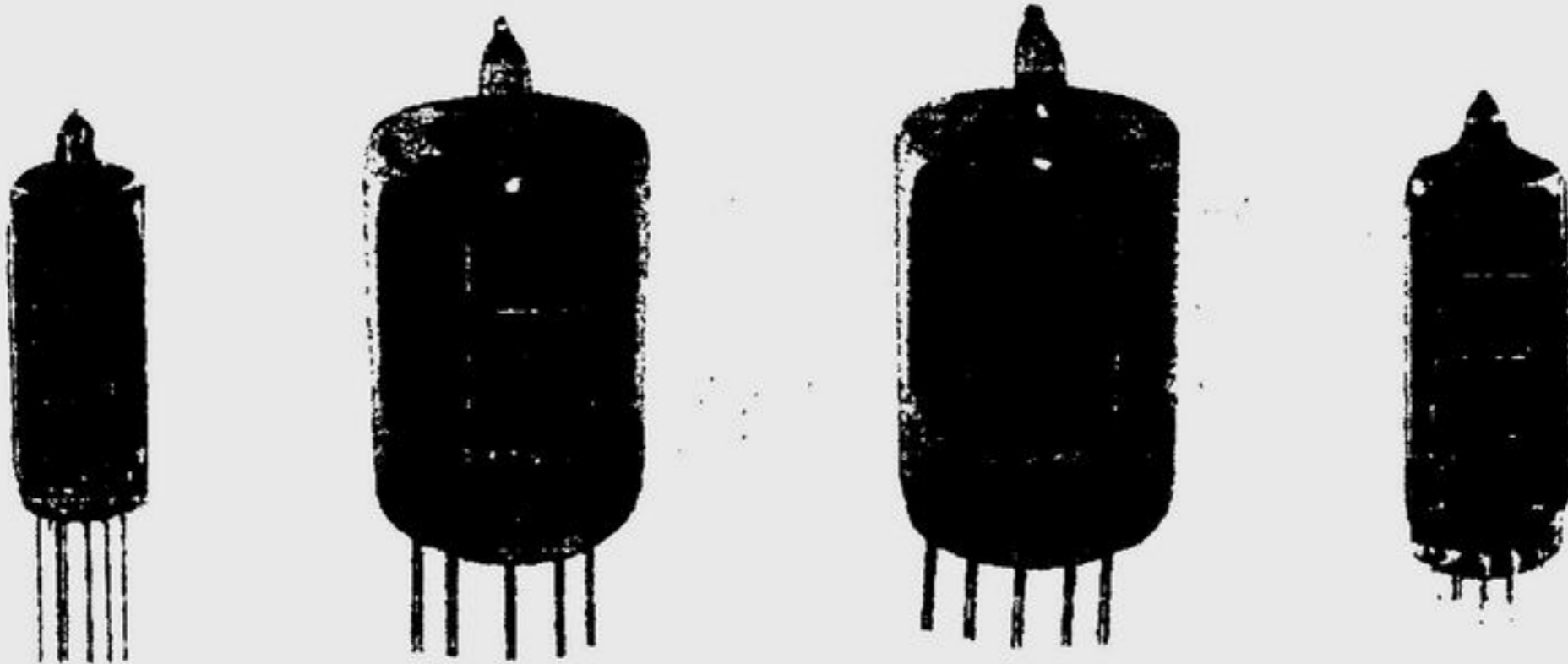


# IEE-APOLLO™

## DA Series

# Incandescent Digital Displays



The IEE APOLLO Readout tube consists of 7 luminescent segments in a single plane arrangement on a black ceramic base sealed in a glass envelope. A directly viewed light source is provided by each of the segments. This single-plane indicating system provides an ultra wide viewing angle and superb readability. Extra long life is assured by rugged unit construction. Brightness is fully adjustable from zero output to a level easily viewed even in direct sunlight by simply varying the

- Rugged construction . . . Environmental and operational tests (shock and vibration), show no segment linearity deviation.
- Long life expectancy (more than 100,000 hours in accelerated life tests for 5 Volt type)
- Subminiature size permits compact equipment design
- Visibility curve ideally suited to the human eye (broad spectrum)
- Compatible with standard driver/decoders
- Low voltage operation

voltage. Any desired filter color may be selected and Fresnel lenses permit display magnification.

Electronic Measuring Instruments (Digital Voltmeters, Frequency Counters, etc.) Precision Devices — Medical Equipment — Digital Clocks — Numerical Controls — Flow Meters — Store Scales — Computers — Counters — Vending Machines — Cash Registers — Stock Quotations — Marine Instruments — Tachometers — Tripmeters, etc.

Any desired color may be obtained by employing filters. Increased illumination offers unexcelled color filtering, even for visibility in bright sunlight

Numerals, decimal points, alphabetical characters (A-C-E-F-H-J-L-P-U) may be displayed

• Wide single plane viewing angle (140°)

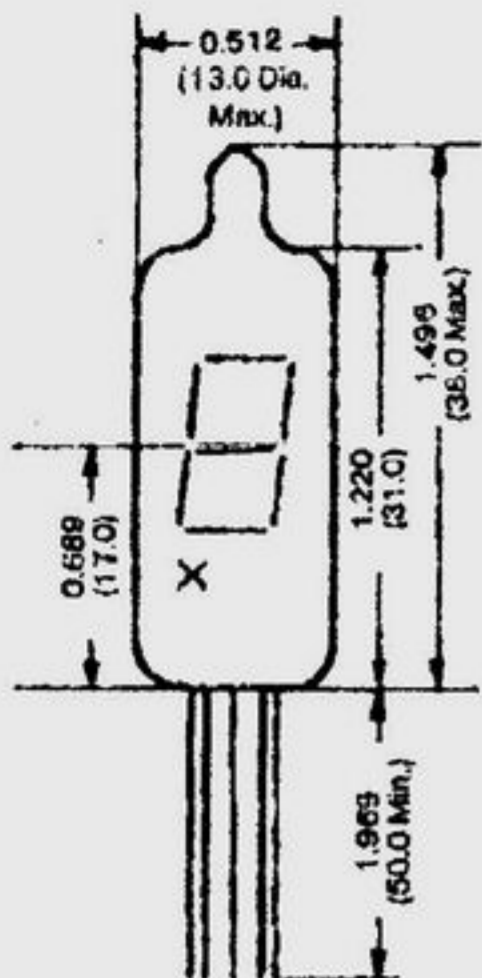
• Sharp contrast (black background)

Brightness fully adjustable

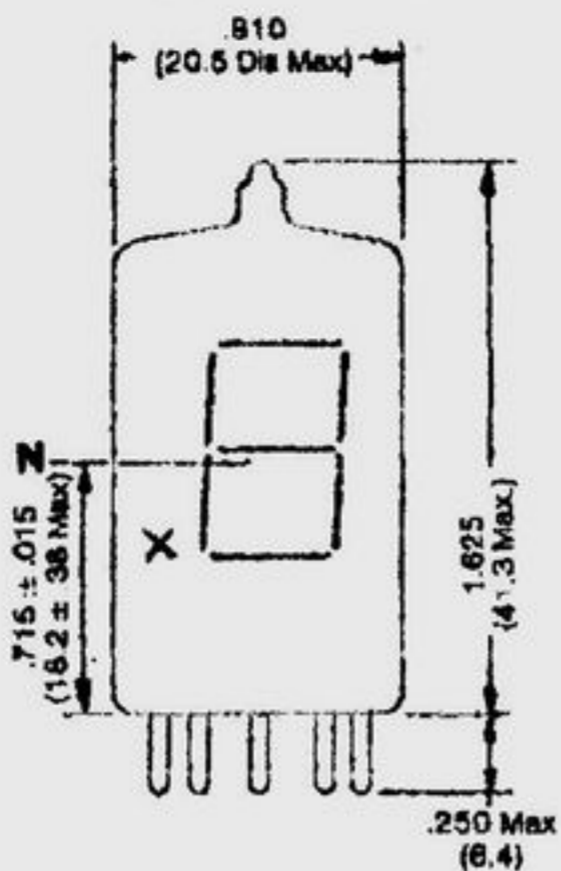
• AC or DC operation

# DIMENSIONAL OUTLINE

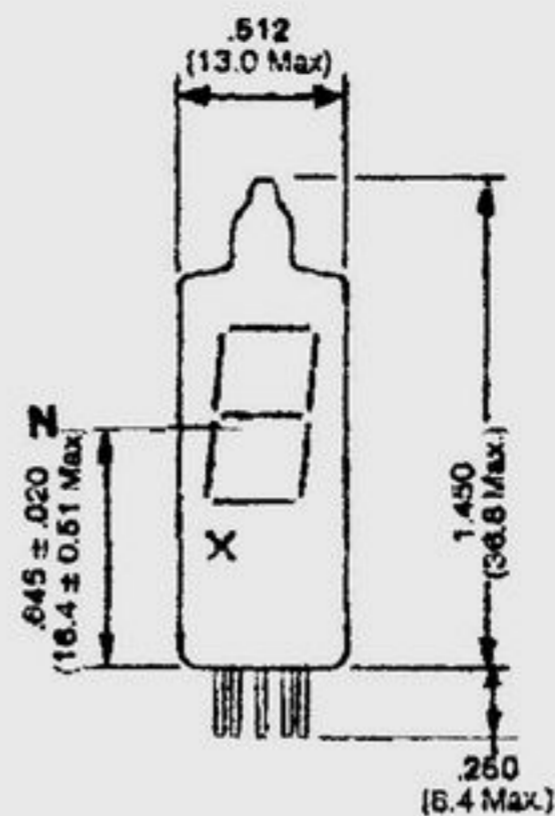
**DA-1300 Series**



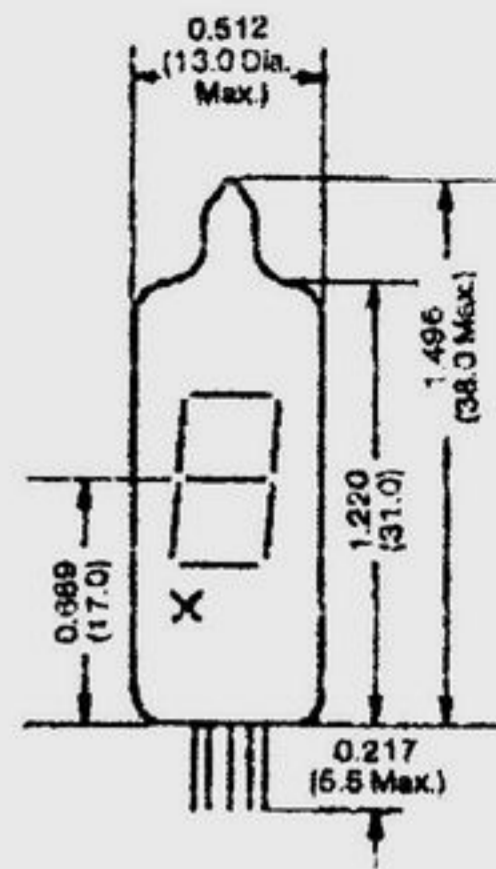
**DA-2000 Series**



**DA-2100 Series**



**DA-2300 Series**

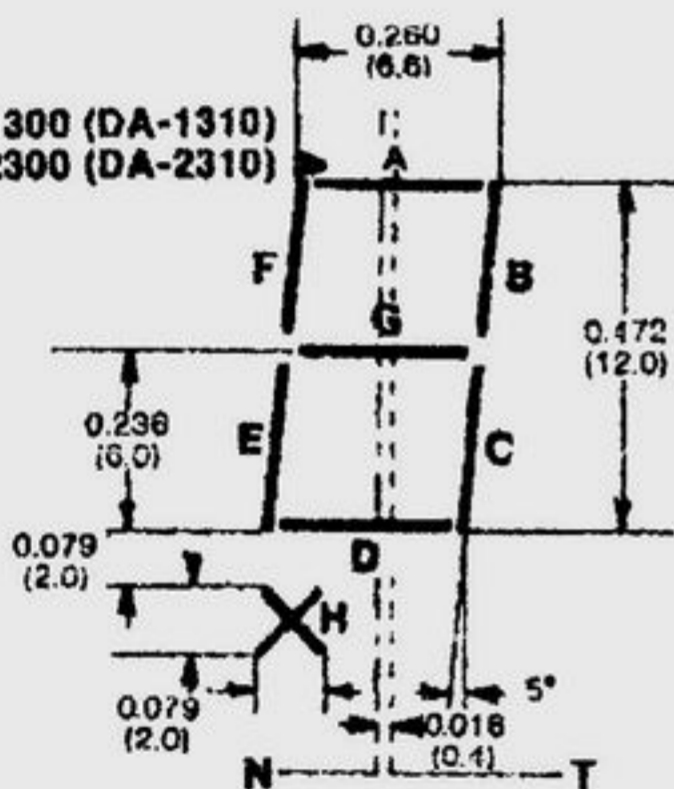


Specifications subject to change without notice.

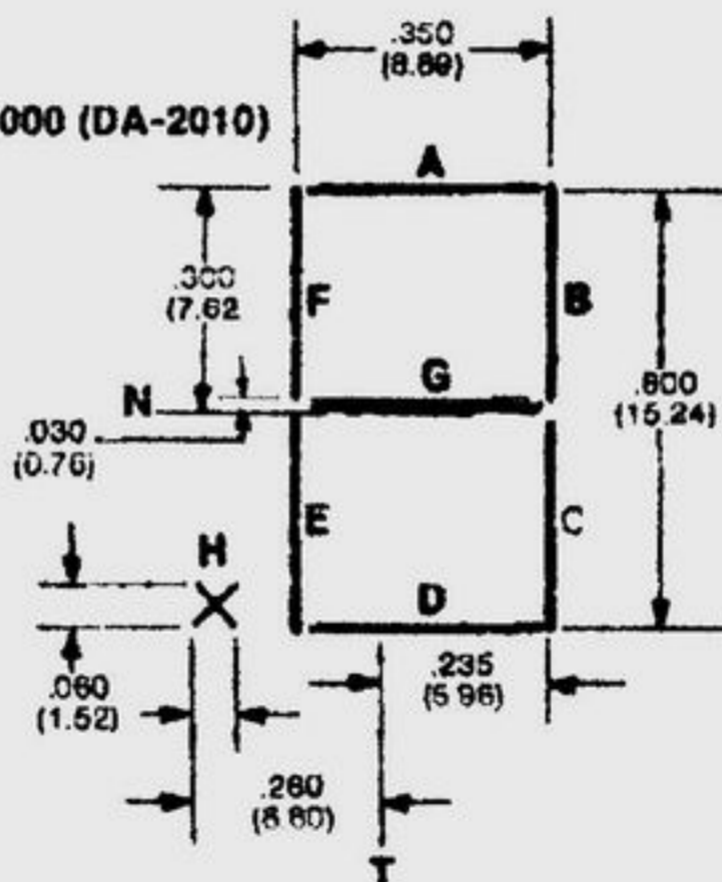
N : center of character  
S : center of sign  
T : center of readout tube

## SEGMENT ASSIGNMENT AND DIMENSIONS

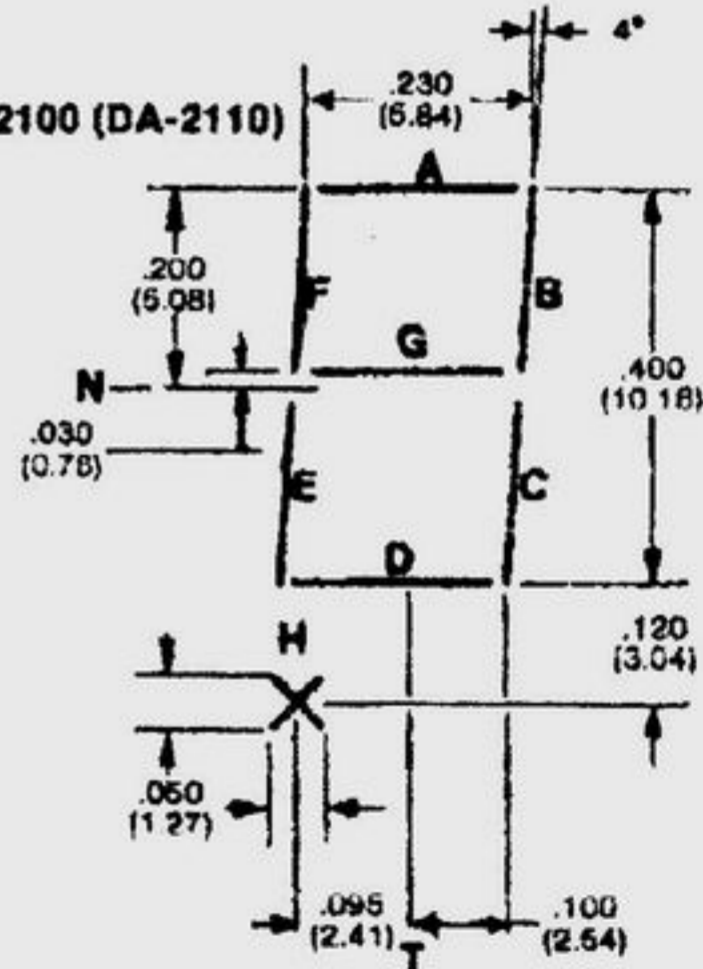
**DA-1300 (DA-1310)  
DA-2300 (DA-2310)**



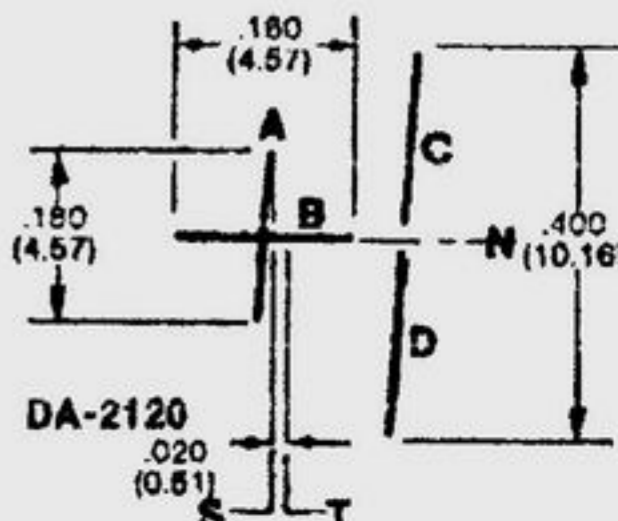
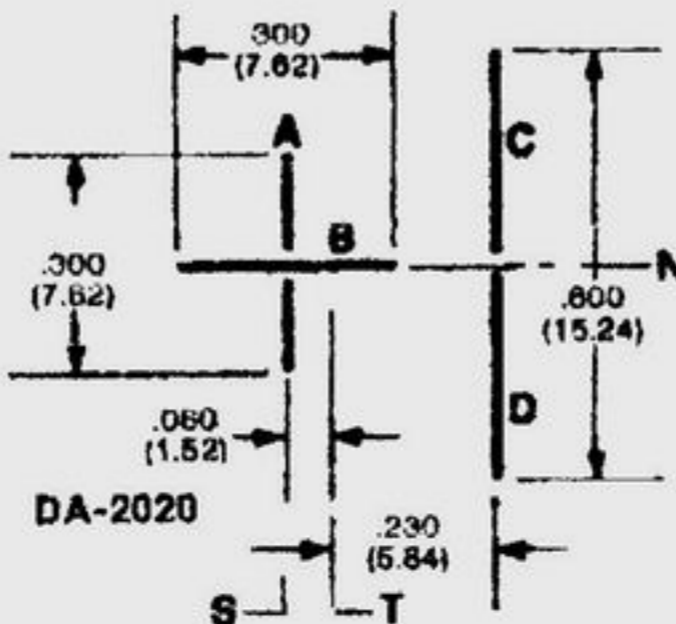
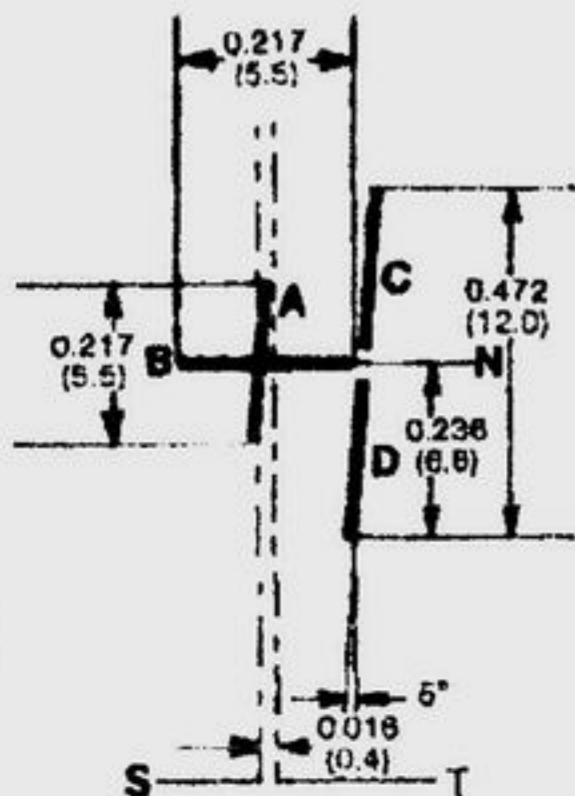
**DA-2000 (DA-2010)**



**DA-2100 (DA-2110)**



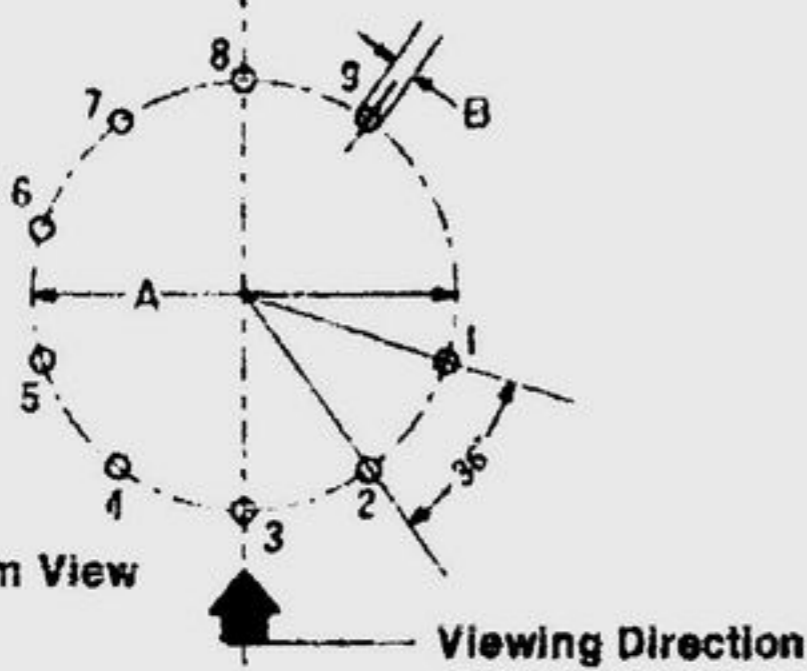
**DA-1320  
DA-2320**



All dimensions are in inches and (millimeters).  
Specifications subject to change without notice.



**BASE DIAGRAM LEAD & PIN CIRCLE DIMENSIONS & DESIGNATION**



**SEGMENT ASSIGNMENT**

Display	Type/Pin No.	1	2	3	4	5	6	7	8	9
	DA - 1300 DA - 2000 DA - 2100 DA - 2300	NC	COM	E	D	C	G	A	B	F
	DA - 1310 DA - 2010 DA - 2110 DA - 2310	H	COM	E	D	C	G	A	B	F
	DA - 1320 DA - 2020 DA - 2120 DA - 2320	NC	COM	NC	NC	NC	D	B	C	A

Series No.	DA-1300	DA-2000	DA-2100	DA-2300
A	.281 (7.1)	.468 (11.8)	.230 (5.8)	.230 (5.9)
B	.016 (0.4)	.040 (1.0)	.020 (0.5)	.020 (0.5)

All dimensions are in inches and (millimeters). Specifications subject to change without notice.

**CHARACTERISTICS**

Series	Unit	DA-1300	DA-2000	DA-2100	DA-2300
DC Segment Voltage	V	5.0	4.5	4.5	5.0
Recommended Voltage Range	V	3.5~5.0	3.5~5.0	3.5~5.0	3.5~5.0
Segment Current (per. seg.)	mA	23	24	24	23
Brightness (per. seg.)	FL	6,000	7,000	7,000	6,000
Life Expectancy (per. seg.)	H	100,000	100,000	100,000	100,000
Response Time	Ascent to visibility	mS	15	15	15
	Descent to 50% of luminance	mS	10	20	20
Viewing Angle		140°	140°	120°	140°
Temperature Range	°C	-50~+70	-50~+70	-50~+70	-50~+70
Weight	gr	5	8.5	5	5
Character Dimensions	Horizontal	in.	.260	.350	.230
	Vertical	in.	.472	.600	.400
Mechanical	Vibration	MIL-STD-202D (201A)			
	Shock	MIL-STD-202D (213, Cond. J)			

**SOCKETS**

Series No.	Type	Source
DA - 1300	Individual	Auto-Swage, Inc., Conn.
DA - 2000	Noval 9-Pin	Methode, ILL. Cinch Mfg., ILL.
DA - 2100	TO-5 10 Pin	Methode, ILL.
DA - 2300	TO-5 10 Pin	Cinch Mfg., ILL. Jerryn, CA.

**FILTERS**

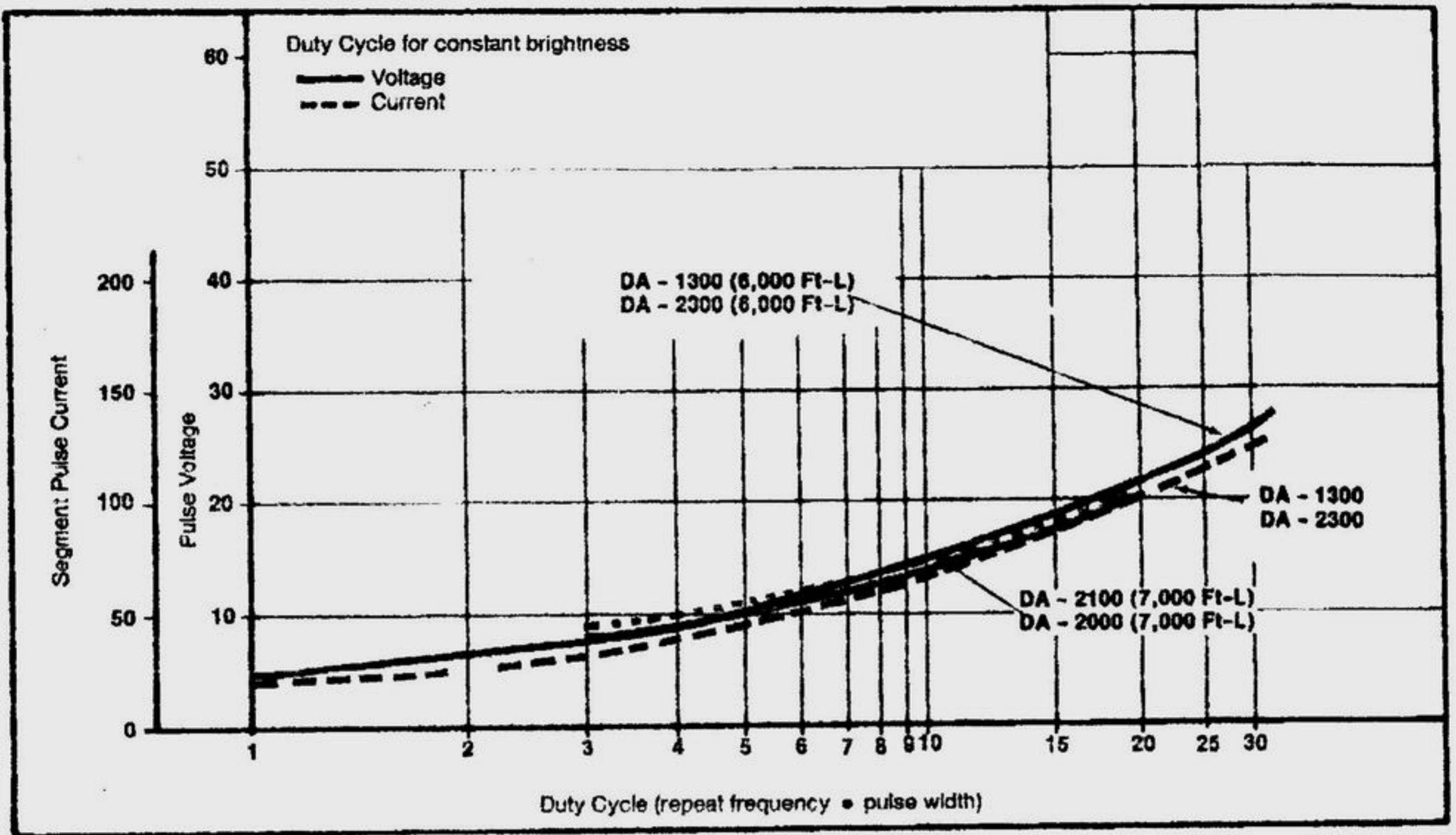
Circular Polarized, Polaroid, MASS. Anti-Reflection, Panelgraphic, N.J.

**SEGMENT DRIVER/DECODERS**

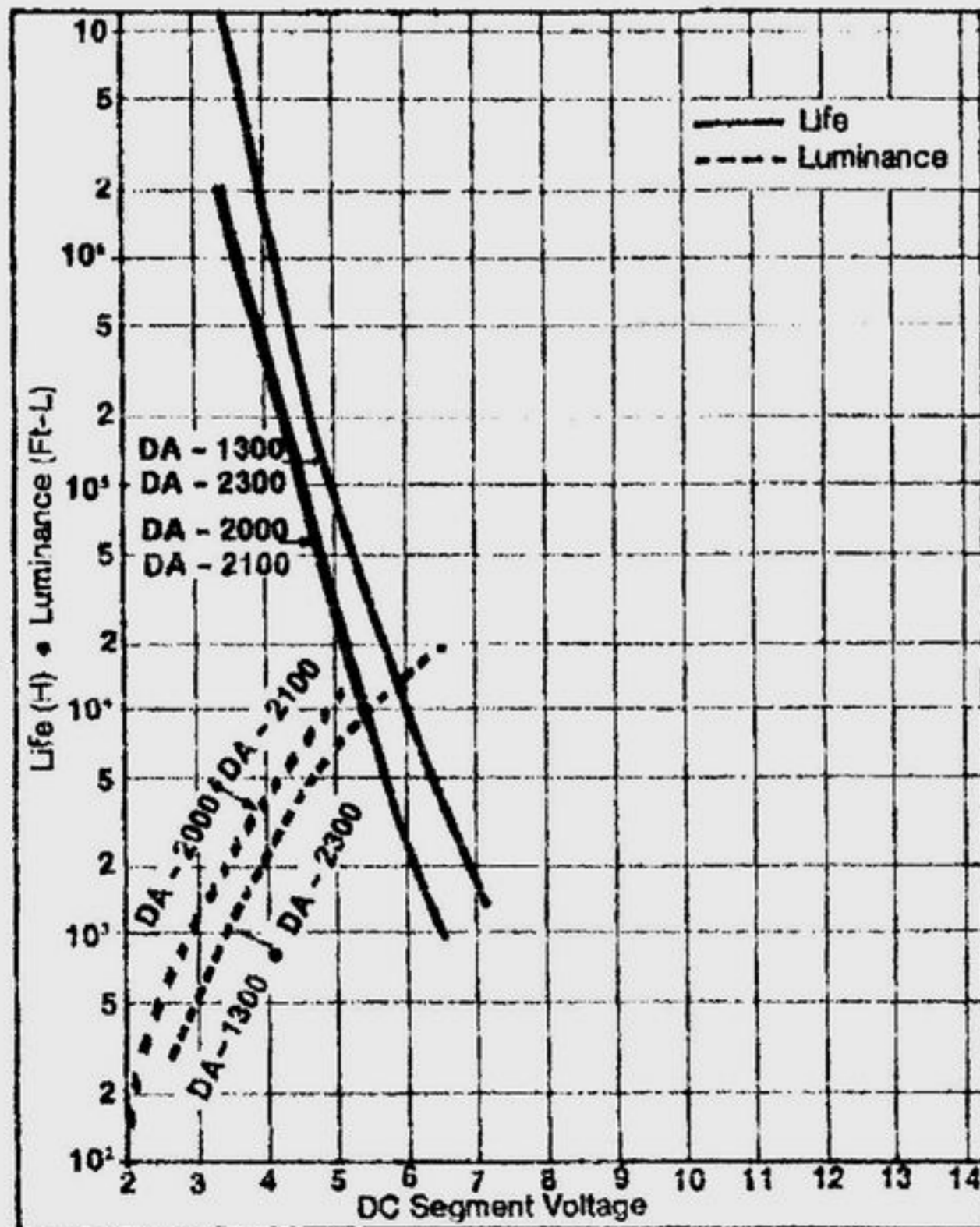
*BCD-7 Type	TI	Signetics	NS	Motorola	Fairchild
	SN7447A	N7447	DM7447	MC7447	9357B



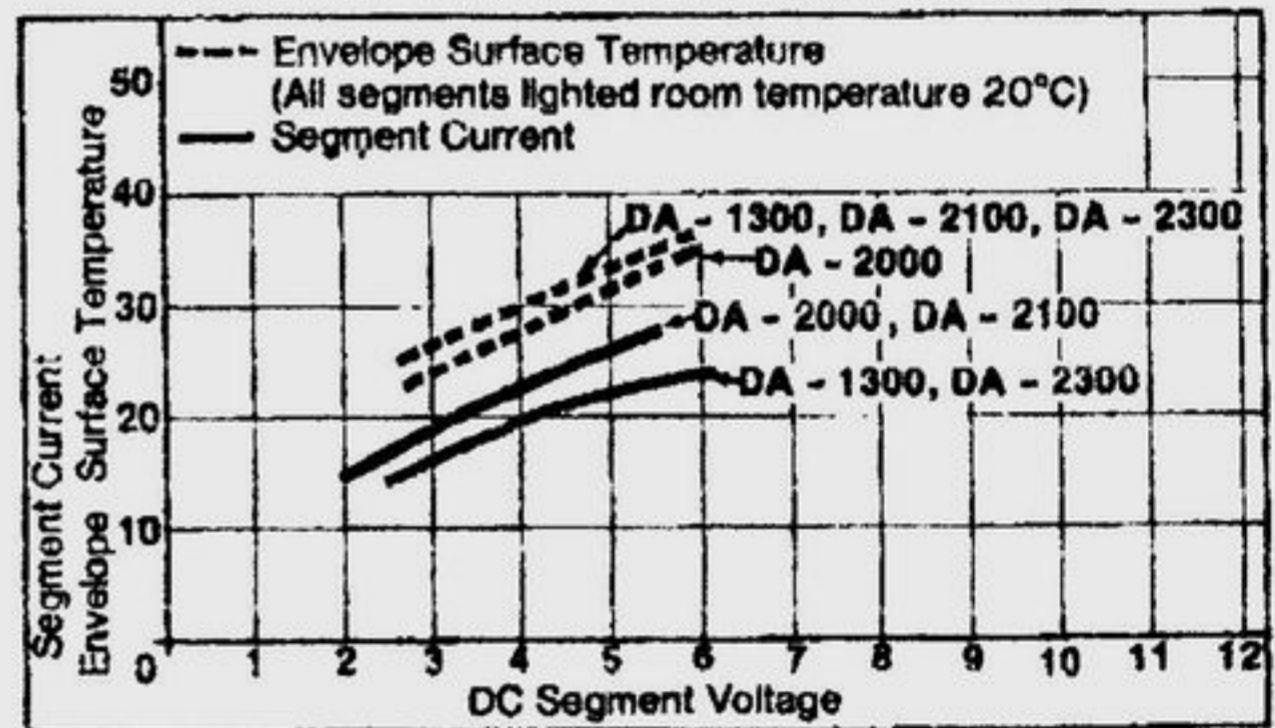
# PULSE DRIVE CHARACTERISTICS



## SEGMENT VOLTAGE vs SEGMENT LUMINANCE • LIFE



## SEGMENT VOLTAGE vs SEGMENT CURRENT • ENVELOPE TEMPERATURE



The technical portion of this catalog is designed to assist the engineer with the problem of applying these devices to electrical, electronic, and electromechanical applications. The information provided herein, as well as any additional data supplied by IEE representatives, is for general use only in order to enable the purchaser to make an independent determination as to the suitability of any of these products for his intended application. Therefore, performance under any particular customer use conditions must be based upon the purchaser's independent conclusions, and no conclusion, representation or warranty is made or implied as to the suitability of any of these devices for a particular requirement or use, due to the wide variety of possible applications, and/or conditions beyond our control.