

# BABCOCK

DISPLAY PRODUCTS DIVISION

MODEL: **SP-450-033-XX**

**XX denotes dash numbers below**

**7-SEGMENTED SCREEN IMAGE, PDP**

The dc-plasma, easy-to-read, 7-Segment Screen Image Display is arranged as 5 columns by 3 rows and features bright neon-orange pixels, wide viewing angle, and sharp contrast. The slim profile, compact outline, and large viewing area make efficient use of valuable system, front panel space. Inherently rugged, dc-plasma displays are a cost-effective solution when overcoming vibration, temperature, or EMI/RFI issues.

## SPECIFICATIONS

### *Recommended Operating Conditions*

PARAMETER	SYM	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	$E_{bb}$	170	180	200	VDC	1
Operating Voltage @ 2.13 mA "b" Segment	$V_{op}$		139		VDC	1
Anode Voltage Swing			56		VDC	
Anode to Cathode Voltage Drop (Segment "b" current 2 mA)		135	142	156	VDC	
Anode ON Time		1880			$\mu$ Sec	
Cathode Voltage Swing (Anode Voltage 180 VDC and Segment "b" current 2 mA TYP)			90		VDC	
Cathode Current Segment "b"		1.9	2.3	2.8	mA	
Cathode Off-Bias Voltage			105		VDC	
Keep Alive Current		25	50	100	$\mu$ A	
Interdigit Blanking Period (Segment "b" current 2 mA max)	$t_{kb}$		100		$\mu$ Sec	
Refresh Period			10	12.5	M Sec	
Initial Ionization Time ( $V_s=180$ VDC)				5	Sec	
Reionization Time				7	$\mu$ Sec	1
Recurrent Turn On Delay			20		$\mu$ Sec	
Digit "On" Period	$t_{on}$	60			$\mu$ Sec	1
Heater Resistance @ 25°C		26		38	Ohms	
Peak Segment Current Density				100	mA/cm <sup>2</sup>	4
Leakage, Anode to Anode		3			M-Ohms	3
Leakage, Heater to all Segments		3			M-Ohms	3
Projected Life		18K			Hours	2
Intersegmented Leakage		3			M-Ohms	4
View Angle		130			Degrees	
Luminance @ 25°C	fL	180 (616)	240 (812)	300 (1027)	fL (cd/cm <sup>2</sup> )	3

Notes:

1. The listed parameters and data are for application purposes only.
2. Continuous operation, at rated operating conditions. End of life is defined as 50% of minimum luminance.
3. Required parameters for inspections and quality conformance.
4. Display will not have segment faults that cause ambiguous 0-9 readings (e.g. Ghosting).
5. 26 VAC heater operation will maintain display temperature above 0°C for cold temperature operation.

### *Environmental Characteristics*

Operating Temperature (Heater)	-40 to +70°C (see note 5)
Operating Temperature (Display)	0 to +70°C
Storage Temperature	-45 to +85°C
Humidity, Operational	10 to 95% non-condensing
Humidity, Storage	2 to 98% non-condensing

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9200-0095 Rev. A

Phone: (714) 994-6500 **14930 East Alondra Blvd., La Mirada, CA 90638-5752** Fax: (714) 994-3013

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### Pin Connection Table

Pin Number	Segment	Pin Number	Segment	Pin Number	Segment		Segment
1	Heater Cond.	10	Row 3, F	19	Row 2, G	28	Row 1, E
2	Anode # 2	11	Row 3, B	20	Row 2, F	29	Row 1, C
3	Anode # 4	12	Row 3, A	21	Row 2, B	30	Row 1, G
4	Row 3, Com	13	Row 2, KA	22	Row 2, A	31	Row 1, F
5	Row 3, Dec	14	Row 2, Com	23	Anode # 5	32	Row 1, B
6	Row 3, D	15	Row 2, Dec	24	Row 1, KA	33	Row 1, A
7	Row 3, E	16	Row 2, D	25	Row 1, DEC	34	Anode # 3
8	Row 3, C	17	Row 2, E	26	Row 1, COM	35	Anode # 1
9	Row 3, G	18	Row 2, C	27	Row 1, D	36	Heater Cond.

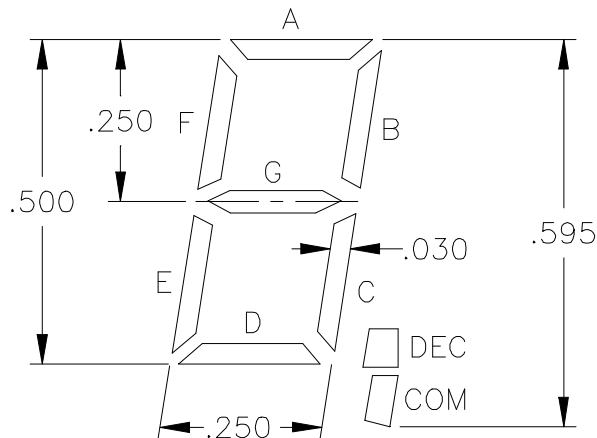
### Ratio Table

Segment	A	B	C	D	E	F	G	DEC	COM	KA
Ratio	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.50	.50	.15

Segment Ratios

$$\text{b}'' = .000582$$

$$\text{Ratio} = \frac{\text{Seg Area}}{\text{Seg } \text{b}'' \text{ Area}}$$



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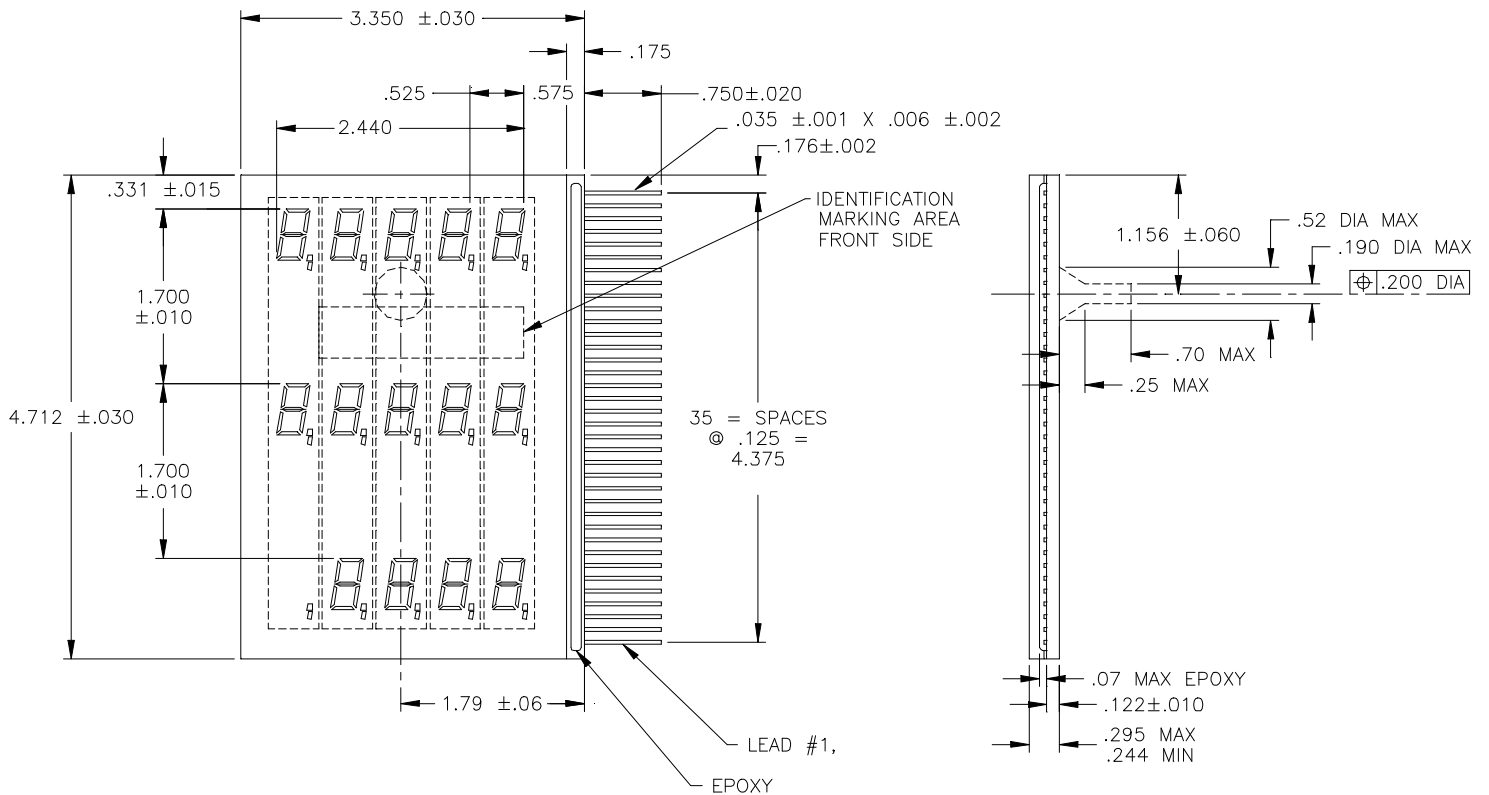
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## Outline and Mounting Dimensions:

### SP-450-033



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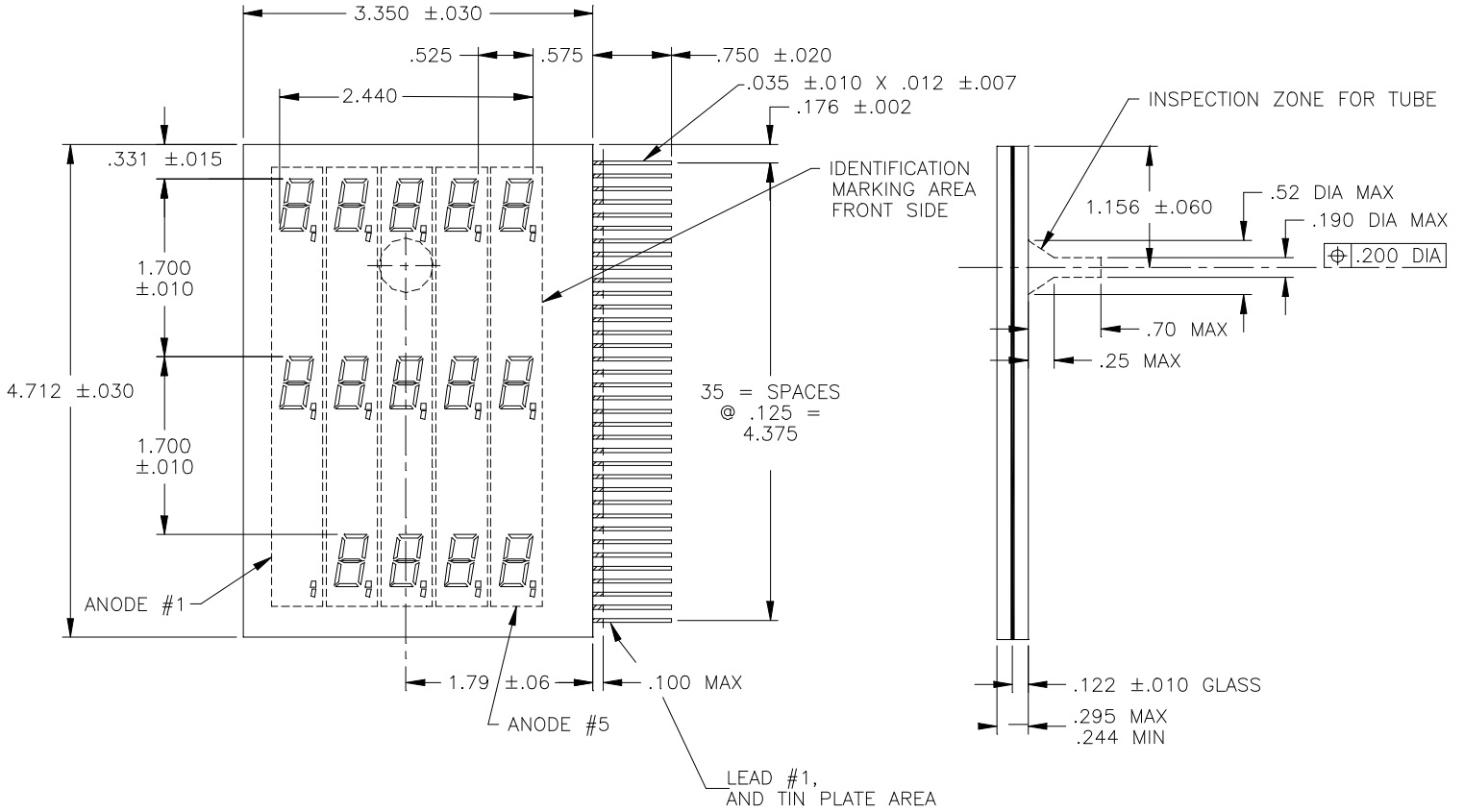
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**7-SEGMENTED SCREEN IMAGE, PDP**

**SP-450-033-01**



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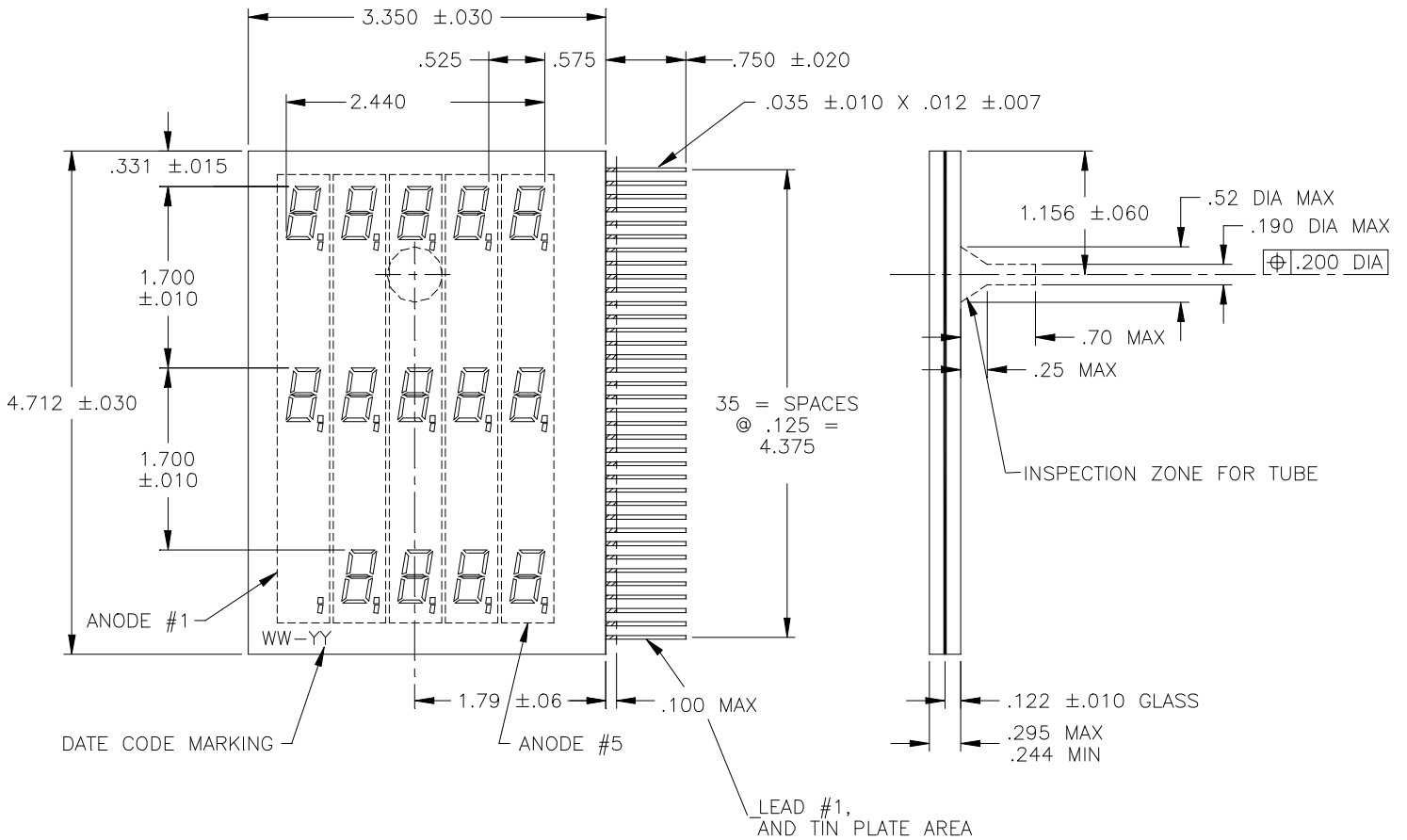
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**SP-450-033-03**



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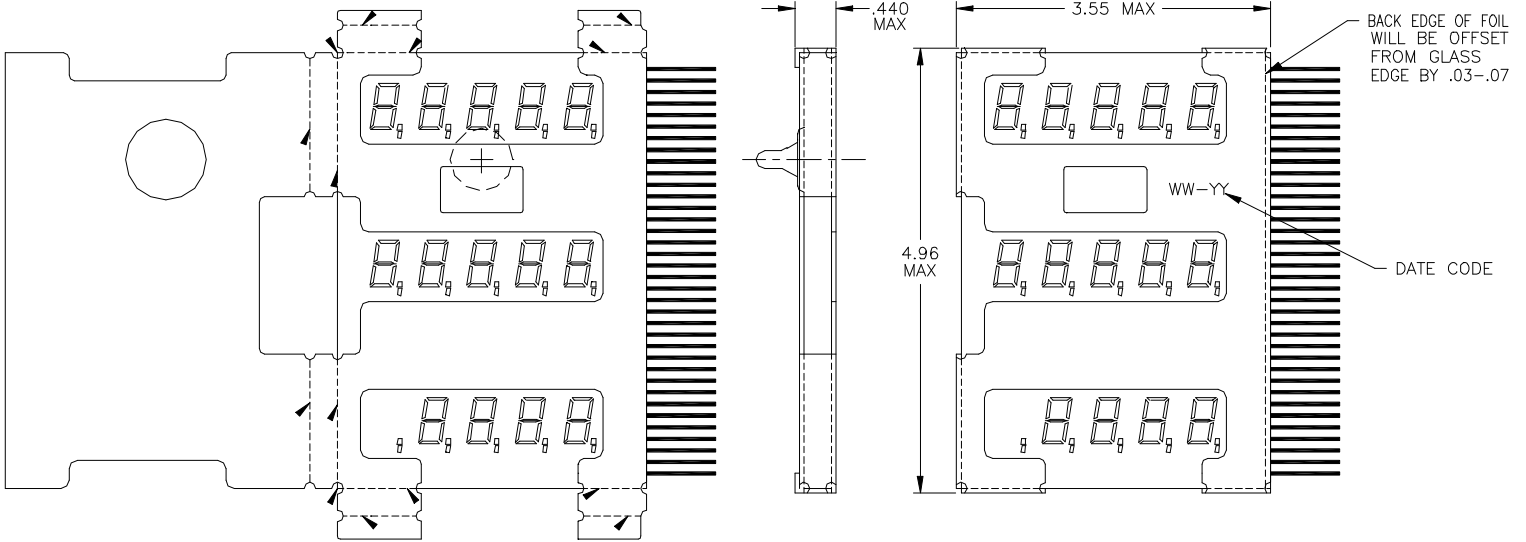
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**7-SEGMENTED SCREEN IMAGE, PDP**

**SP-450-033F**



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