MAX-LION

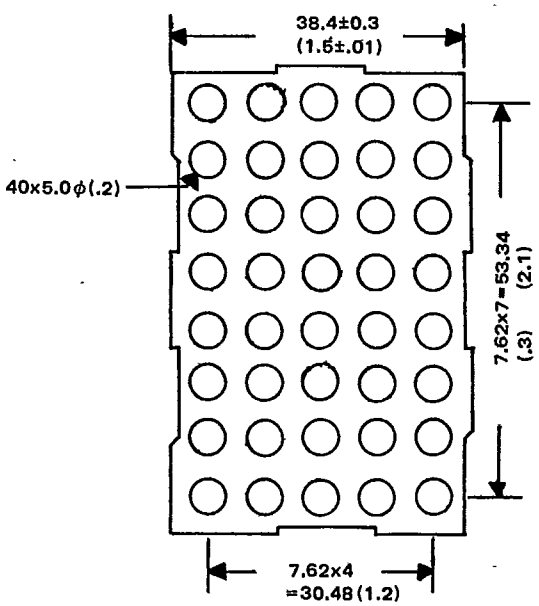
.2.3" DOT MATRIX DISPLAY

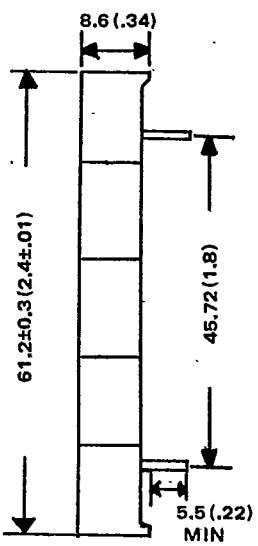
CS-5821/5822 SERIES

Selection Guide

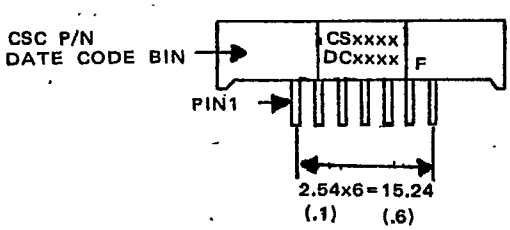
PART NO.				DESCRIPTION	
HI-RED	GREEN	YELLOW	ORANGE	COLUMN	ROW
CS-5821H	CS-5821G	CS-5821Y	CS-5821E	Anode	Cathode
CS-5822H	CS-5822G	CS-5822Y	CS-5822E	Cathode	Anode

Mechanical Dimensions





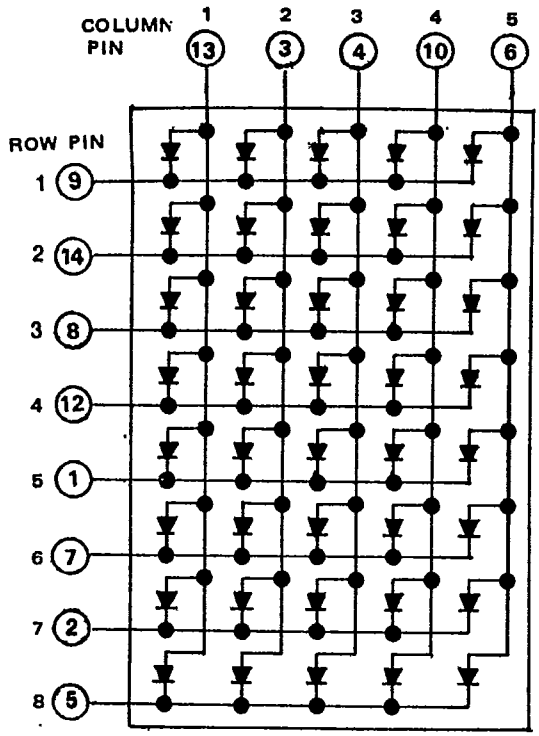
ALL PINS: φ0.5(.02)



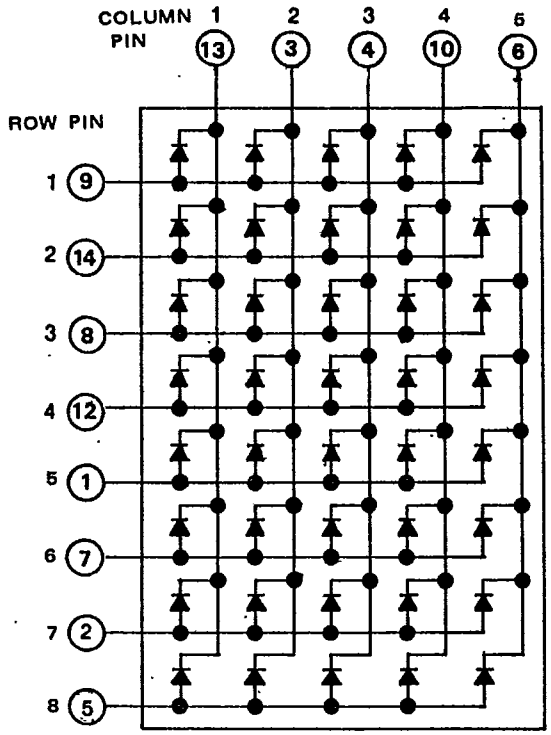
NOTES:
Dimensions in millimeters and (inches), tolerance is 0.25 (0.010) unless otherwise is noted.

Typical Internal Equivalent Circuit

CS-5821



CS-5822



CS-5821				CS-5822			
PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	Cathode Row 5	8	Cathode Row 3	1	Anode Row 5	8	Anode Row 3
2	Cathode Row 7	9	Cathode Row 1	2	Anode Row 7	9	Anode Row 1
3	Anode Column 2	10	Anode Column 4	3	Cathode Column 2	10	Cathode Column 4
4	Anode Column 3	11	Anode Column 3	4	Cathode Column 3	11	Cathode Column 3
5	Cathode Row 8	12	Cathode Row 4	5	Anode Row 8	12	Anode Row 4
6	Anode Column 5	13	Anode Column 1	6	Cathode Column 5	13	Cathode Column 1
7	Cathode Row 6	14	Cathode Row 2	7	Anode Row 6	14	Anode Row 2

Typical Multiplex Scheme

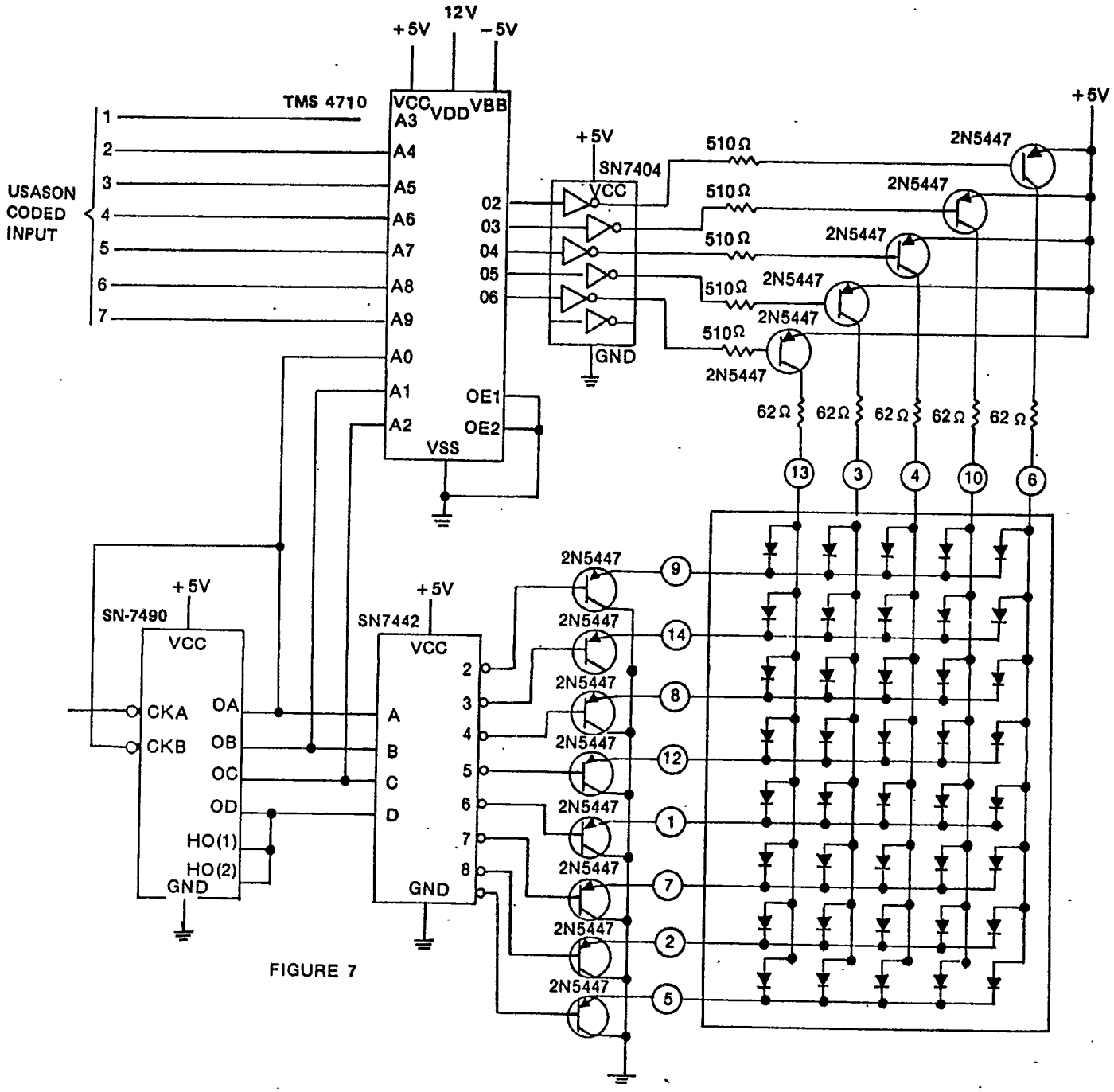


FIGURE 7

Typical Application Data

The TMS4710 has TTL-compatible inputs and outputs, therefore level-shifting circuitry is not required. Its outputs cannot drive the display directly, so discrete transistors are used to supply the additional LED drive current. Additional information on the TMS4710 can be found in the basic TMS4700 data sheet in The Semiconductor Memory Data Book for Design Engineers.

Usually the application requires more than one CS5801 Since the character generator is normally the most expensive part of the system, a substantial cost savings can be realized by using a single character generator and storing its information in additional memory. Since time is required to store and transfer the data, the LED duty cycle may decrease and additional peak current will be required to maintain display brightness.

Figure 7 illustrates a typical interface circuit between a character generator such as the TMS4710 and a single CS5801 alphanumeric display. The TMS4710 is programmed to display upper and lower case alphanumeric characters with USASCII coding on the inputs of the character generator.

The SN7490 and SN7442 multiplex the rows at a rate determined by the clock pulse rate supplied to the SN7490. The BCD count of the SN7490 is also used to select the proper row information from the TMS4710 through inputs A0, A1, and A2. The eight count from the SN7490 resets the counter to zero through the RO inputs. USASCII code information is applied to inputs A3 through A9 of the TMS4710.

Since the basic ROM chip has a block layout of 8×8, it is necessary to blank some of the TMS4710 outputs for the 5×8 display. Row 1 of the 8×8 array, corresponding to row address 000 on A0, A1, and A2, is blanked. Note that row 1 of the CS5801 must be driven by output 2 of the SN7442 to pick up the first active row addressed as 001 on the row address lines.

Absolute Maximum Ratings (Ta = 25°C)

PARAMETER		SYMBOL	RED GaAsP	BRIGHT RED(Gap) YELLOW/GREEN/ORANGE	UNITS
Average Power Dissipation per digit	7 segment	PAD	340	400	mW
	polerity	PAD	255	250	mW
Derating, Linear from 50°C per digit	7 segment		3.43	3.2	mA/°C
	polarity		2.14	2	mA/°C
Average Forward Current per digit	7 segment	IAF	200	160	mA
	polarity	IAF	125	100	mA
Average Forward Current per segment/D.P.		IAF	25	20	mA
Pulse Peak Current per segment/D.P. (Duty 1/10, 1 Khz)		IPF	200	150	mA
Reverse Voltage per segment/D.P.		VR	3	5	V
Operating Temperature		Topr.	−25°C to + 85°C		
Storage Temperature		Tstg.	−25°C to + 85°C		
Solder Temperature 1/16 Inch Below Seating Plane for 5 Seconds at 230°C					

Electro-Optical Characteristics (Ta = 25°C)

PARAMETER	SYMBOL	DEVICES	MIN	TYP 1.7	MAX 2.5	UNITS	TEST CONDITIONS
Forward Voltage	VF	RED (GaAsP)		1.7	20	V	IF = 20mA
		RED (GaP)		2.0	2.8		
		GREEN		2.2	2.8		
		YELLOW		2.1	2.8		
		ORANGE		2.1	2.8		
Peak Emission Wave-length	λP	RED (GaAsP)	630	655	680	nm	IF = 20mA
		RED (GaP)		697			
		GREEN		565			
		YELLOW		585			
		ORANGE		635			
Spectral Line Half-width	$\Delta\lambda$	RED (GaAsP)		40		nm	IF = 20mA
		RED (GaP)		90			
		GREEN		30			
		YELLOW		35			
		ORANGE		45			
Reverse Current	IR	RED (GaAsP)			100	uA	VR = 3V
		RED (GaP)			100		VR = 5V
		GREEN			100		
		YELLOW			100		
		ORANGE			100		
Luminous Intensity/ Segment (See Note 1, 2) (Digit Average)	IV	RED (GaAsP)		800		ucd	IF = 20mA
		RED (GaP)		1300			
		GREEN		2500			
		YELLOW		3000			
		ORANGE		4000			
Segment-to-Segment Luminous Intersity Ratio	IV-M	All Models		1.5:1			IF = 20mA

TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES (25℃ FREE AIR TEMPERATURE UNLESS OTHERWISE SPECIFIED)

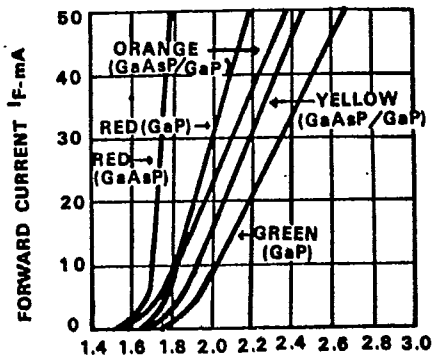


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

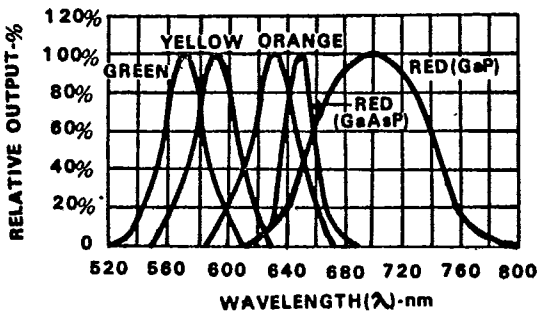


Fig.2 SPECTRAL RESPONSE

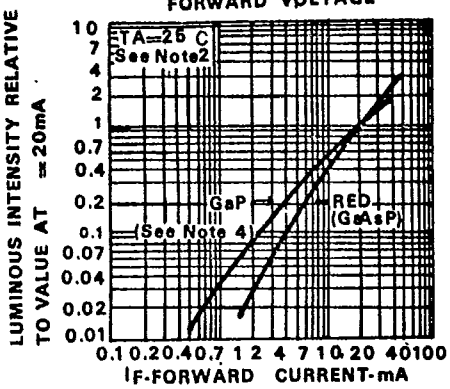
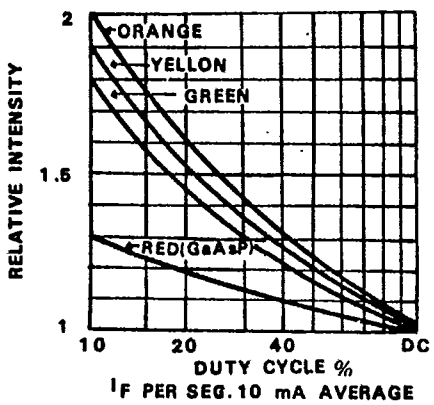


Fig. 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT



IF PER SEG. 10 mA AVERAGE

Fig. 5 LUMINOUS INTENSITY V.S. DUTY CYCLE

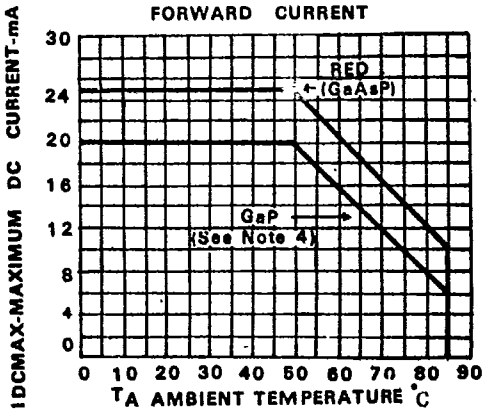


Figure.4 MAXIMUM ALLOWABLE DC CURRENT PER SEGMENT AS A FUNCTION OF AMBIENT TEMPERATURE.

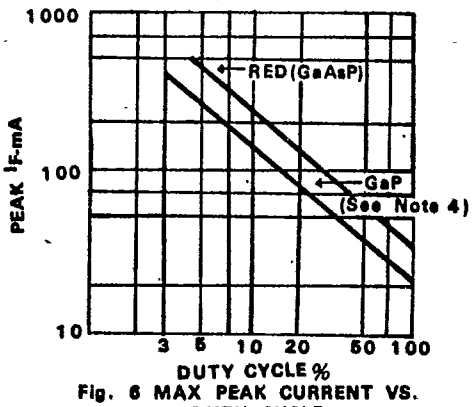


Fig. 6 MAX PEAK CURRENT VS. DUTY CYCLE

NOTES:4 GaP-BRIGHT RED/ GREEN / YELLOW / ORANGE