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ROHM SEMICONDUCTOR

Data Sheet

Single Digit LED Numeric Display

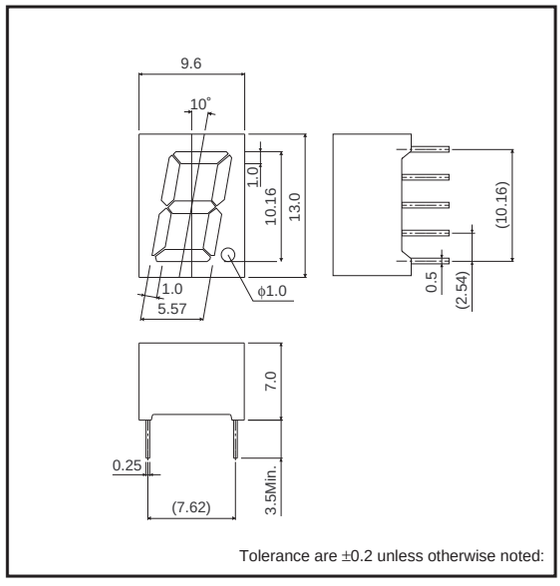
LAP-401 D / N Series

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.

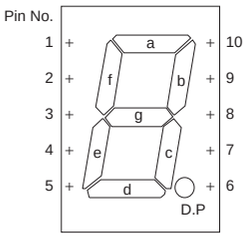
●Dimensions (Unit : mm)



●Selection guide

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

●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"

●Inner circuit (anode common)



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●Absolute maximum ratings (Ta=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	Topr	–25 to +75				˚C
Storage temperature	Tstg	–30 to +85				˚C

*1 Pulse width 1ms Duty 1 / 5

●Electrical characteristics (Ta=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 half width	$\Delta\lambda$	I_F=10mA	20	–	20	–	20	–	20	–	nm

◎The products are not radiations resistant.

●Luminous intensity

Color	λ_P (nm)	Type	Min.	Typ.	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			

◎A condition of measurement is I_F=10mA.

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●Electrical and optical characteristic curve

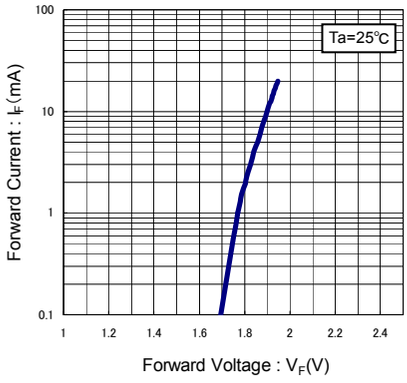


Fig.1 Forward Current - Forward Voltage

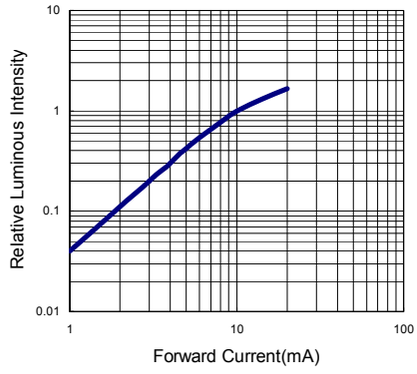


Fig.2 Relative Luminous Intensity - Forward Current

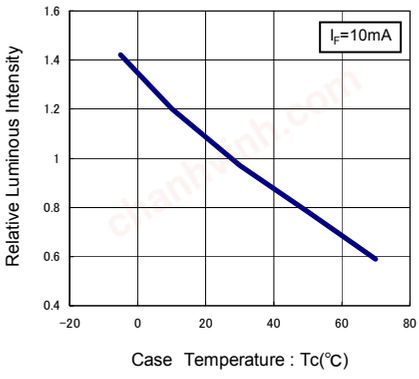


Fig.3 Relative Luminous Intensity - Case Temperature(℃)

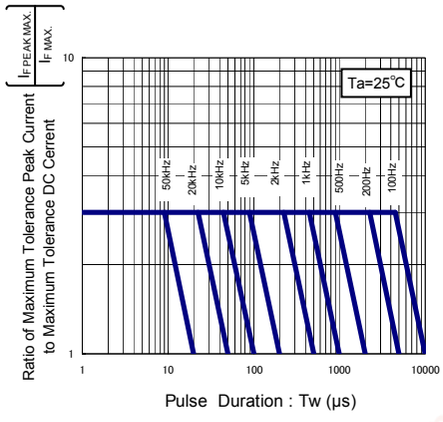


Fig.4 Ratio of Maximum Tolerable Peak Current- Pulse Duration

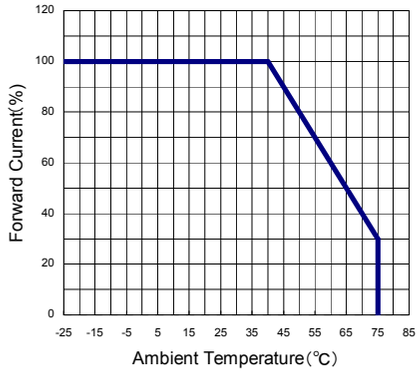


Fig.5 Derating

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