



Notes
Front and rear polarizers are same size.
All dimensions in inches **bold** and millimeters (parentheses).
Solder seal shall not exceed backglass width.

Pin Assignments

1 Backplane	21 Decimal Point 5	41 Decimal Point 10	61 Segment G_{10}	81 Segment G_5
2 Segment E_1	22 Segment E_6	42 Segment E_{11}	62 Segment B_9	82 Segment B_4
3 Segment D_1	23 Segment D_6	43 Segment D_{11}	63 Segment A_9	83 Segment A_4
4 Segment C_1	24 Segment C_6	44 Segment C_{11}	64 Segment F_9	84 Segment F_4
5 Decimal Point 1	25 Decimal Point 6	45 Decimal Point 11	65 Segment G_9	85 Segment G_4
6 Segment E_2	26 Segment E_7	46 Segment E_{12}	66 Segment B_8	86 Segment B_3
7 Segment D_2	27 Segment D_7	47 Segment D_{12}	67 Segment A_8	87 Segment A_3
8 Segment C_2	28 Segment C_7	48 Segment C_{12}	68 Segment F_8	88 Segment F_3
9 Decimal Point 2	29 Decimal Point 7	49 Decimal Point 12	69 Segment G_8	89 Segment G_3
10 Segment E_3	30 Segment E_8	50 Segment B_{12}	70 Segment B_7	90 Segment B_2
11 Segment D_3	31 Segment D_8	51 Segment A_{12}	71 Segment A_7	91 Segment A_2
12 Segment C_3	32 Segment C_8	52 Segment F_{12}	72 Segment F_7	92 Segment F_2
13 Decimal Point 3	33 Decimal Point 8	53 Segment G_{12}	73 Segment G_7	93 Segment G_2
14 Segment E_4	34 Segment E_9	54 Segment B_{11}	74 Segment B_6	94 Segment B_1
15 Segment D_4	35 Segment D_9	55 Segment A_{11}	75 Segment A_6	95 Segment A_1
16 Segment C_4	36 Segment C_9	56 Segment F_{11}	76 Segment F_6	96 Segment F_1
17 Decimal Point 4	37 Decimal Point 9	57 Segment G_{11}	77 Segment G_6	97 Segment G_1
18 Segment E_5	38 Segment E_{10}	58 Segment B_{10}	78 Segment B_5	98 Backplane
19 Segment D_5	39 Segment D_{10}	59 Segment A_{10}	79 Segment A_5	
20 Segment C_5	40 Segment C_{10}	60 Segment F_{10}	80 Segment F_5	

Ordering Information FLB1208X1

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Device Type	Polarizer Option
FLB1208A1	Non-Polarized
FLB1208B1	Transflective
FLB1208C1	Reflective (smooth)
FLB1208D1	Transmissive

Connectors
Display interfaces with elastomeric connectors.
See page 6-42 for elastomeric connector suppliers.

Drivers
See page 6-43 for available drivers.