# Single Digit LED Numeric Display

LA-301 B / L Series

Datasheet

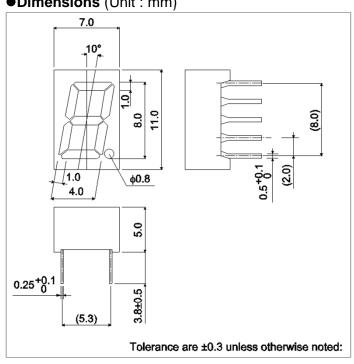
**Function** 

LA-301 B / L series is developed because of the demand for small single digit LED Numeric Display. Materials of emission are GaAsP on GaP, AlGalnP and GaP. This is the height of a letter 8mm, single digit LED Numeric Display that is packed by epoxy resin.

#### Features

- 1) The height of a letter is 8mm.
- 2) The light don't leak from the segment in spite of the small package.
- 3) The package of surface color is black. Color of segment is colored in emitting color.
- 4) Each color has anode common and cathode common respectively.

### Dimensions (Unit : mm)

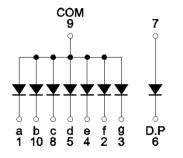


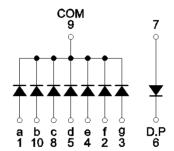
#### Pin assignments

		1	Segment "a"
		2	Segment "f"
Pin No.	+ a + 11	3	Segment "g"
2	+ / <sub>f</sub> / <sub>b</sub> + 9	4	Segment "e"
3	+ g + 8	5	Segment "d"
4	+ e c + 7	6	D.P Cathode
5	+ d + 6	7	D.P Anode
•	D.P	8	Segment "c"
		9	Common
		10	Segment "b"

Pin No.

### Internal circuit schematic





**Anode Common** 

Cathode Common

#### Selection guide

- ociconon garac					
Emitting color Common	Red	Red (High brightness)	Orange (High brightness)	Yellow (High brightness) (NRND)	Green
Anode	LA-301VB	LA-301AB	LA-301EB	LA-301XB	LA-301MB
Cathode	LA-301VL	LA-301AL	LA-301EL	LA-301XL	LA-301ML

## ●Absolute maximum ratings (T<sub>a</sub> = 25°C)

Parameter	Symbol	Red	Red (High brightness)	Orange (High brightness)	Yellow (High brightness) (NRND)	Green	Unit
		LA-301VB / VL	LA-301AB / AL	LA-301EB / EL	LA-301XB / XL	LA-301MB / ML	
Power dissipation	$P_D$	320	520	520	520	480	mW
Power dissipation	P <sub>D</sub> / seg	40	65	65	65	60	mW
Forward current	I <sub>F</sub>	15	25	25	25	20	mA
Peak forward current	I <sub>FP</sub>	60 * <sup>1</sup>	50 * <sup>2</sup>	50 * <sup>2</sup>	50 * <sup>2</sup>	60 * <sup>1</sup>	mA
Reverse voltage	$V_R$	5	5	5	5	5	V
Operating temperature T <sub>opr</sub>		−25 to +75					
Storage temperature	ature T <sub>stg</sub> -30 to +85						°C

<sup>\*1</sup> Pulse width 1ms, duty 1 / 5

# ●Electrical and optical characteristics (T<sub>a</sub> = 25°C)

Parameter	Symbol	Conditions	Red		Red (High brightness)		Orange (High brightness)		Yellow (High brightness) (NRND)		Green		Unit
			Тур.	Max.	Тур.	Max.	Тур.	Max.	Тур.	Max.	Тур.	Max.	
Forward voltage	$V_{F}$	$I_F = 10 \text{mA}$	2.0	2.8	2.05*	2.6*	2.05*	2.6*	2.05*	2.6*	2.1	2.8	V
Reverse current	I <sub>R</sub>	$V_R = 3V$	-	100	-	100	-	100	1	100	1	100	μΑ
Peak wavelength	$\lambda_{p}$	I <sub>F</sub> =10mA	650	-	626*	-	610*	-	589*	-	563	1	nm
Spectral line halfwidth	Δλ	I <sub>F</sub> =10mA	40	-	18*	-	17*	-	15*	-	40	-	nm

O Not designed for radiation resistance.

<sup>\*2</sup> Pulse width 0.1ms, duty 1 / 10

<sup>\*</sup> Shows the number on the condition of  $I_F=20$ mA.

### Luminous intensity

Parameter	$\lambda_{p}$	Туре	Min.	Тур.	Max.	Unit
Red	650	LA-301VB	3.6	10		mcd
Red	630	LA-301VL	3.0	10	-	
Red	626	LA-301AB	36	90	-	mcd
(High brightness)	020	LA-301AL	30			
Orange	610	LA-301EB	36	90	-	mcd
(High brightness)	610	LA-301EL	30			
Yellow	500	LA-301XB	36	90	-	
(High brightness) (NRND)	589	LA-301XL	30			mcd
Green	563	LA-301MB	2.6	10		mad
	503	LA-301ML	3.0	3.6	-	mcd

<sup>©</sup> Condition I<sub>F</sub>=10mA

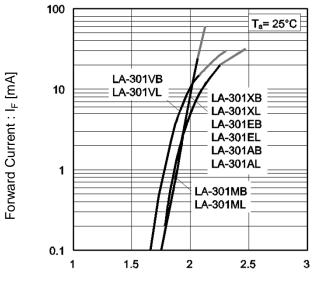
### ●lv classification

Parameter	Туре	Item	lv cla	Unit			
		" K "	3.6	to	7.1	mcd	
		" L "		to	11	mcd	
Red	LA-301VB LA-301VL	" M "	9.0	to	18	mcd	
	27. 00172	" N "	14	to	28	mcd	
		"P"	22	to	(45)	mcd	
		" Q "	36	to	71	mcd	
		" R "	56	to	110	mcd	
Red (High brightness)	LA-301AB LA-301AL	" S "	90	to	180	mcd	
(i iigii ziigiiii zee)	271 00 1712	" T "	140	to	280	mcd	
		" U "	220	to	(450)	mcd	
		" Q "	36	to	71	mcd	
		" R "	56 to 110 90 to 180	110	mcd		
Orange (High brightness)	LA-301EB LA-301EL	" S "		180	mcd		
(ringiri briginarioco)	27. 00122	" T "	140	to	280	mcd	
		" U "	220	to	(450)	mcd	
		" K "	3.6	to	7.1	mcd	
			"L"	5.6	to	11	mcd
Green	LA-301MB LA-301ML	" M "	9.0	mcd			
	E/ COTIVIE	" N "	14	to	28	mcd	
		"P"	22	to	(45)	mcd	

<sup>©</sup> Condition I<sub>F</sub>=10mA

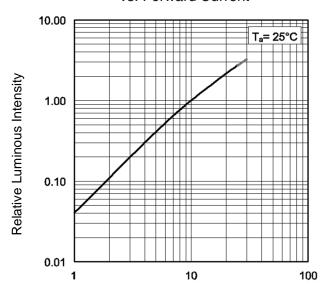
### •Electrical and optical characteristics curves

Fig.1 Forward Current vs. Forward Voltage



Forward Voltage: V<sub>F</sub> [V]

Fig.2 Relative Luminous Intensity vs. Forward Current



Forward Current : I<sub>F</sub> [mA]

Fig.3 Relative Luminous Intensity vs. Case Temperature

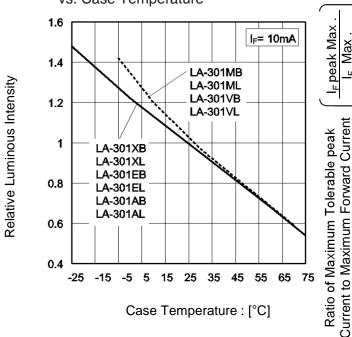
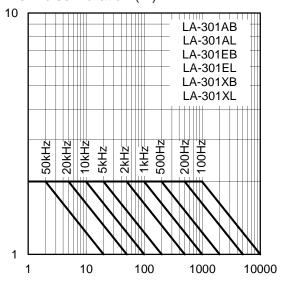


Fig.4 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration (I)



Pulse Duration : tw [μs]

l<sub>F</sub> Max

### •Electrical and optical characteristics curves

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

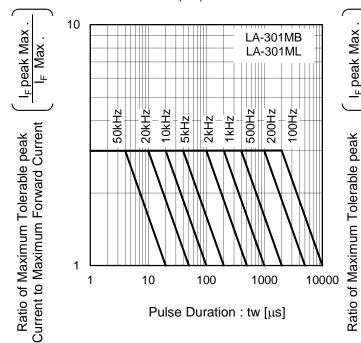


Fig.6 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration ( III )

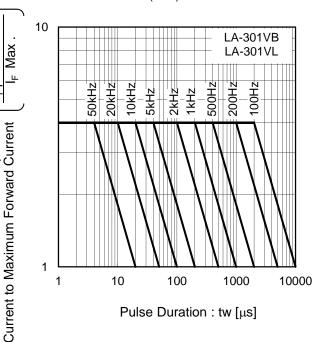
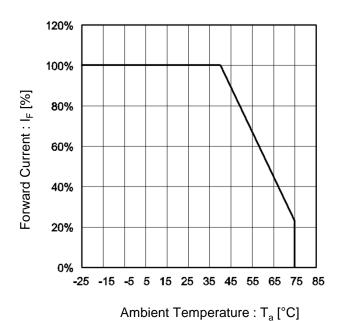


Fig.7 Derating



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