Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Single Digit High Brightness LED Numeric Display

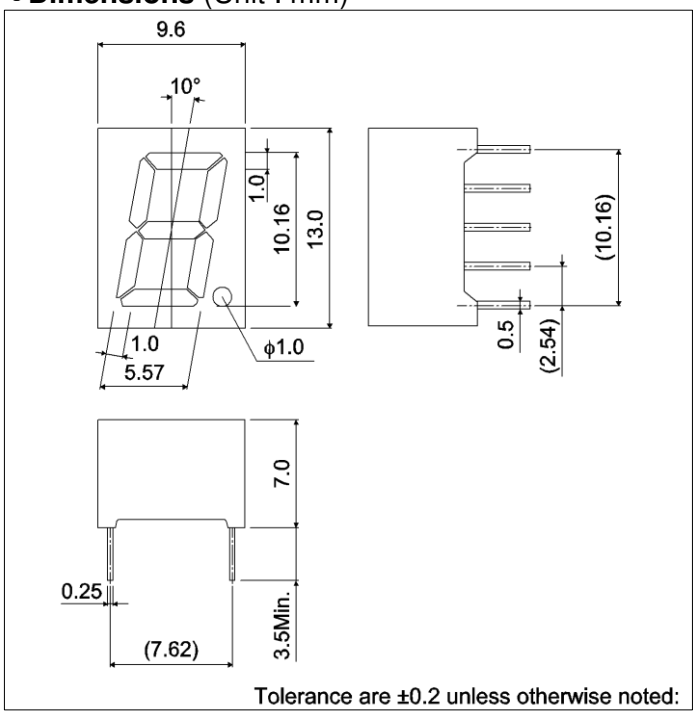
LAP-401 D / N Series Datasheet

LAP-401 D / N series are the numberical display units featuring ROHM's in-house 4-element(AlGaInP) high-brightness LED dies.Their luminous intensity is top class in the industry while degradation is considerably slow, which helps to keep illumination vividness almost unchanged and the image of sets high over a long period of time.

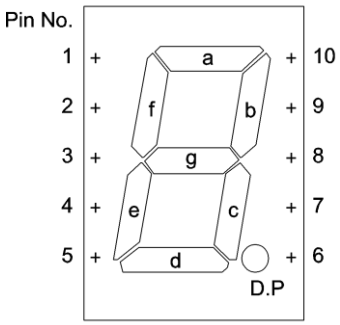
●Features

1) 10.16mm for letter height, single-line LED numerical displays.
2) About 10 times more luminous intensity than the conventional products by use of 4-element LED dies. (in case of orange color)
3) The same luminous intensity as the conventional products at their 1/10 of current, which contributes lots to energy-saving of sets.
4) Light-leakage from segments probable with the small display packages is very rare.
5) Both anode common type and cathode common type are available in lineup for each color.

●Dimensions (Unit : mm)

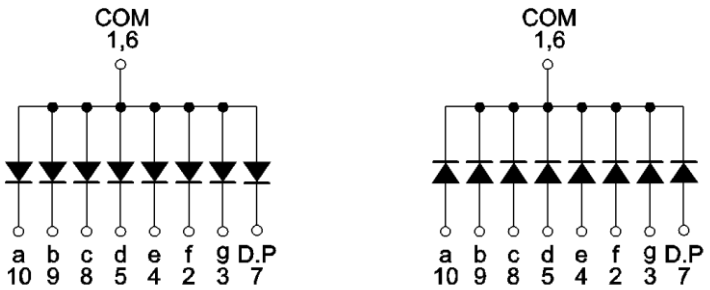


●Pin assignments



Pin No.	Function
1	Common
2	Segment "f"
3	Segment "g"
4	Segment "e"
5	Segment "d"
6	Common
7	D.P
8	Segment "c"
9	Segment "b"
10	Segment "a"

●Internal circuit schematic



●Selection guide

Emitting color / Common	Red	Orange	Yellow	Green
Anode	LAP-401VD	LAP-401DD	LAP-401YD	LAP-401MD
Cathode	LAP-401VN	LAP-401DN	LAP-401YN	LAP-401MN

●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Red	Orange	Yellow	Green	Unit
		LAP-401VD / VN	LAP-401DD / DN	LAP-401YD / YN	LAP-401MD / MN	
Power dissipation	P_D	448	448	448	448	mW
Power dissipation	P_D / seg	56	56	56	56	mW
Forward current	I_F	20	20	20	20	mA
Peak forward current	I_{FP}	60 *1	60 *1	60 *1	60 *1	mA
Reverse voltage	V_R	5	5	5	5	V
Operating temperature	T_{opr}	−25 to +75				°C
Storage temperature	T_{stg}	−30 to +85				°C

*1 Pulse width 1ms, duty 1 / 5

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

Parameter	Symbol	Conditions	Red		Orange		Yellow		Green		Unit
			Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	
Forward voltage	V_F	I_F =10mA	1.9	2.6	1.9	2.6	1.9	2.6	1.9	2.6	V
Reverse current	I_R	V_R =3V	-	100	-	100	-	100	-	100	μA
Peak wavelength	λ_p	I_F=10mA	650	-	605	-	590	-	572	-	nm
Spectral line halfwidth	$\Delta\lambda$	I_F=10mA	20	-	20	-	20	-	20	-	nm

◎ Not designed for radiation resistance.

●Luminous intensity

Parameter	λ_p	Type	Min.	Typ.	Max.	Unit
Red	650	LAP-401VD	14	36	-	mcd
		LAP-401VN				
Orange	605	LAP-401DD	56	250	-	mcd
		LAP-401DN				
Yellow	590	LAP-401YD	90	450	-	mcd
		LAP-401YN				
Green	572	LAP-401MD	36	100	-	mcd
		LAP-401MN				

◎ Condition I_F=10mA

●Electrical and optical characteristics curves

Fig.1 Forward Current vs. Forward Voltage

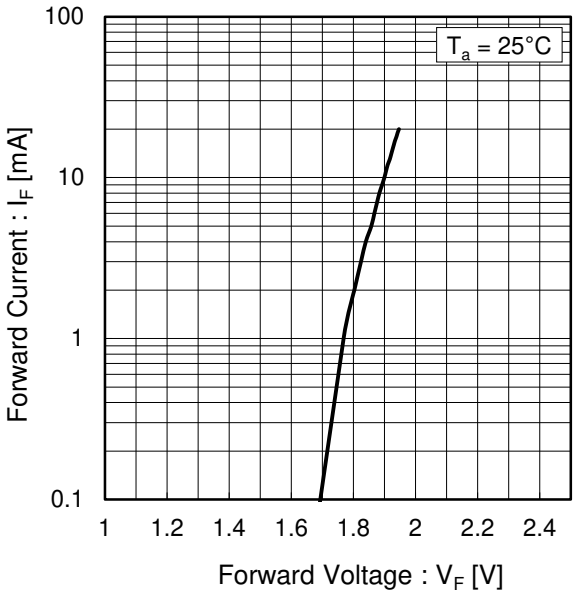


Fig.2 Relative Luminous Intensity vs. Forward Current

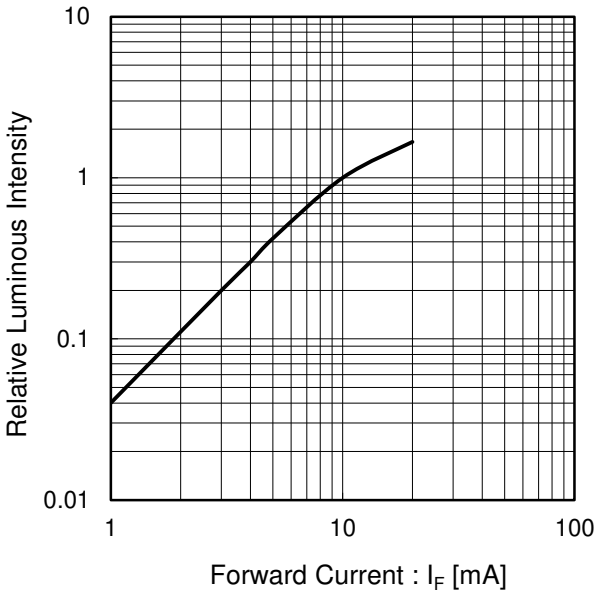


Fig.3 Relative Luminous Intensity vs. Case Temperature

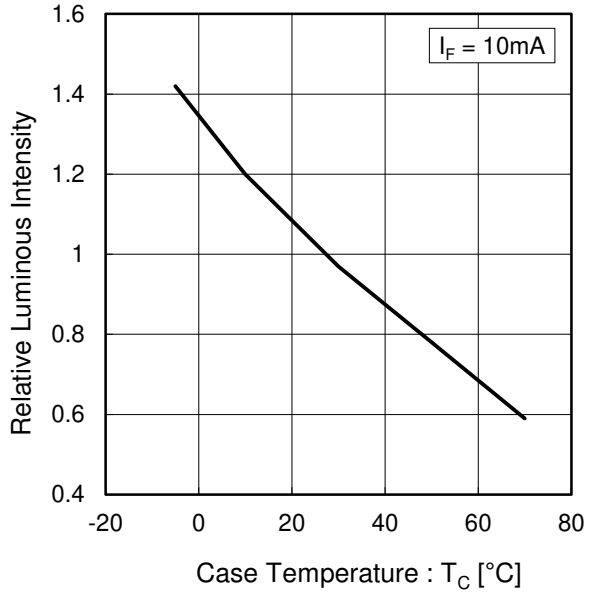
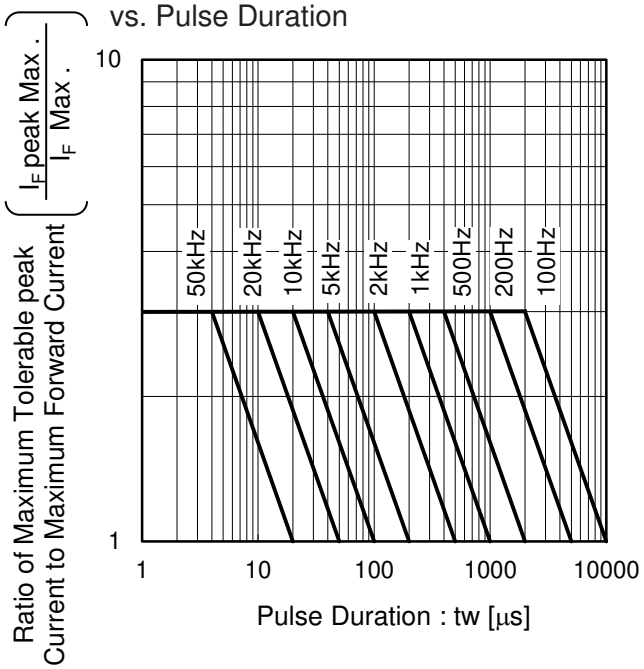
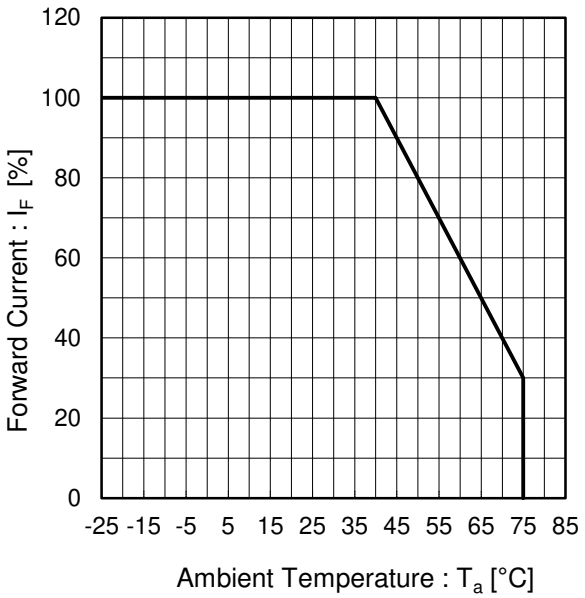


Fig.4 Ratio of Maximum Tolerable Peak Current vs. Pulse Duration



●Electrical and optical characteristics curves

Fig.5 Derating



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2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.

7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

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