



# Electro-Optical Specifications LCD Panel Displays

## Electro-Optical Specifications

### Absolute Maximum Ratings (Polarizers Attached)

Parameter	Liquid Crystal Material		Unit
	"Standard" Temperature	"W" Wide Temperature	
Applied Voltage	6	10	Vrms
DC Drive allowable	25	25	mV
Operating Temperature	-10 to +60	0 to + 80	°C
Storage Temperature	-20 to +60	-40 to + 85	°C
Operating Frequency	30 to 300	30 to 300	Hz

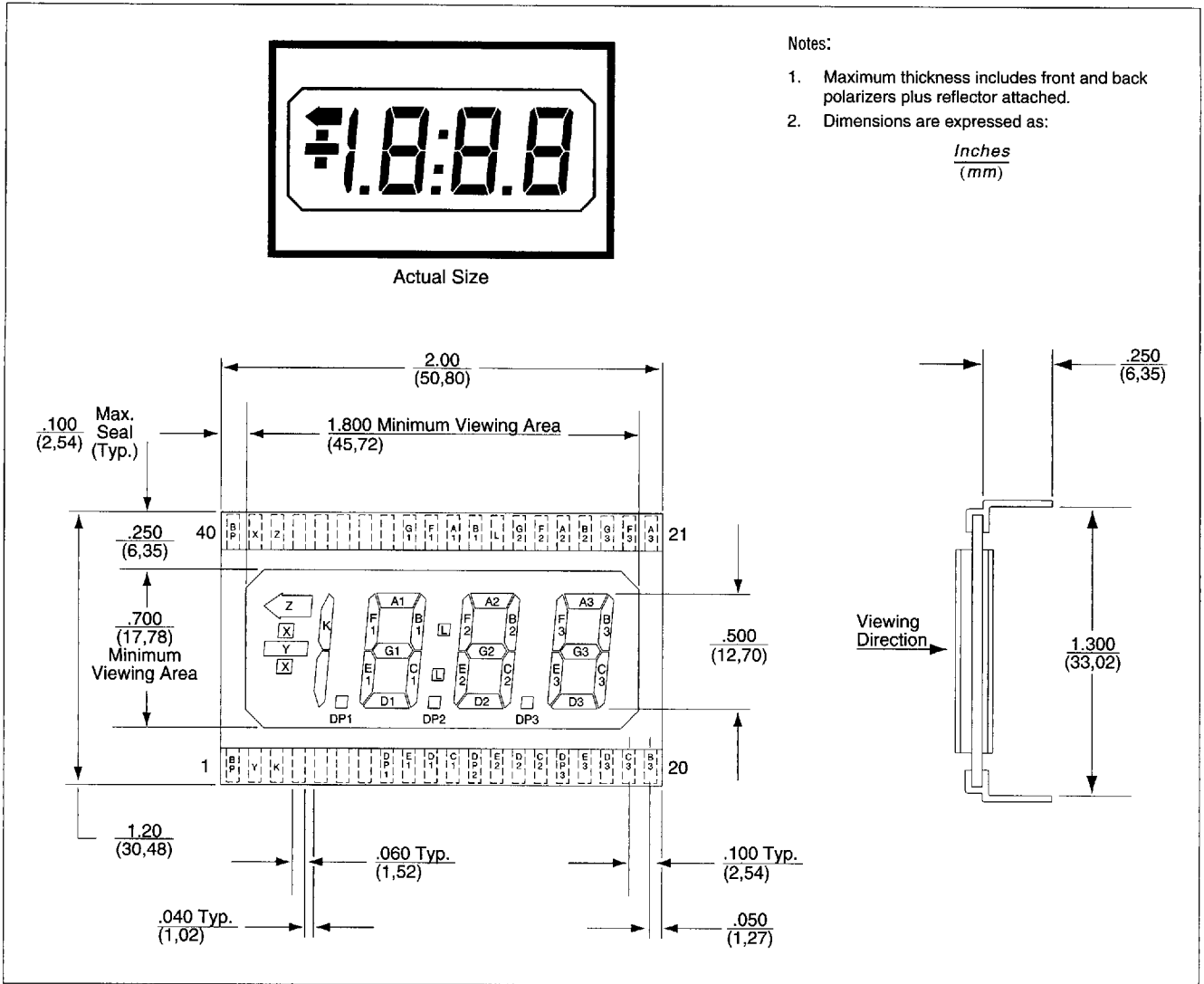
Notes:

- Upper limits achieved with high temperature "U" sheet polarizers. With standard temperature polarizers, high temperature operation and storage is recommended not to exceed +60°C over extended periods of time.
- Flicker may occur below 30 Hz: power consumption increases above 100 Hz.

### Typical Operating Characteristics

Parameter	Liquid Crystal Material						Unit
	"Standard" Temperature			"W" Wide Temperature			
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Operating Voltage	3.0	5.0	6.0	3.5	5.0	6.0	Vrms
Operating Frequency	30	40	100	30	40	100	Hz
Operating Temperature	-10	25	60	-40	25	80	°C
Operating Current							
0.5" Character Height	—	1.0	—	—	1.0	—	μA/digit
0.7" Character Height	—	3.0	—	—	3.0	—	μA/digit
1.0" Character Height	—	6.0	—	—	6.0	—	μA/digit
Optical Response Time							
Rise time (Ta = 60°C)	—	15	—	—	40	—	mS
Decay time (Ta = 60°C)	—	60	—	—	40	—	mS
Rise time (Ta = 25°C)	—	120	—	—	60	—	mS
Decay time (Ta = 25°C)	—	100	—	—	50	—	mS
Rise time (Ta = 0°C)	—	350	—	—	100	—	mS
Decay time (Ta = 0°C)	—	280	—	—	150	—	mS
Contrast Ratio	—	20:1	—	—	20:1	—	—
Viewing Angle	—	±60°	—	—	±60°	—	—
DC Resistance	—	100	—	—	100	—	MΩ
Expected Life	—	50000	—	—	100000	—	Hours

FE0201  
3 1/2 Digits, 0.5 Inch (12.7mm) Character Height



Pin Assignments

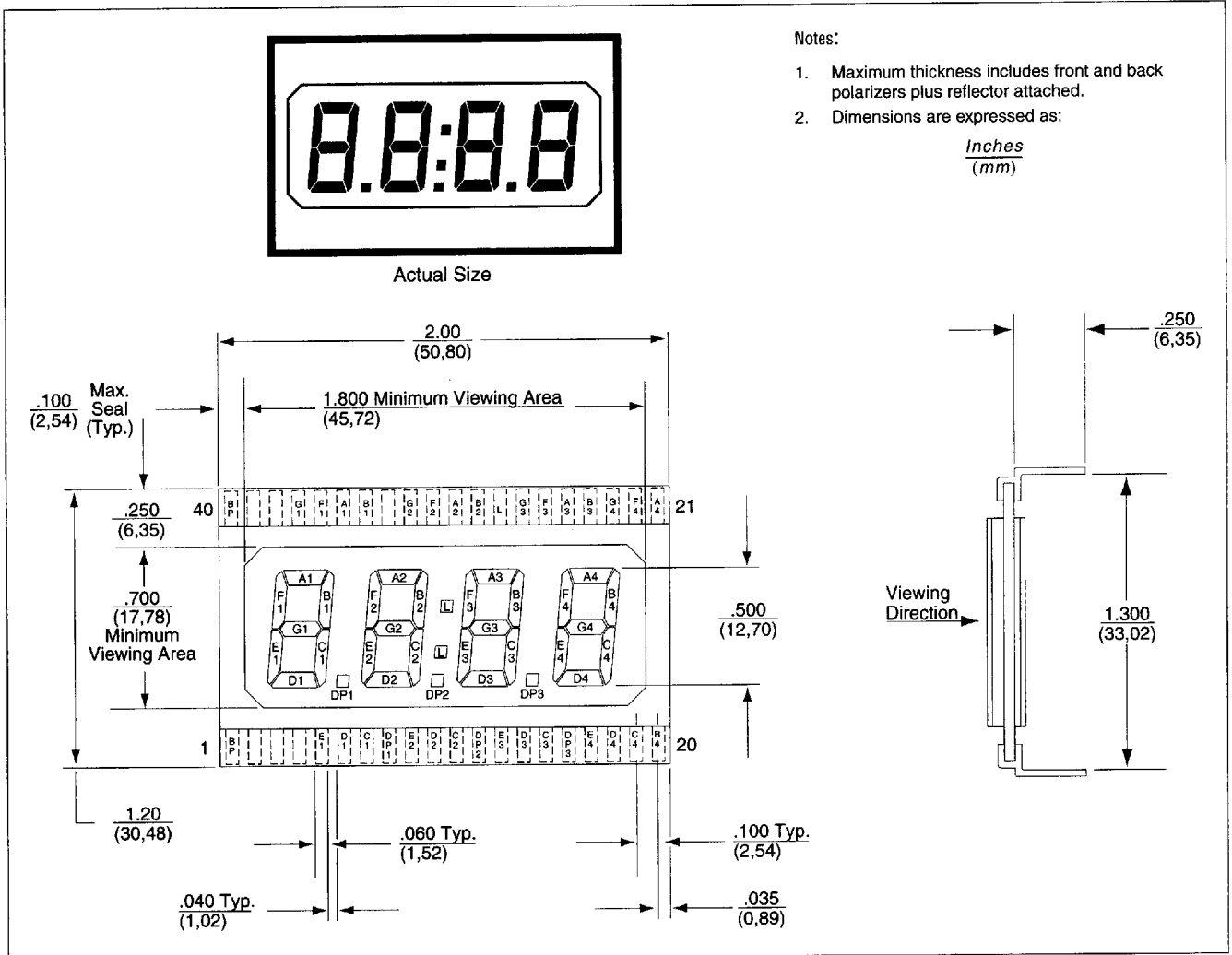
Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	NC	9	E1	13	E2	17	E3	21	A3	25	A2	29	B1	33	NC	37	NC
2	Y	6	NC	10	D1	14	D2	18	D3	22	F3	26	F2	30	A1	34	NC	38	Z
3	K	7	NC	11	C1	15	C2	19	C3	23	G3	27	G2	31	F1	35	NC	39	X
4	NC	8	DP1	12	DP2	16	DP3	20	B3	24	B2	28	L	32	G1	36	NC	40	BP

FE0202  
4 Digits, 0.5 Inch (12.7mm) Character Height

Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

*Inches*  
(mm)

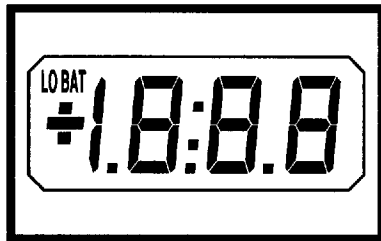


Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	E1	9	E2	13	E3	17	E4	21	A4	25	A3	29	B2	33	NC	37	G1
2	NC	6	D1	10	D2	14	D3	18	D4	22	F4	26	F3	30	A2	34	B1	38	NC
3	NC	7	C1	11	C2	15	C3	19	C4	23	G4	27	G3	31	F2	35	A1	39	NC
4	NC	8	DP1	12	DP2	16	DP3	20	B4	24	B3	28	L	32	G2	36	F1	40	BP



FE0203  
3 1/2 Digits, 0.5 Inch (12.7mm) Character Height

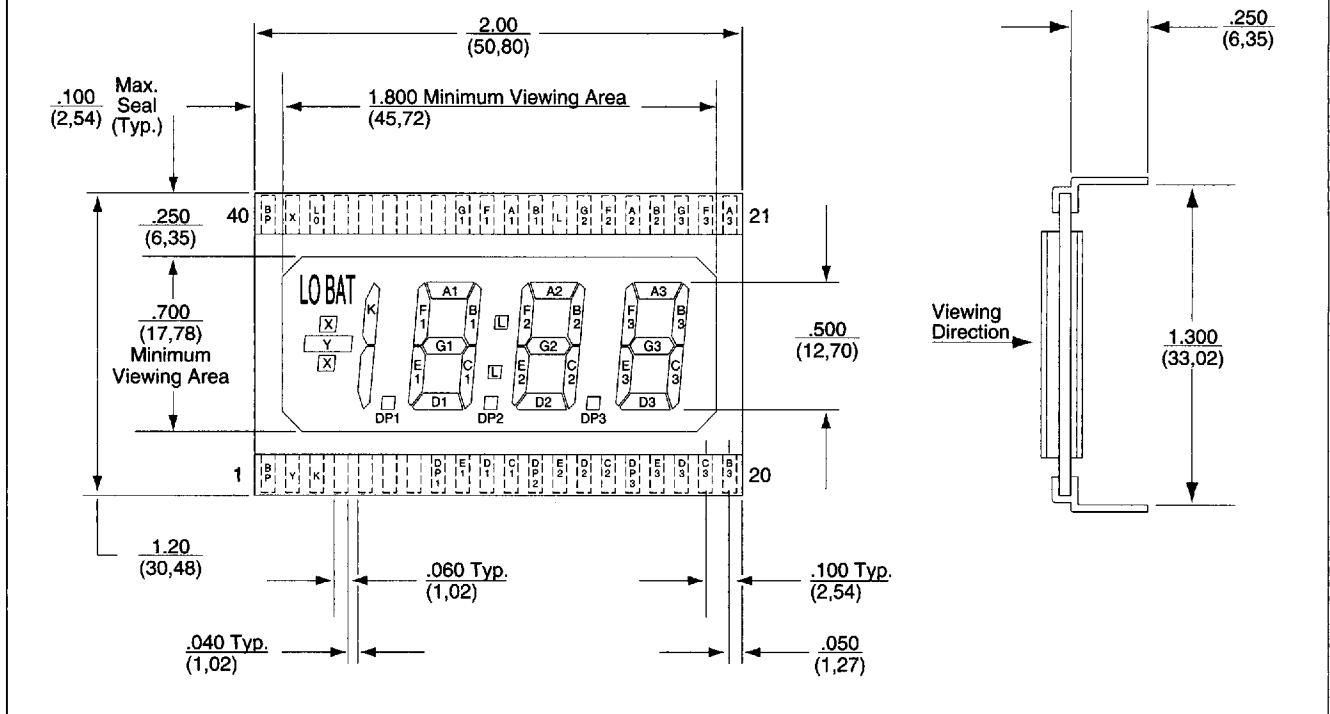


Actual Size

Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

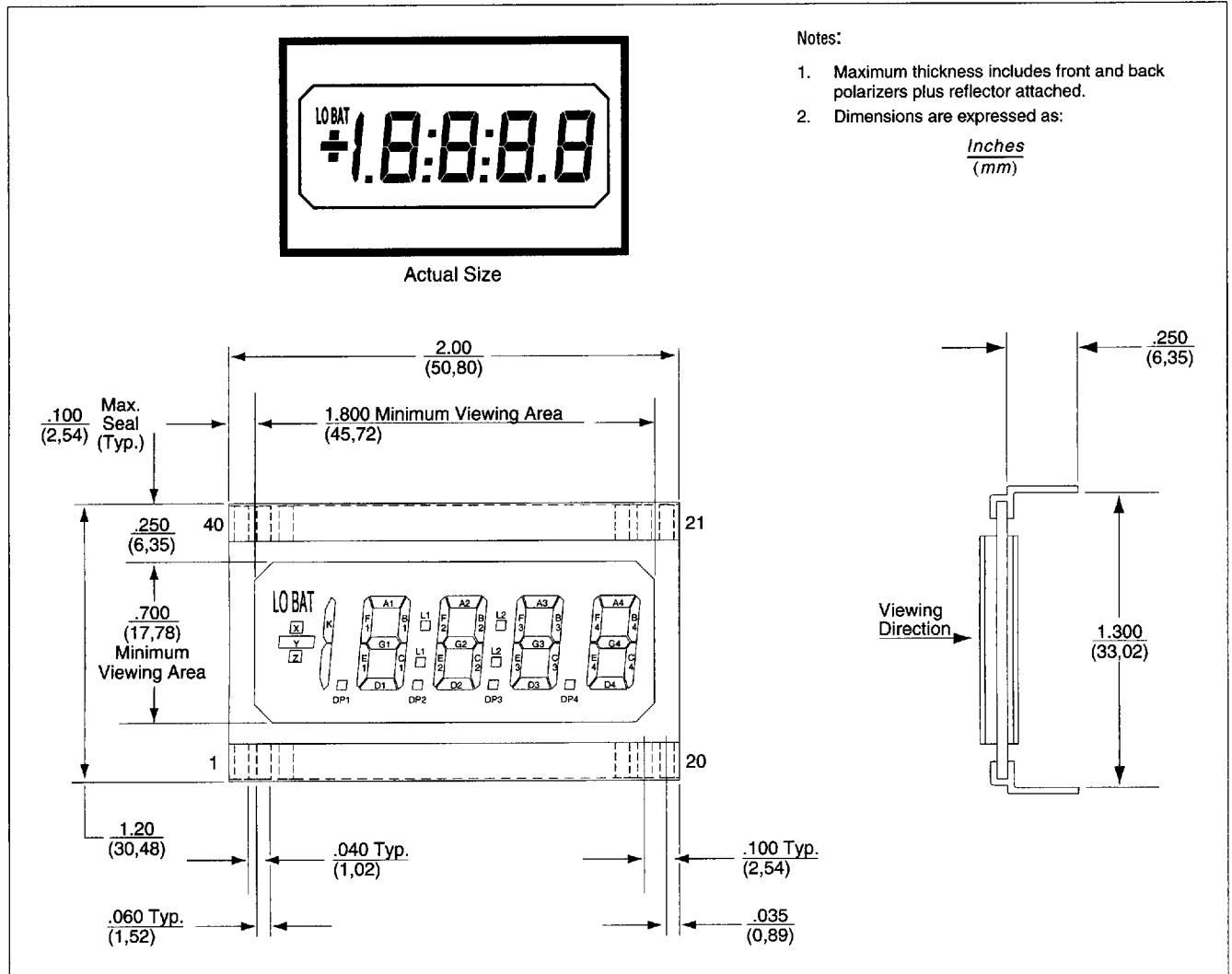
*Inches*  
*(mm)*



Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	NC	9	E1	13	E2	17	E3	21	A3	25	A2	29	B1	33	NC	37	NC
2	Y	6	NC	10	D1	14	D2	18	D3	22	F3	26	F2	30	A1	34	NC	38	LO
3	K	7	NC	11	C1	15	C2	19	C3	23	G3	27	G2	31	F1	35	NC	39	X
4	NC	8	DP1	12	DP2	16	DP3	20	B3	24	B2	28	L	32	G1	36	NC	40	BP

FE0206  
4 1/2 Digits, 0.4 Inch (10.2mm) Character Height



Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

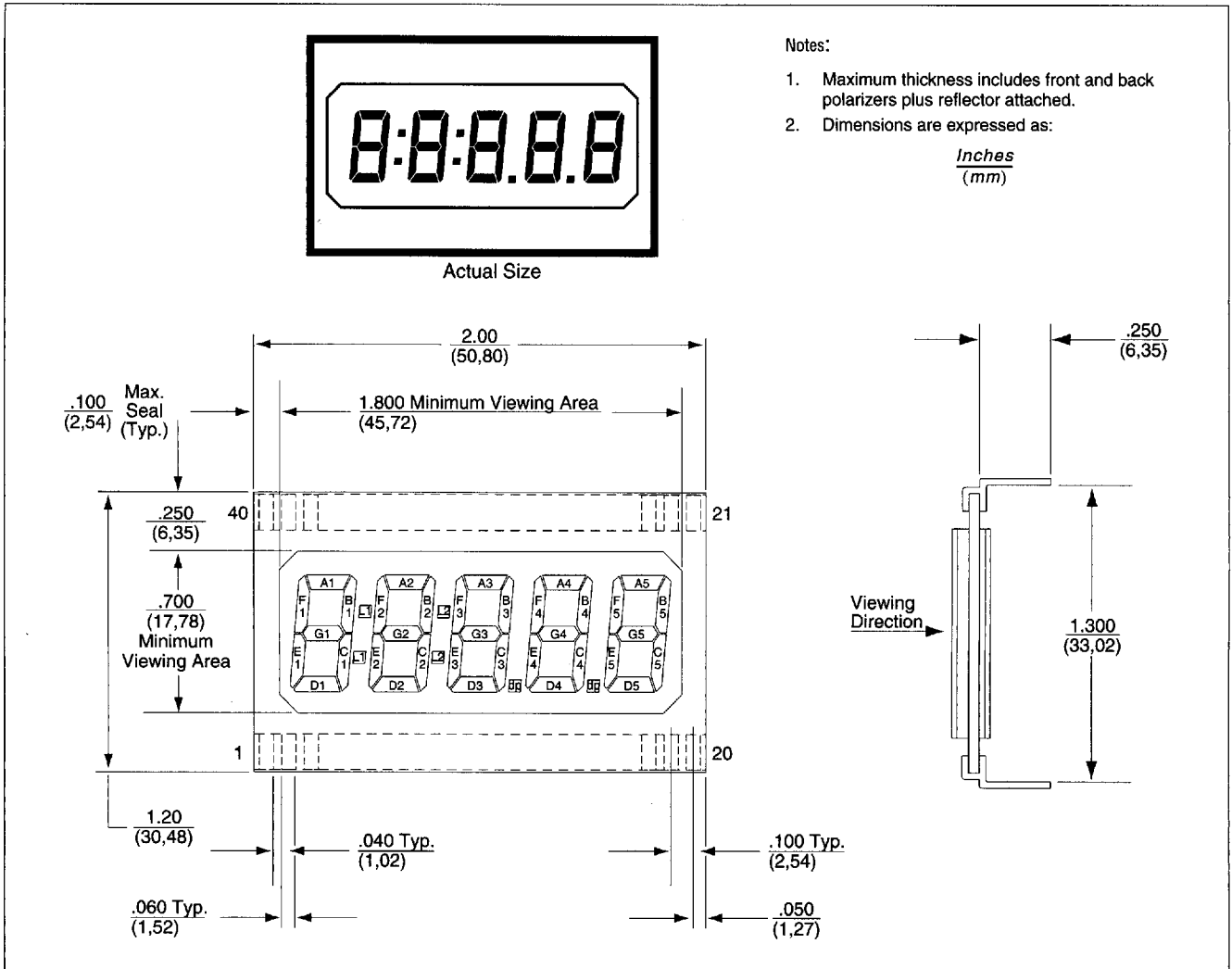
*Inches*  
(*mm*)

Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	E1	9	E2	13	E3	17	E4	21	A4	25	A3	29	B2	33	L1	37	G1
2	Y	6	D1	10	D2	14	D3	18	D4	22	F4	26	F3	30	A2	34	B1	38	BAT
3	K	7	C1	11	C2	15	C3	19	C4	23	G4	27	G3	31	F2	35	A1	39	X
4	DP1	8	DP2	12	DP3	16	DP4	20	B4	24	B3	28	L2	32	G2	36	F1	40	BP



FE0208  
5 Digits, 0.4 Inch (10.2mm) Character Height

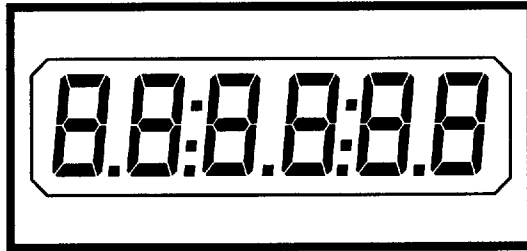


Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	C1	9	E3	13	E4	17	E5	21	A5	25	A4	29	A3	33	B2	37	L1
2	G1	6	E2	10	D3	14	D4	18	D5	22	F5	26	F4	30	F3	34	A2	38	B1
3	E1	7	D2	11	C3	15	C4	19	C5	23	G5	27	G4	31	G3	35	F2	39	A1
4	D1	8	C2	12	DP1	16	DP2	20	B5	24	B4	28	B3	32	L2	36	G2	40	F1

### FE0401

#### 6 Digits, 0.5 Inch (12.7mm) Character Height

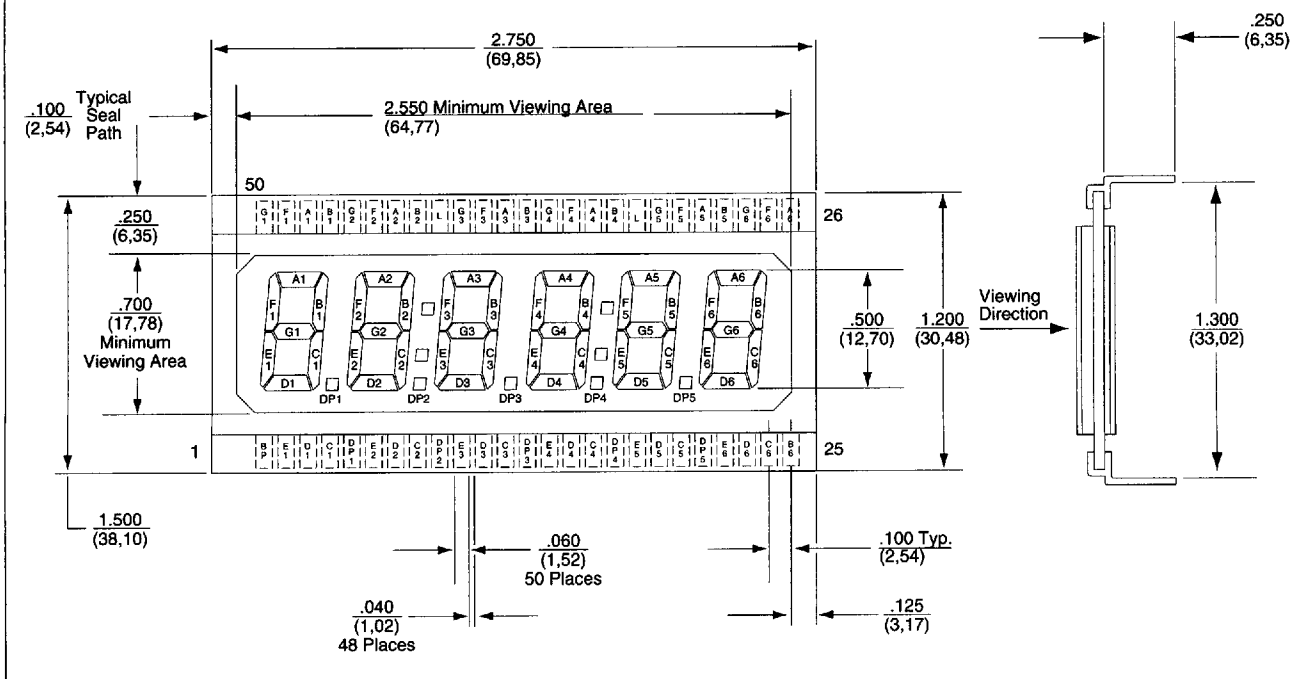


Actual Size

Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

*Inches*  
(mm)



### Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	6	E2	11	D3	16	C4	21	DP5	26	A6	31	F5	36	F4	41	G3	46	G2
2	E1	7	D2	12	C3	17	DP4	22	E6	27	F6	32	G5	37	G4	42	L	47	B1
3	D1	8	C2	13	DP3	18	E5	23	D6	28	G6	33	L	38	B3	43	B2	48	A1
4	C1	9	DP2	14	E4	19	D5	24	C6	29	B5	34	B4	39	A3	44	A2	49	F1
5	DP1	10	E3	15	D4	20	C5	25	B6	30	A5	35	A4	40	F3	45	F2	50	G1

FE0501  
3 1/2 Digits, 0.7 Inch (17.8mm) Character Height

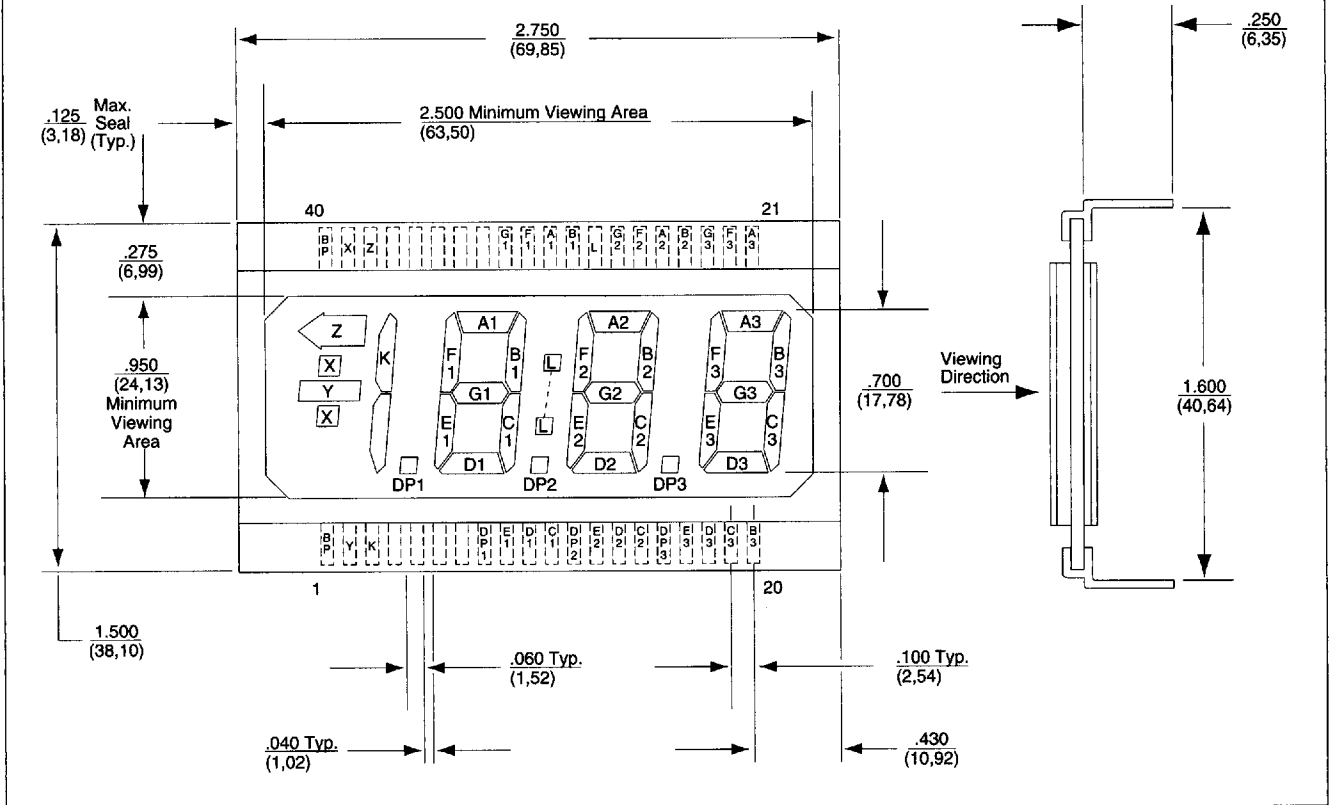


Actual Size

Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

*Inches*  
(mm)

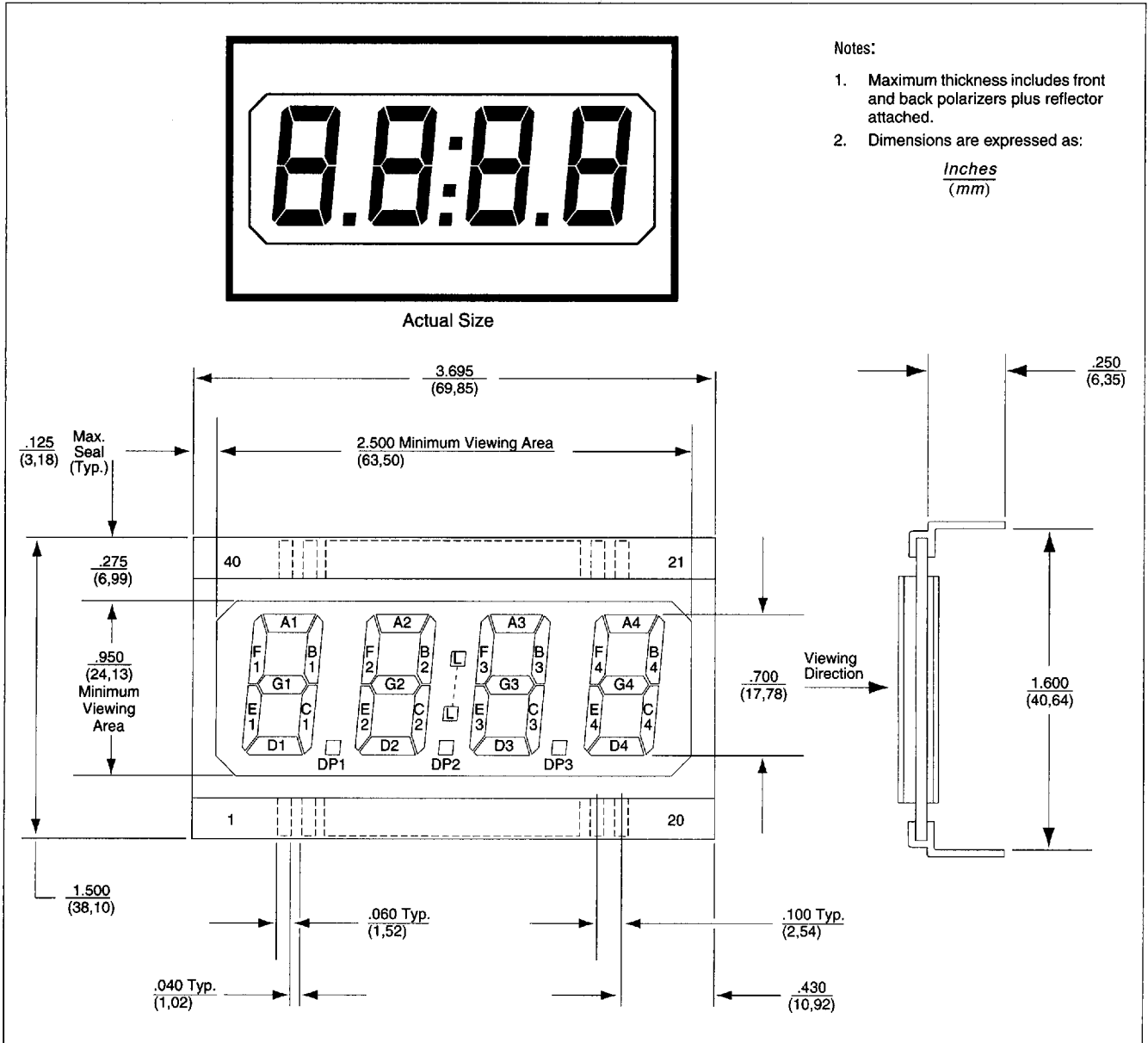


Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.		
1	BP	5	NC	9	E1	13	E2	17	E3	21	A3	25	A2	29	B1	33	NC	37	NC
2	Y	6	NC	10	D1	14	D2	18	D3	22	F3	26	F2	30	A1	34	NC	38	Z
3	K	7	NC	11	C1	15	C2	19	C3	23	G3	27	G2	31	F1	35	NC	39	X
4	NC	8	DP1	12	DP2	16	DP3	20	B3	24	B2	28	L	32	G1	36	NC	40	BP



FE0502  
4 Digits, 0.7 Inch (17.8mm) Character Height



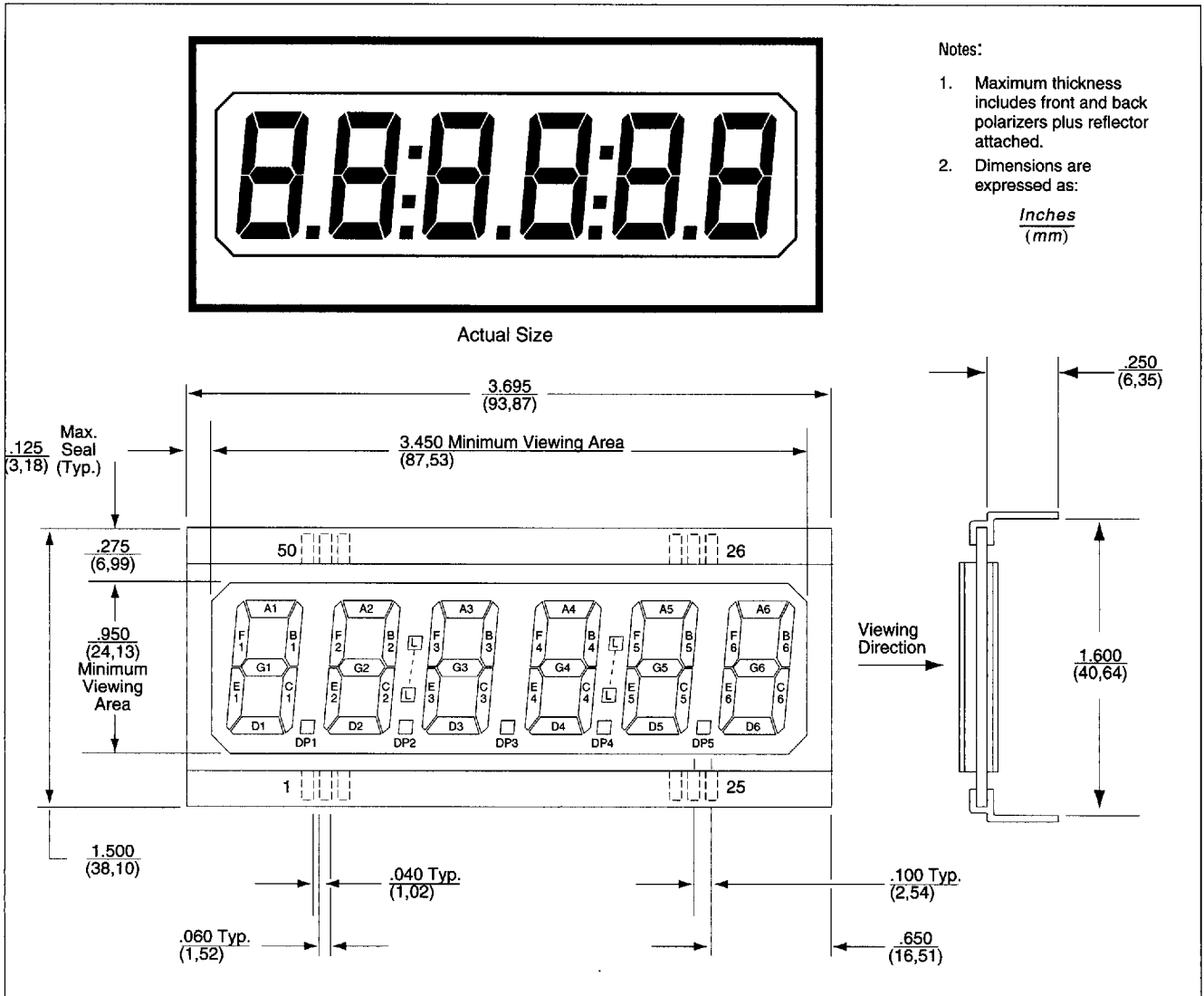
Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	E1	9	E2	13	E3	17	E4	21	A4	25	A3	29	B2	33	NC	37	G1
2	NC	6	D1	10	D2	14	D3	18	D4	22	F4	26	F3	30	A2	34	B1	38	NC
3	NC	7	C1	11	C2	15	C3	19	C4	23	G4	27	G3	31	F2	35	A1	39	NC
4	NC	8	DP1	12	DP2	16	DP3	20	B4	24	B3	28	L	32	G2	36	F1	40	BP



FE0601

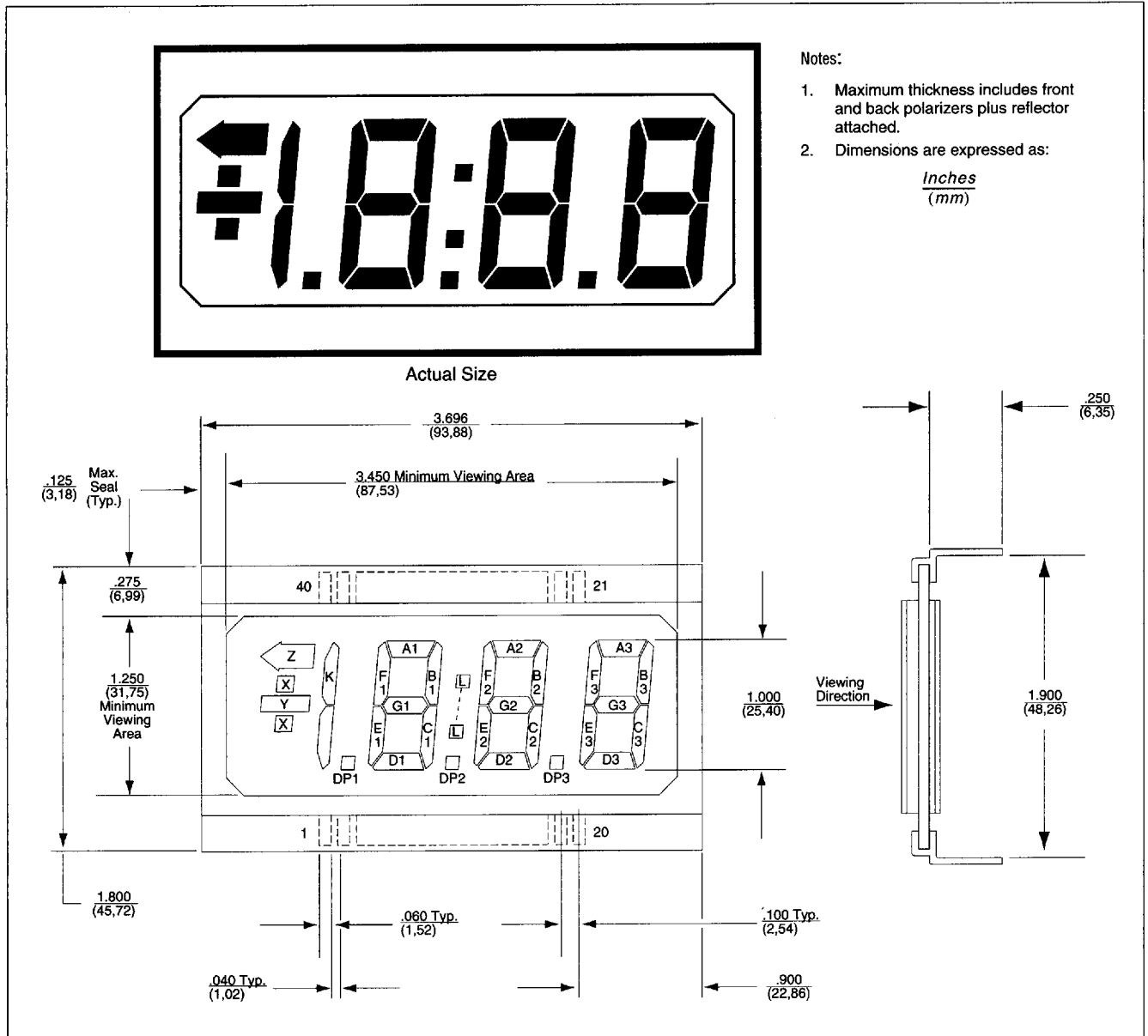
6 Digits, 0.7 Inch (17.8mm) Character Height



Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	6	E2	11	D3	16	C4	21	DP5	26	A6	31	F5	36	F4	41	G3	46	G2
2	E1	7	D2	12	C3	17	DP4	22	E6	27	F6	32	G5	37	G4	42	L	47	B1
3	D1	8	C2	13	DP3	18	E5	23	D6	28	G6	33	L	38	B3	43	B2	48	A1
4	C1	9	DP2	14	E4	19	D5	24	C6	29	B5	34	B4	39	A3	44	A2	49	F1
5	DP1	10	E3	15	D4	20	C5	25	B6	30	A5	35	A4	40	F3	45	F2	50	G1

FE0701  
3 1/2 Digits, 1.0 Inch (25.4mm) Character Height



Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	NC	9	E1	13	E2	17	E3	21	A3	25	A2	29	B1	33	NC	37	NC
2	Y	6	NC	10	C1	14	D2	18	D3	22	F3	26	F2	30	A1	34	NC	38	Z
3	K	7	NC	11	D1	15	C2	19	C3	23	G3	27	G2	31	F1	35	NC	39	Y
4	NC	8	DP1	12	DP2	16	DP3	20	B3	24	B2	28	L	32	G1	36	NC	40	BP

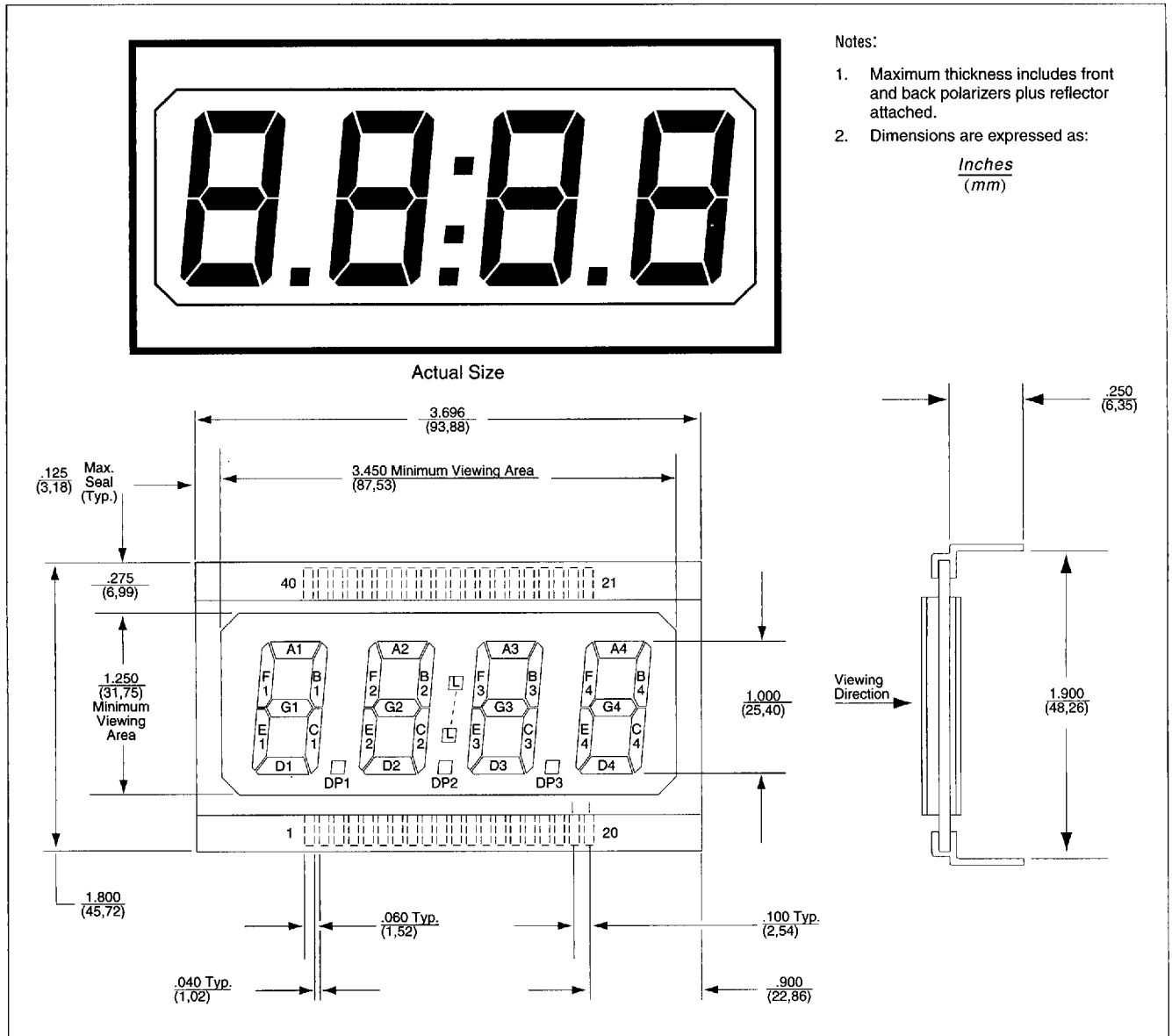


FE0703  
4 Digits, 1.0 Inch (25.4mm) Character Height

Notes:

1. Maximum thickness includes front and back polarizers plus reflector attached.
2. Dimensions are expressed as:

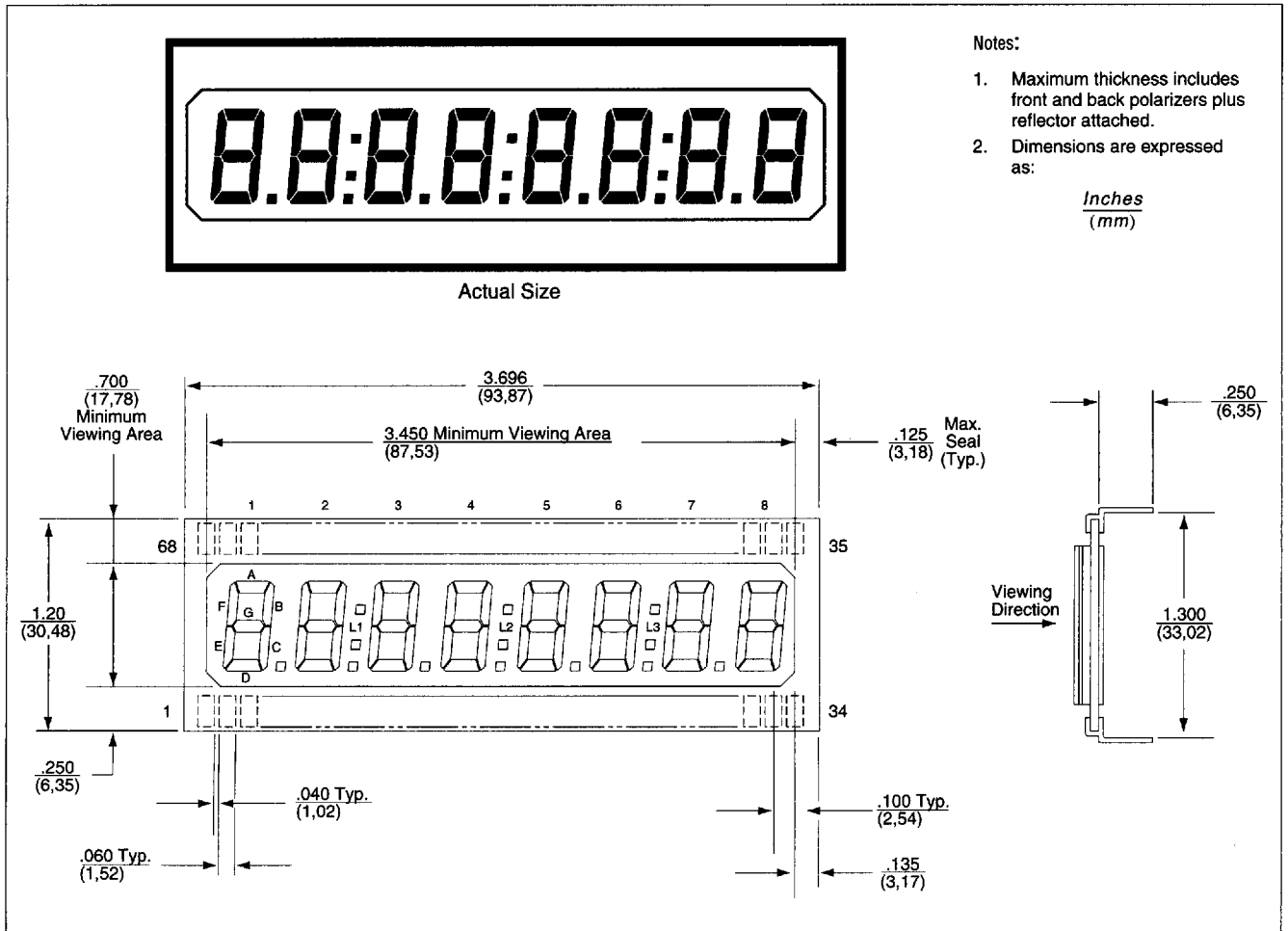
$$\frac{\text{Inches}}{\text{(mm)}}$$



Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	E1	9	E2	13	E3	17	E4	21	A4	25	A3	29	B2	33	NC	37	G1
2	NC	6	D1	10	D2	14	D3	18	D4	22	F4	26	F3	30	A2	34	B1	38	NC
3	NC	7	C1	11	C2	15	C3	19	C4	23	G4	27	G3	31	F2	35	A1	39	NC
4	NC	8	DP1	12	DP2	16	DP3	20	B4	24	B3	28	L	32	G2	36	F1	40	BP

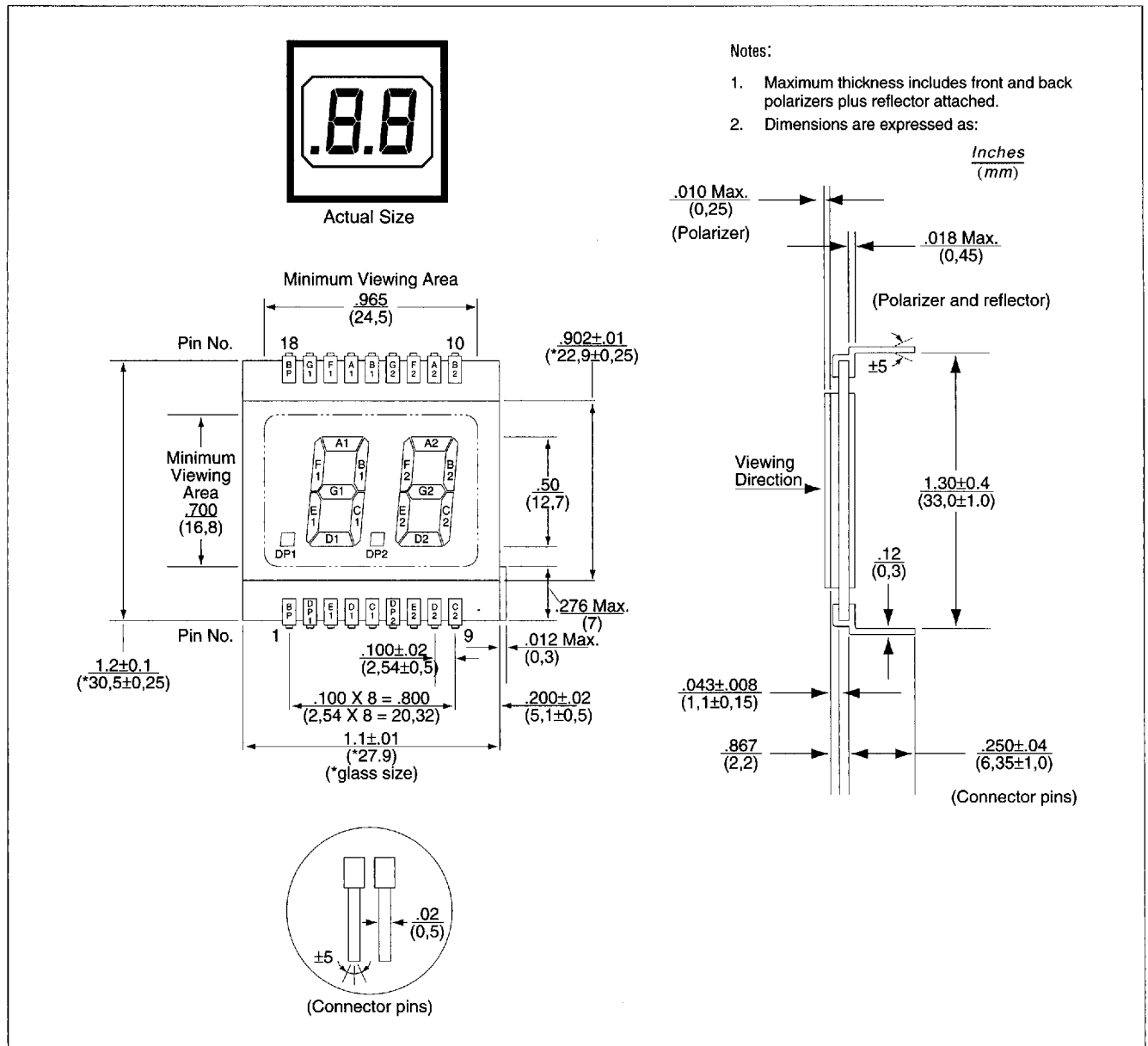
## FE1001 3 1/2 Digits, 0.5 Inch (12.7mm) Character Height



### Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	8	C2	15	E4	22	DP	29	C7	36	F8	43	B6	50	G5	57	A3	64	G2
2	E1	9	DP	16	D4	23	E6	30	DP	37	G8	44	A6	51	L2	58	F3	65	B1
3	D1	10	BP	17	C4	24	D6	31	E8	38	B7	45	F6	52	B4	59	G3	66	A1
4	C1	11	E3	18	DP	25	C6	32	D8	39	A7	46	G6	53	A4	60	L1	67	F1
5	DP	12	D3	19	E5	26	DP	33	C8	40	F7	47	B5	54	F4	61	B2	68	G1
6	E2	13	C3	20	D5	27	E7	34	B8	41	G7	48	A5	55	G4	62	A2		
7	D2	14	DP	21	C5	28	D7	35	A8	42	L3	49	F5	56	B3	63	F2		

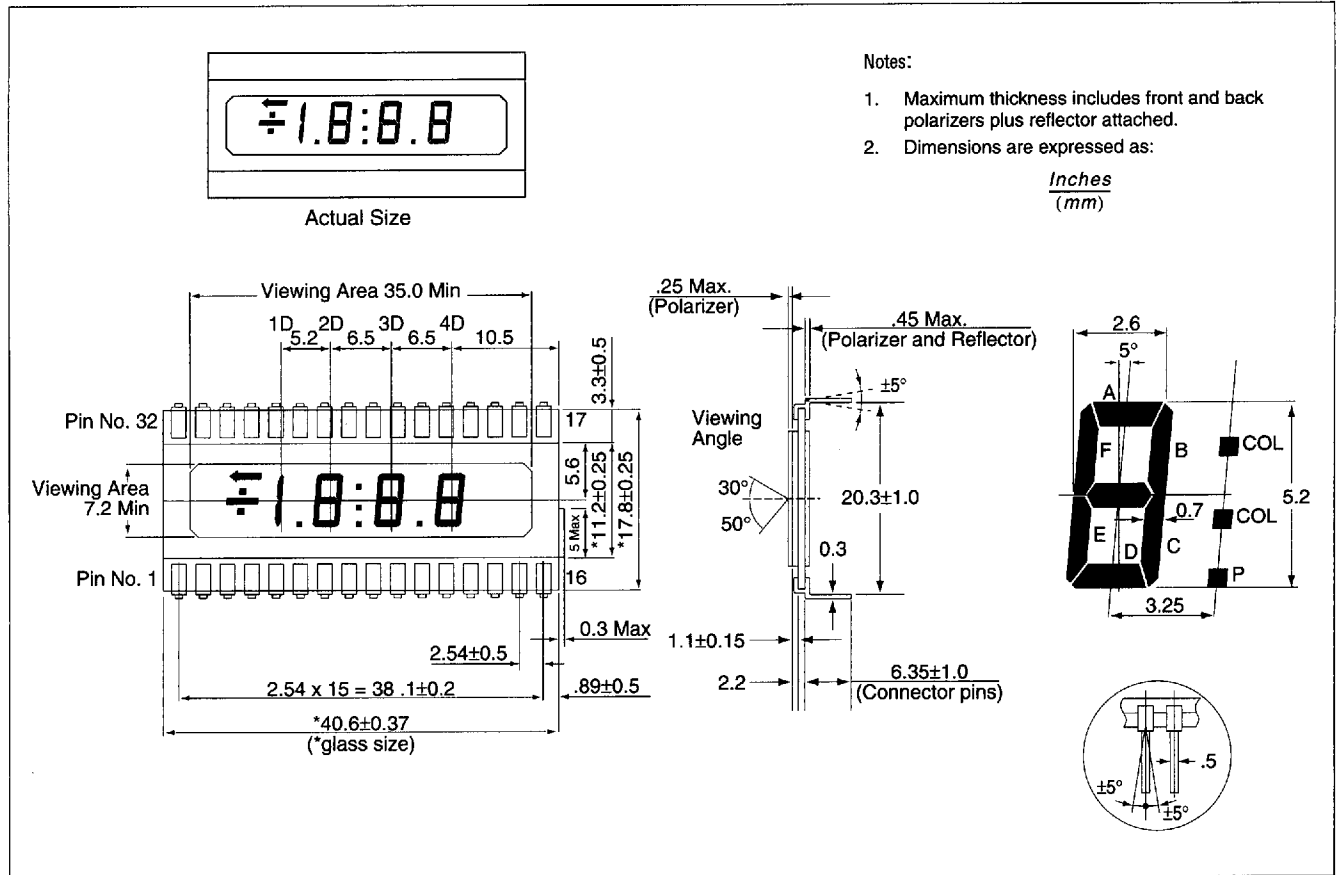
## FE1901 2 Digits, 0.5 Inch (12.7mm) Character Height



### Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	3	E1	5	C1	7	E2	9	C2	11	A2	13	G2	15	A1	17	G1
2	DP1	4	D1	6	DP2	8	D2	10	B2	12	F2	14	B1	16	F1	18	BP

## FE2201 3 1/2 Digits, 0.2 Inch (5.1mm) Character Height



### Pin Assignments

Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.	Pin #	Seg.
1	BP	5	2E	9	3E	13	4E	17	4A	21	3A	25	2B	29	NC
2	-	6	2D	10	3D	14	4D	18	4F	22	3F	26	2A	30	ARW
3	1BC	7	2C	11	3C	15	4C	19	4G	23	3G	27	2F	31	:
4	1P	8	2P	12	3P	16	4B	20	3B	24	COL	28	2G	32	BP