



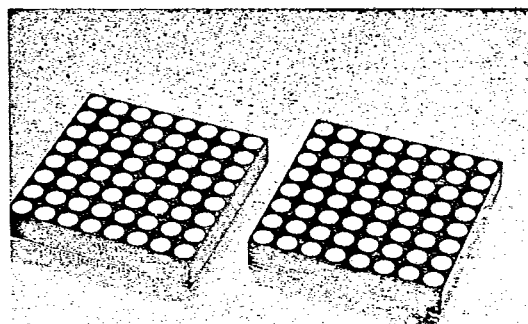
LTP-18088X 18188A SERIES

1.85" 8 x 8 SINGLE COLOR & MULTICOLOR
DOT MATRIX DISPLAYS

T-41-35

FEATURES

- 1.85 INCH (47.0 mm) MATRIX HEIGHT.
- LOW POWER REQUIREMENT.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- SINGLE PLANE, WIDE VIEWING ANGLE.
- 8 x 8 ARRAY WITH X-Y SELECT.
- COMPATIBLE WITH USASCII AND EBCDIC CODES.
- STACKABLE VERTICALLY AND HORIZONTALLY.
- CHOICE OF TWO MATRIX ORIENTATION CATHODE ROW OR CATHODE COLUMN.
- EASY MOUNTING ON P.C. BOARD.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- SINGLE COLOR DISPLAYS HAVE THE CHOICE OF BRIGHT COLORS-GREEN/ORANGE/.
- MULTICOLOR DISPLAYS ARE APPLICABLE TO THREE BRIGHT COLORS: GREEN, ORANGE AND YELLOW (GREEN AND ORANGE MIXED)



DESCRIPTION

The LTP-18x88 series are 1.85 inch (47.0 mm) matrix-height 8x8 dot matrix displays.

The LTP-18188A are multicolor applicable displays. The multicolor displays have black face and white dot color.

The LTP-18088 series are single color displays. The green, and orange displays have black face and white dot color.

The green series devices utilize LED chips which are made from GaP on a transparent GaP substrate.

The orange series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate.

DEVICES

PART NO. LTP-			DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
GREEN	ORANGE	MULTI-COLOR			
LTP-18088G	18088E	—	Anode Column, Cathode Row	A	A
—	—	18188A	Anode Column, Cathode Row	B	B

T-41-35

PIN CONNECTION

PIN NO.	CONNECTION	
	A: LTP-18088	B: LTP-18188A
1	Cathode Row 2	Cathode Row 2
2	Anode Column 2	Anode Column 2 Green
3	No Pin	Anode Column 2 Orange
4	Cathode Row 4	Cathode Row 4
5	Anode Column 4	Anode Column 4 Green
6	No Pin	Anode Column 4 Orange
7	Cathode Row 6	Cathode Row 6
8	Anode Column 6	Anode Column 6 Green
9	No Pin	Anode Column 6 Orange
10	Cathode Row 8	Cathode Row 8
11	Anode Column 8	Anode Column 8 Green
12	No Pin	Anode Column 8 Orange
13	Cathode Row 7	Cathode Row 7
14	Anode Column 7	Anode Column 7 Green
15	No Pin	Anode Column 7 Orange
16	Cathode Row 5	Cathode Row 5
17	Anode Column 5	Anode Column 5 Green
18	No Pin	Anode Column 5 Orange
19	Cathode Row 3	Cathode Row 3
20	Anode Column 3	Anode Column 3 Green
21	No Pin	Anode Column 3 Orange
22	Cathode Row 1	Cathode Row 1
23	Anode Column 1	Anode Column 1 Green
24	No Pin	Anode Column 1 Orange

ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

PARAMETER	GREEN	ORANGE	UNIT
Power Dissipation Per Dot	75	75	mW
Peak Forward Current Per Dot (1/16 Duty Cycle, 0.1ms Pulse Width)	100	100	mA
Continuous Forward Current Per Dot	25	25	mA
Derating Linear From 25°C Per Dot	0.3	0.3	mA/°C
Reverse Voltage Per Dot	5	5	V
Operating Temperature Range	-25°C to +85°C		
Storage Temperature Range	-25°C to +85°C		
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260°C			

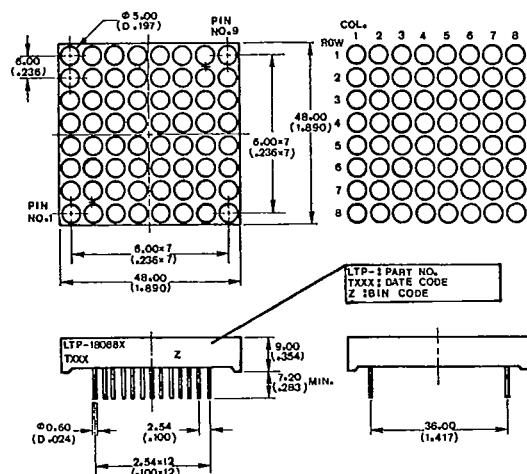


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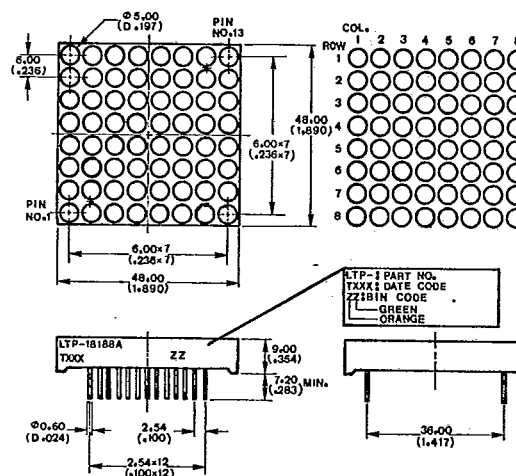
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PACKAGE DIMENSIONS

A. LTP-18088



B. LTP-18188A

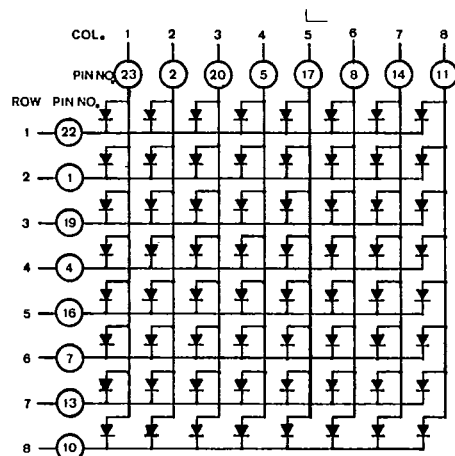


NOTE: All dimensions are in millimeters tolerance are:
(inches)

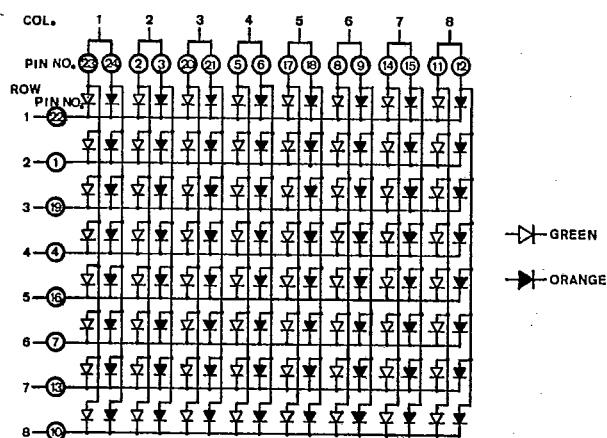
- Lead length (from seating plane): minimum value $\frac{+1.00}{-0.000}$ mm
($\frac{+0.040''}{-0.000''}$)
- ± 0.25 mm (0.010'') unless otherwise otherwise noted.

INTERNAL CIRCUIT DIAGRAM

A. LTP-18088

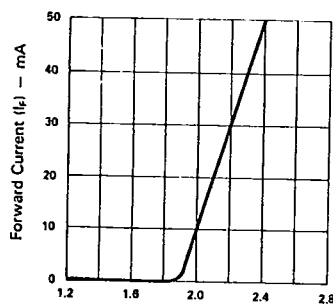


B. LTP-18188A

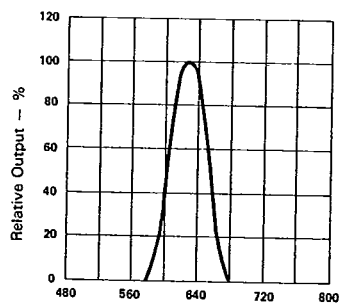


ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$
LTP-18088E/18188A (DRANGE)

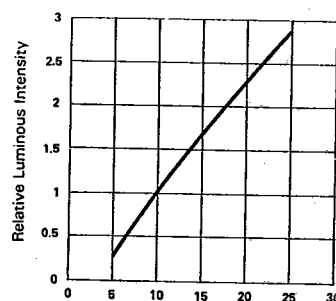
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	1000	3500		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_p		630		nm	$I = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I = 20 \text{ mA}$
Forward Voltage any Dot	V_f		2.1	2.8	V	$I = 20 \text{ mA}$
Reverse Current any Dot	I_r			100	μA	$V = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I = 20 \text{ mA}$



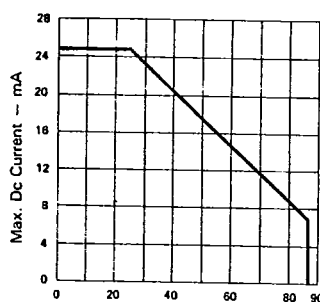
Forward Voltage (V_f) — Volts
Fig. 1 FORWARD CURRENT VS. FORWARD VOLTAGE.



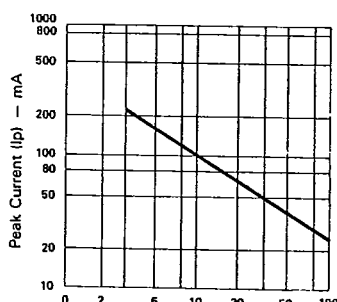
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



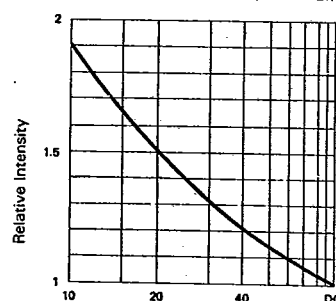
Forward Current (I_f) — mA
Fig. 3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (T_a) — $^\circ\text{C}$
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. VS AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT VS. DUTY CYCLE.% (REFRESH RATE — $F = 1 \text{ KHz}$)

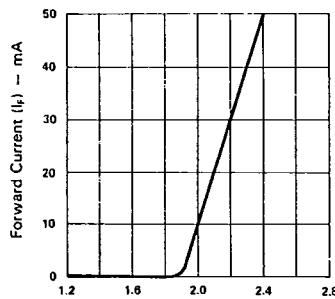


Duty Cycle %
Fig. 6 LUMINOUS INTENSITY VS. DUTY CYCLE.% (AVERAGE $I_f = 10 \text{ mA PER SEG.}$)

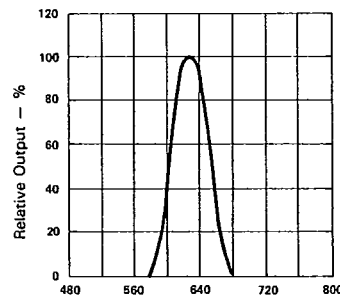


ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$
LTP-18088G/18188A (GREEN)

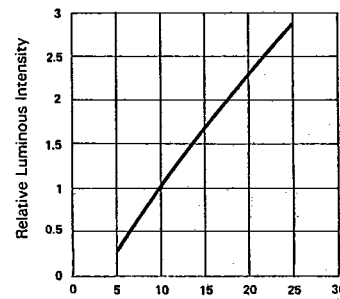
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_v	1000	3500		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_p		565		nm	$I = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I = 20 \text{ mA}$
Forward Voltage any Dot	V		2.1	2.8	V	$I = 20 \text{ mA}$
Reverse Current any Dot	I_r			100	μA	$V = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I = 20 \text{ mA}$



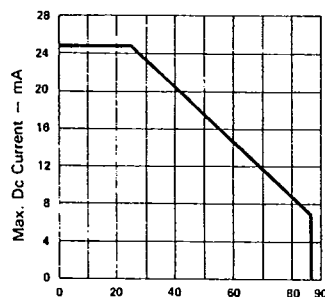
Forward Voltage (V_f) — Volts
Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.



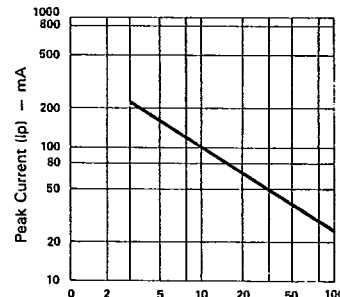
Wavelength (λ) — nm.
Fig. 2 SPECTRAL RESPONSE.



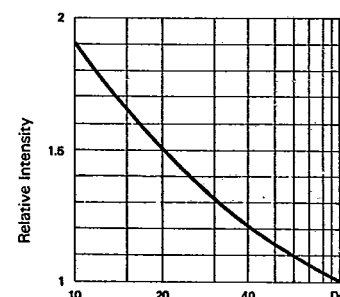
Forward Current (I_f) — mA
Fig. 3 RELATIVE, LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).



Ambient Temperature (T_a) — $^\circ\text{C}$
Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.



Duty Cycle %
Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE — $F = 1 \text{ KHz}$)



Duty Cycle %
Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_f = 10 \text{ mA}$ PER SEG.)

PACKAGING

T-90-20

Reel Packaging (Axial Lead Units)

DEVICE TYPE	COMPONENT SPACE (MM) "A"	TAPE SPACE (MM) "B"	REEL DIA (MM) "D"	QUANTITY (EA)		CARTON	
				REEL	CARTON	SIZE (MM)	WEIGHT (KG)
DO-41 DO-41L	5±0.5	52.4±1.5	326~336	5000	20K	355 x 355 x 355	10.5
DO-201AD	10±0.5	52.4±1.5	326~336	1200	4.8K	355 x 355 x 355	9.0
P6(Aleg)	10±0.5	52.4±1.5	326~336	700	2.8K	355 x 355 x 355	8.8

The C dimension of Fig. 3 is between 3.17mm and 635mm greater than the length of the component involved.

FIG. 1

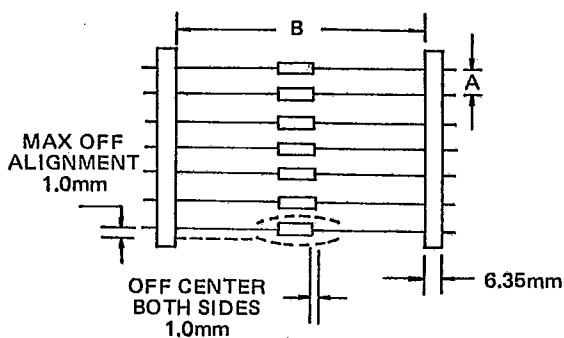


FIG. 2

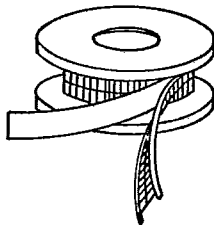
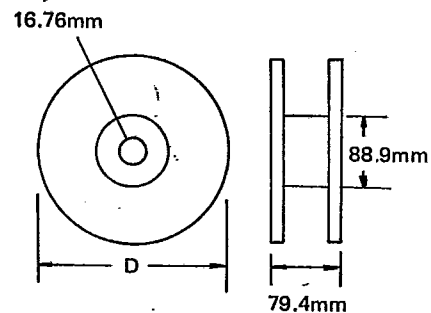


FIG. 3

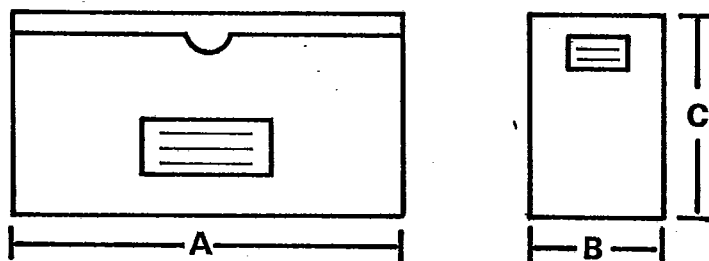


Bulk Packaging (Axial Lead Devices and Bridge Rectifiers)

DEVICE TYPE	PACKAGING SIZE (MM)		QUANTITY (EA)		APPROX GROSS WEIGHT (KG)	
	BOX	CARTON	BOX	CARTON	BOX	CARTON
DO-41 DO-41L	196 x 84 x 20	450 x 210 x 250	1000	50K	0.38	20
DO-201AD	305 x 93 x 59	355 x 355 x 355	1000	20K	1.35	28
P6(Aleg)	305 x 93 x 59	355 x 355 x 355	500	10K	1.2	24.5
PBM	357 x 125 x 60	530 x 360 x 340	1000	20K	1.5	32.3
PBDF	495 x 155 x 145	500 x 325 x 305	5000	20K	5.1	21.5
PBP	357 x 125 x 60	530 x 360 x 340	500	10K	1.5	31.5
PBL	375 x 220 x 155	470 x 385 x 455	1000	5K	5.7	30.5
PBPC-6	357 x 125 x 60	560 x 360 x 340	250	5K	1.1	22
PBPC-8	357 x 125 x 60	560 x 360 x 340	250	5K	1.7	35
KBPC	375 x 220 x 365	470 x 390 x 385	500	1K	15.1	31.5
KBPC-W	375 x 220 x 365	470 x 390 x 385	500	1K	14.5	30.0

AMMO BOX PACKAGING

BOX SIZE



Unit:m. m.

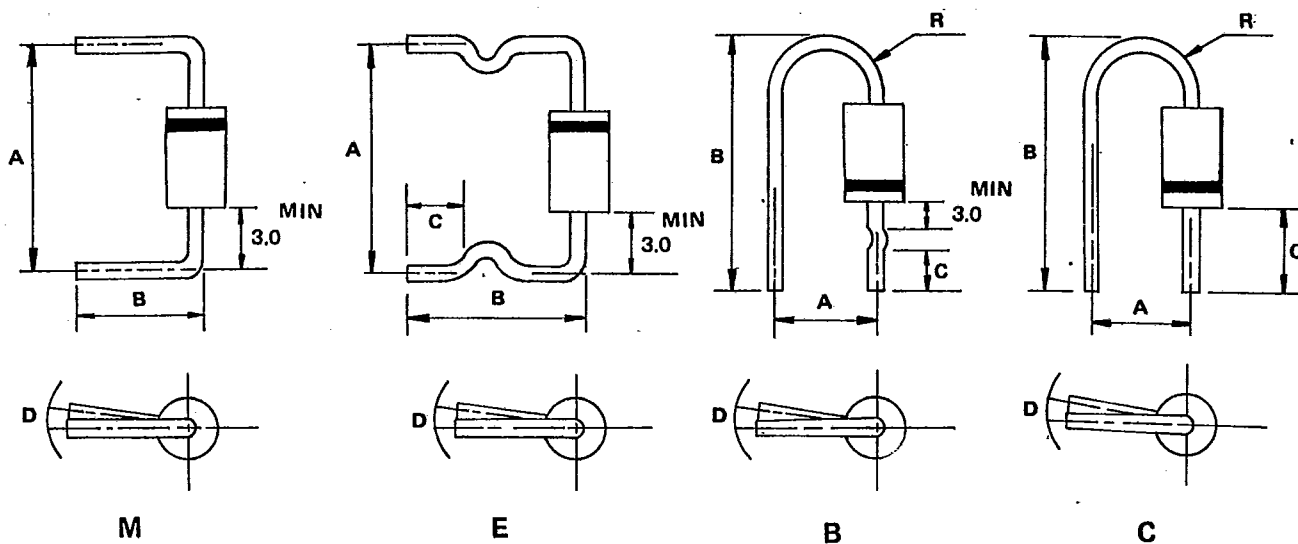
Packaging	Products Outline	Dimension *A*	Dimension *B*	Dimension *C*	Q'ty per BOX
26MM Horizontal Ammo Pack	DO-41 DO-41L(0.6mm Lead)	255	50	95	3K
					3K
52MM Horizontal Ammo Pack	DO-41and DO-41L DO 201AD	250	75	92	3K
					0.8K

CARTON SIZE

Unit:m. m.

Packaging	Products Outline	length	Width	High	Q'ty Per Carton
26MM Horizontal Ammo Pack	DO-41 DO-41L(0.6mm Lead)	330	310	268	42K
					48K
52MM Horizontal Ammo Pack	DO-41and DO-41L DO 201AD	355	355	340	12K
					12K

PREFORMED LEAD DRAWING



Case type	Preformed type	A (mm)		B (mm)		C (mm)		D (mm)		R (mm)	
		range	tolerance	range	tolerance	range	tolerance	range	tolerance	range	tolerance
D041	M	9.0-20.0	1.0	8.0-22.0	± 0.5	—	—	1.5	max	—	—
	E	11.0-20.0	± 1.0	11.0-16.0	± 1.0	4.0-5.0	± 0.5	1.5	max	—	—
	B	7.5	± 0.5	19.0-22.0	± 0.5	7.5	± 0.5	1.5	max	2.5-4.0	Typ
	C	4.5	± 0.8	18.0-19.0	± 0.5	9.0	± 0.5	1.5	max	2.5-4.0	Typ
D0201AD	M	15.0-20.0	± 1.0	8.0-22.0	± 1.0	—	—	2.0	max	—	—
	E	15.0-20.0	± 1.0	10.0-22.0	± 1.0	3.0-15.0	± 0.5	2.0	max	—	—
P6(Aleg)	M	15.0-20.0	± 1.0	8.0-22.0	± 1.0	—	—	2.0	max	—	—