

# High efficiency, two-digit numeric displays

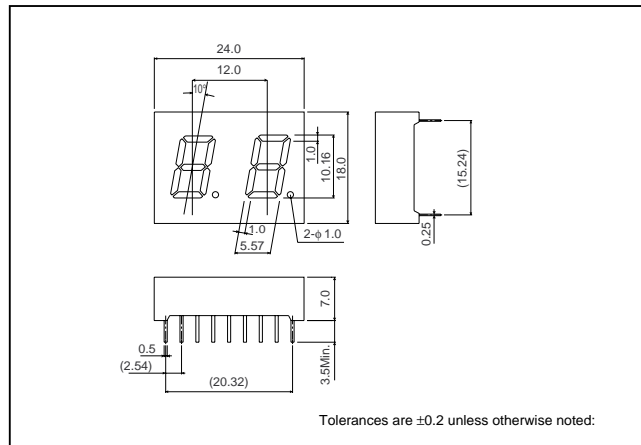
## LB-402DN Series

The LB-402 DN series were designed to meet the need for multi-digit numeric displays. These LED numeric displays use GaAsP on GaP for the emitting material (with the exception of green) and are housed in an epoxy resin package. They are two-digit displays with a character height of 10.16 mm.

### ●Features

- 1) Height of character : 10.16 mm
- 2) Common anode and common cathode configurations are available for each color.
- 3) The package surface is painted black and the segments are colored the display color.
- 4) High efficiency reflectors are used to achieve a bright, clear display.

### ●Dimensions (Unit : mm)

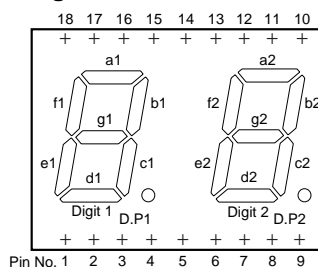


### ●Selection guide

Emitting color	Common			
	Red	Orange	Yellow	Green
Anode	LB-402VD	LB-402DD*	LB-402YD*	LB-402MD
Cathode	LB-402VN	LB-402DN*	LB-402YN*	LB-402MN

\*Order-based production.

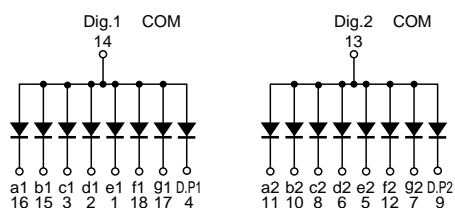
### ●Pin assignments



Pin No.	Function	Pin No.	Function
1	Segment "e1"	10	Segment "b2"
2	Segment "d1"	11	Segment "a2"
3	Segment "c1"	12	Segment "f2"
4	D.P1	13	Digit 2 Common
5	Segment "e2"	14	Digit 1 Common
6	Segment "d2"	15	Segment "b1"
7	Segment "g2"	16	Segment "a1"
8	Segment "c2"	17	Segment "g1"
9	D.P2	18	Segment "f1"

LED displays

● Internal circuit schematic (example of common anode)



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Red	Orange	Yellow	Green	Unit
		LB-402VD / VN	LB-402DD / DN	LB-402YD / YN	LB-402MD / MN	
Power dissipation	P <sub>D</sub>	640	640	640	960	mW
Power dissipation	P <sub>D</sub> / seg	40	40	40	60	mW
Forward current	I <sub>F</sub>	15	15	15	20	mA
Peak forward current	I <sub>FP</sub>	60*	60*	60*	60*	mA
Reverse voltage	V <sub>R</sub>	3	3	3	3	V
Operating temperature	T <sub>opr</sub>	-25~+75				°C
Storage temperature	T <sub>stg</sub>	-30~+85				°C

\* Pulse width 1ms duty 1 / 5

● Electrical and optical characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	Red			Orange			Yellow			Green			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 10mA	-	2.0	2.8	-	2.0	2.8	-	2.1	2.8	-	2.1	2.8	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> = 3V	-	-	100	-	-	100	-	-	100	-	-	100	μA
Peak wavelength	λ <sub>P</sub>	I <sub>F</sub> = 10mA	-	650	-	-	610	-	-	585	-	-	563	-	nm
Spectral line half width	Δλ	I <sub>F</sub> = 10mA	-	40	-	-	40	-	-	40	-	-	40	-	nm

©Not designed for radiation resistance.

● Luminous intensity

Color	λ <sub>P</sub>	Type	Min.	Typ.	Max.	Unit
Red	650	LB-402VD	5.6	16	-	mcd
		LB-402VN				
Orange	610	LB-402DD	3.6	10	-	mcd
		LB-402DN				
Yellow	585	LB-402YD	3.6	10	-	mcd
		LB-402YN				
Green	563	LB-402MD	9.0	25	-	mcd
		LB-402MN				

Note : Measured at I<sub>F</sub> = 10mA

LED displays

● Electrical and optical characteristic curves

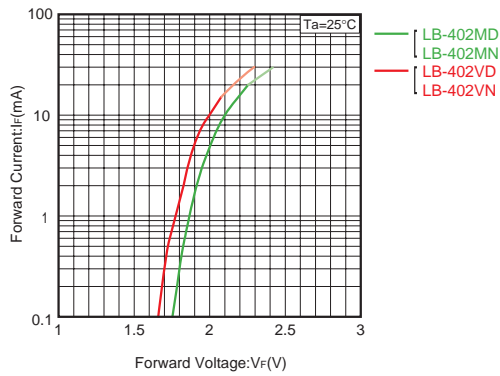


Fig.1 Forward Current - Forward Voltage

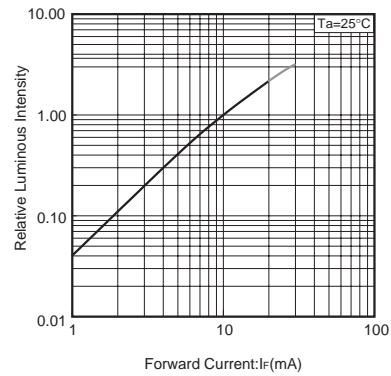


Fig.2 Relative Luminous Intensity - Forward Current

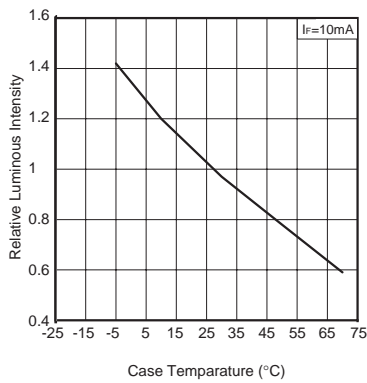


Fig.3 Relative Luminous Intensity - Case Temperature

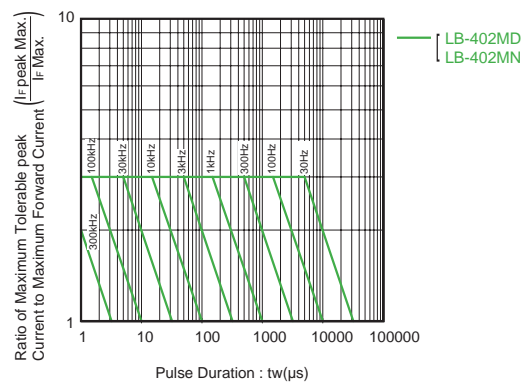


Fig.4 Ratio of Maximum Tolerable Peak Current - Pulse Duration ( I )

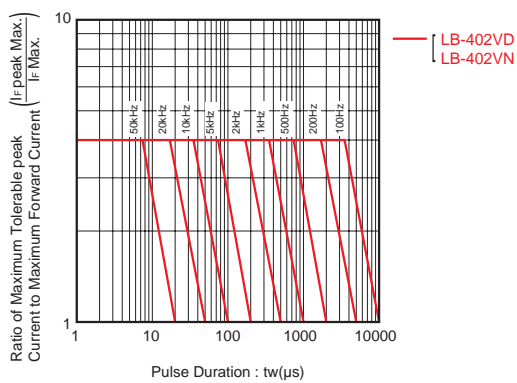


Fig.5 Ratio of Maximum Tolerable Peak Current - Pulse Duration ( II )

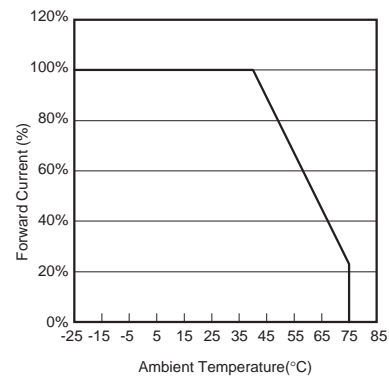


Fig.6 Derating

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