

# 3½-Digit Clock and Instrument Display

Optoelectronic Products

# FLB3513X3 FLB3513X4

## General Description

The FLB3513X3 and FLB3513X4 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  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ . Applications include clock, digital panel meter and general instrumentation.

**0.5-Inch Digits (13 mm)**  
**Decimal Points for DPMs**  
**Colon for Timekeeping**  
**Four Polarizer Options**  
**Glass-Frit Seal for High Reliability**

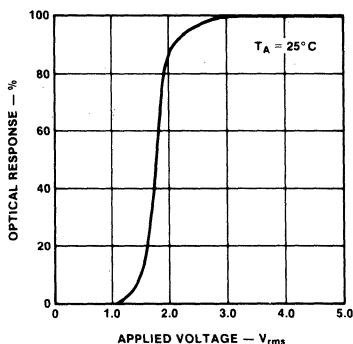
**Electrical Characteristics** Measured at  $25^{\circ}\text{C}$  with drive voltage of 5.0 V, square wave at 32 Hz.

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	$\mu\text{A}$
Viewing Angle		45		degrees
Contrast Ratio		20:1		
Response Times: $t_{\text{on}}$ (Includes Delay Time)		70	150	ms
$t_{\text{off}}$ (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

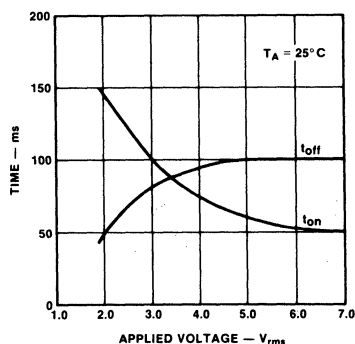
## Note

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

## Voltage Characteristics



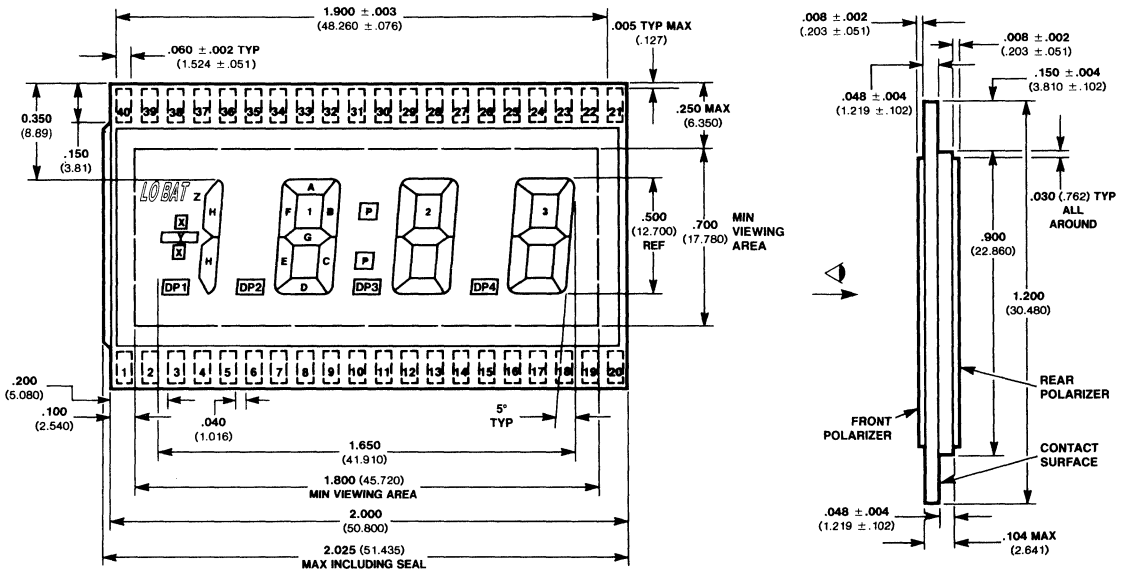
## Response Time



# Package Outline

# FLB35 13X3 FLB35 13X4

## FLB3513X3 Elastomer Connection



### Note

All dimensions in inches bold and millimeters (parentheses)

### Pin Assignments

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

### Ordering Information

#### Elastomeric

Connector Configuration	Connector Pins	Polarizer Option
FLB35 13A3	FLB35 13A4	Non-Polarized
FLB35 13B3	FLB35 13B4	Transflective
FLB35 13C3	FLB35 13C4	Reflective (smooth)
FLB35 13D3	FLB35 13D4	Transmissive

### Connectors

Display is available in pinned or elastomeric configuration.

See page 6-42 for elastomeric connector suppliers.

### Drivers

See page 6-43 for available drivers.

# Pin Assignments Ordering Information

# FLB3513X3 FLB3513X4

## FLB3513X4 (Pin Connection)

