

4-Digit Large-Area Clock / DPM Display

Optoelectronic Products

FLB4013X1 FLB4013X2

General Description

The FLB4013X1 and FLB4013X2 are liquid crystal displays that are hermetically sealed with glass frit. They are available in pinned or elastomeric connector configurations, offer four polarizer options and operate at the standard temperature range of -20°C to $+60^{\circ}\text{C}$. Applications include clock, digital panel meter and general instrumentation.

0.5-Inch Digits (13 mm)

Decimal Points for DPMs

Color for Timekeeping

Four Polarizer Options

Glass-Frit Seal for High Reliability

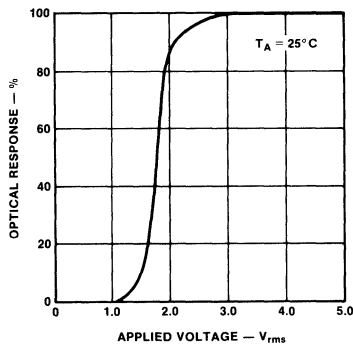
Electrical Characteristics Measured at 25°C with drive voltage of 5.0 V, square wave at 32 Hz.

Characteristic	Min	Typ	Max	Units
Operating Voltage	2.8	5.0	12	V
Saturation Voltage	2.0	2.2	2.4	V
Operating Frequency Range	30	32	1000	Hz
Drive Current at 3.0 V, All Segments On			5.0	μA
Viewing Angle		45		degrees
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	$^{\circ}\text{C}$
Storage Temperature Range	-20		80	$^{\circ}\text{C}$
Humidity	50/60			$^{\circ}\text{C}/\text{RH}$
Life Time		50k		hrs

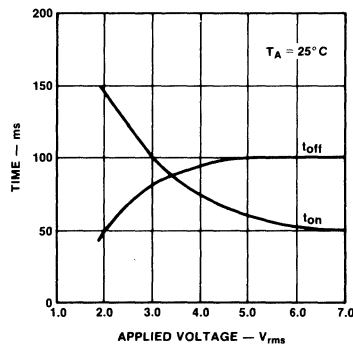
Note

Higher operating temperature is available. Consult the factory for details.

Voltage Characteristics



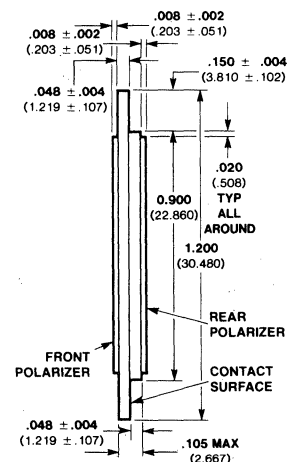
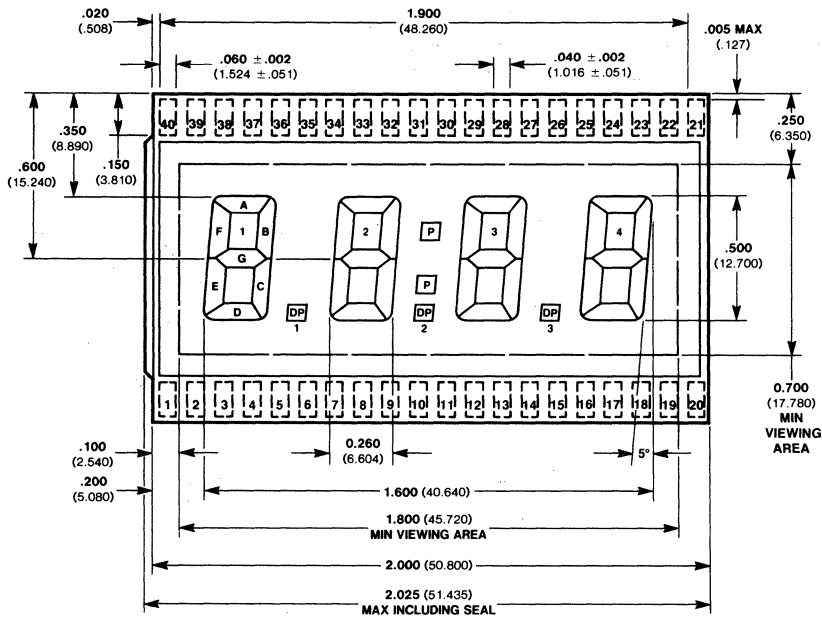
Response Time



Package Outline Pin Assignments

FLB4013X1 FLB4013X2

FLB4013X1 (Elastomer Connection)



Note

All dimensions in inches **bold** and millimeters (parentheses).

Pin Assignments

1 Backplane BP	9 Segment E ₂	17 Segment E ₄	25 Segment A ₃	33 NC
2 NC	10 Segment D ₂	18 Segment D ₄	26 Segment F ₃	34 Segment B ₁
3 NC	11 Segment C ₂	19 Segment C ₄	27 Segment G ₃	35 Segment A ₁
4 NC	12 Decimal Point 2	20 Segment B ₄	28 Colon P	36 Segment F ₁
5 Segment E ₁	13 Segment E ₃	21 Segment A ₄	29 Segment B ₂	37 Segment G ₁
6 Segment D ₁	14 Segment D ₃	22 Segment F ₄	30 Segment A ₂	38 NC
7 Segment C ₁	15 Segment C ₃	23 Segment G ₄	31 Segment F ₂	39 NC
8 Decimal Point 1	16 Decimal Point 3	24 Segment B ₃	32 Segment G ₂	40 NC

FLB4013X1
FLB4013X2

Technical drawing of a 20-column, 40-row display panel. The drawing includes dimensions in inches and millimeters, and labels for various components and viewing areas.

Dimensions:

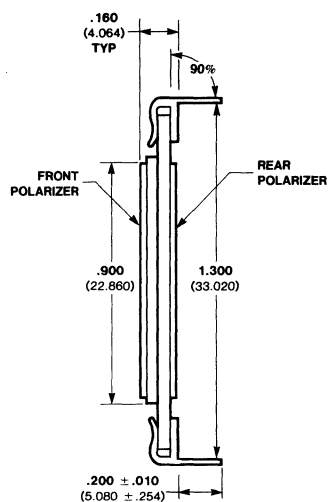
- Top: .020 (.508) (left margin), 1.900 (48.260) (total width), .005 MAX (.127) (right margin).
- Left: .350 (8.890) (top margin), .150 (3.810) (bottom margin), .600 (15.240) (total left margin).
- Right: .250 (6.350) (top margin), .500 (12.700) (middle margin), .700 (17.780) (bottom margin).
- Bottom: .100 (2.540) (left margin), .200 (5.080) (right margin), .260 (6.604) (center margin), 1.600 (40.640) (total bottom margin), 1.800 (45.720) (total bottom margin), 2.000 (50.800) (total bottom margin), 2.025 (51.435) (total bottom margin).

Component Labels:

- Top row: 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21.
- Bottom row: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.
- Internal labels: A, B, C, D, E, F, G, 1, 2, 3, 4, P, DP 1, DP 2, DP 3.

Viewing Areas:

- MIN VIEWING AREA: 1.800 (45.720)
- MAX INCLUDING SEAI: 2.025 (51.435)



All dimensions in inches **bold** and millimeters (parentheses).

Ordering Information

Elastomeric Connector Configuration	Connector Pins	Polarizer Option
FLB4013A1	FLB4013A2	Non-polarized
FLB4013B1	FLB4013B2	Transflective
FLB4013C1	FLB4013C2	Reflective (smooth)
FLB4013D1	FLB4013D2	Transmissive

Display is available in pinned or elastomeric configuration.

See page 6-42 for elastomeric connector suppliers.

See page 6-43 for available drivers.