

# 3½-Digit Clock and Instrument Display

Optoelectronic Products

# FLB3511X1

## General Description

The FLB3511X1 is a 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  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ . Applications include clock, digital panel meter and general instrumentation.

## 0.45-Inch Digits (11.4 mm)

## Colon for Timekeeping

## Polarity and Decimal Points for DPMs

## Four Polarizer Options

## Glass-Frit Seal for High Reliability

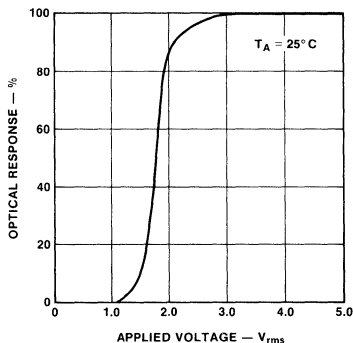
**Electrical Characteristics** Measured at  $25^{\circ}\text{C}$  with drive voltage of 5.0 V, square wave at 32 Hz.

Characteristic	Min	Typ	Max	Units
Operating Voltage	2.8	5.0	12.0	$V_{\text{RMS}}$
Saturation Voltage	2.0	2.2	2.4	$V_{\text{RMS}}$
Operating Frequency Range	30	32	1000	Hz
Drive Current at 3.0 V, All Segments On			5	$\mu\text{A}$
Segment Capacitance			100	pF
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
DC Drive Component Allowable			50	mV

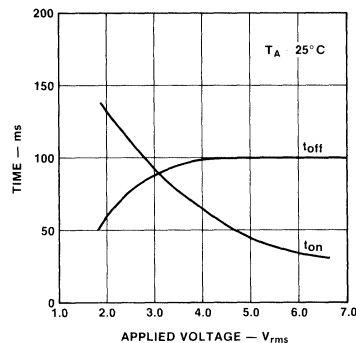
## Note

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

## Voltage Characteristics



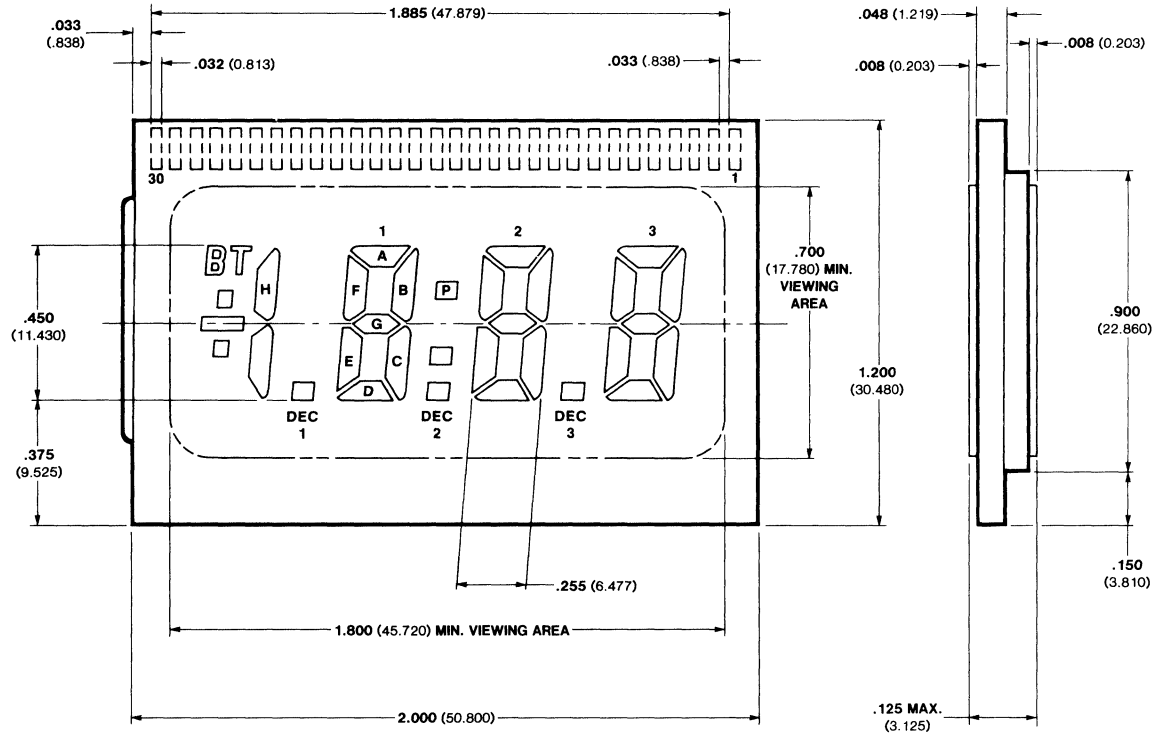
## Response Time



# Package Outline Pin Assignments

## FLB3511X1

### Package Outline



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

### Pin Assignments

1 Segment D <sub>3</sub>	7 Segment E <sub>3</sub>	13 Segment F <sub>2</sub>	19 Segment C <sub>1</sub>	25 Decimal 1
2 Segment C <sub>3</sub>	8 Decimal 3	14 Segment G <sub>2</sub>	20 Segment B <sub>1</sub>	26 Half Digit
3 Segment B <sub>3</sub>	9 Segment D <sub>2</sub>	15 Segment E <sub>2</sub>	21 Segment A <sub>1</sub>	27 Minus
4 Segment A <sub>1</sub>	10 Segment C <sub>2</sub>	16 Colon P	22 Segment F <sub>1</sub>	28 Plus
5 Segment F <sub>3</sub>	11 Segment B <sub>2</sub>	17 Decimal 2	23 Segment G <sub>1</sub>	29 BT
6 Segment G <sub>3</sub>	12 Segment A <sub>2</sub>	18 Segment D <sub>1</sub>	24 Segment E <sub>1</sub>	30 Backplane

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# Ordering Information

# FLB3511X1

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## Ordering Information

**Device Type**

FLB3511A1

FLB3511B1

FLB3511C1

FLB3511D1

**Polarizer Option**

Non-Polarized

Transflective

Reflective (smooth)

Transmissive

**Connectors**

Display interfaces with elastomeric connectors.

See page 6-42 for elastomeric connector suppliers.

**Drivers**

See page 6-43 for available drivers.