



LIGITEK

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SINGLE DIGIT LED DISPLAY (0.40 Inch)



Lead-Free Parts

LSD401/2EGR-XX/SRP104-PF

DATA SHEET

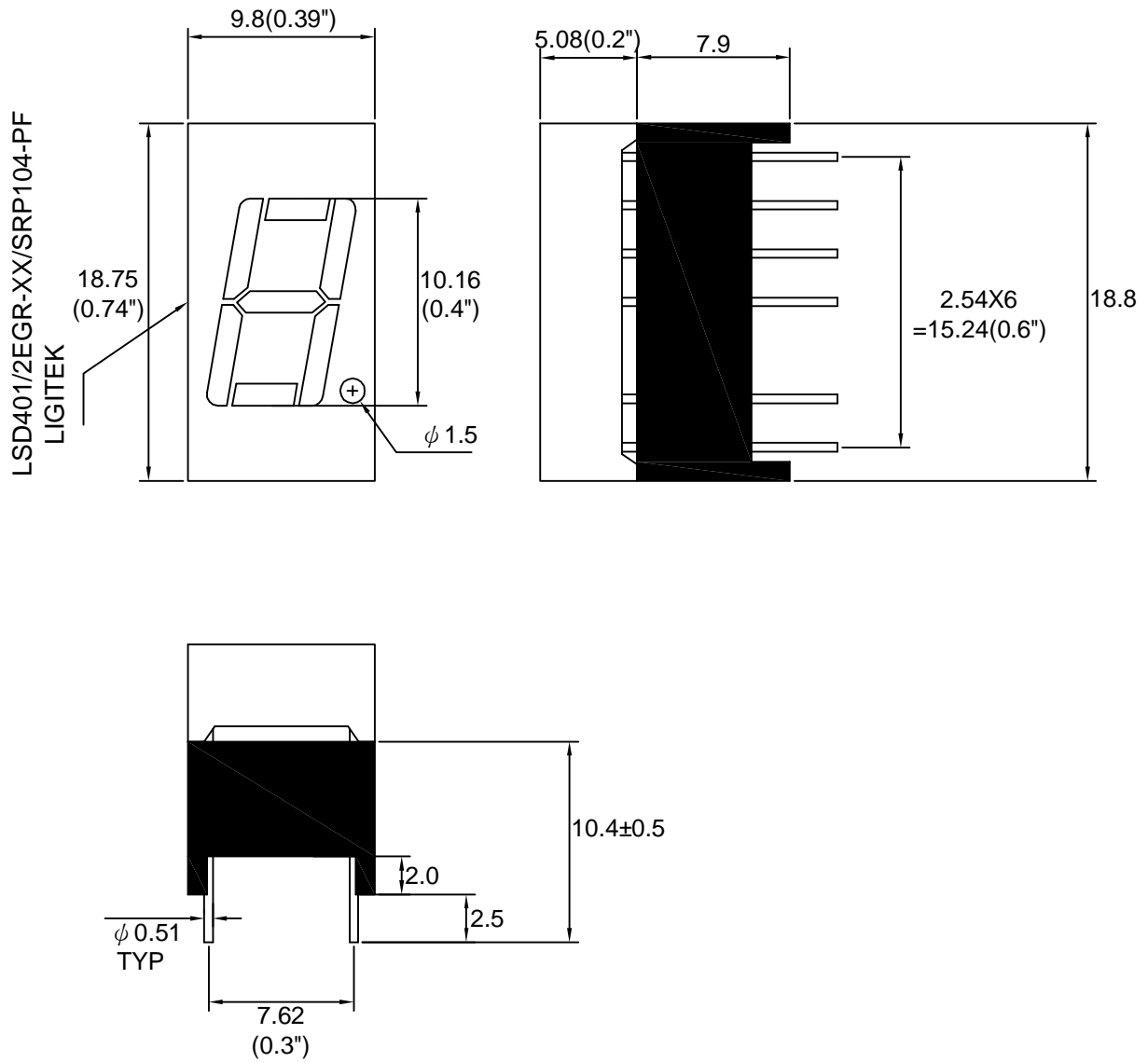
DOC. NO : QW0905-LSD401/2EGR-XX/SRP104-PF

REV. : C

DATE : 29 - Jan. - 2008



Package Dimensions

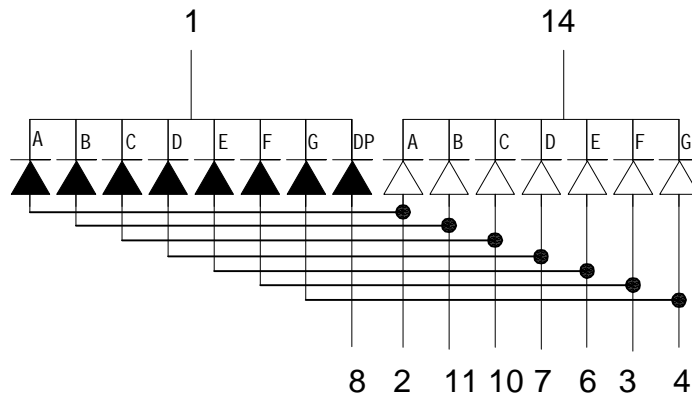


Note : 1.All dimension are in millimeters and (Inch) tolerance is $\pm 0.25(0.01)$ unless otherwise noted.
2.Specifications are subject to change without notice.

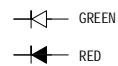
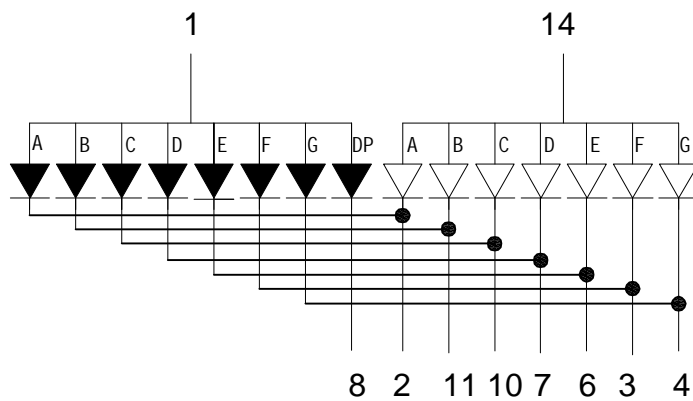


Internal Circuit Diagram

LSD401EGR-XX/SRP104-PF



LSD402EGR-XX/SRP104-PF



NP: 5, 9, 12, 13



Electrical Connection

PIN NO.	LSD401EGR-XX/SRP104-PF	PIN NO.	LSD402EGR-XX/SRP104-PF
1	Common Cathode(R)	1	Common Anode(R)
2	Anode A	2	Cathode A
3	Anode F	3	Cathode F
4	Anode G	4	Cathode G
5	No Pin	5	No Pin
6	Anode E	6	Cathode E
7	Anode D	7	Cathode D
8	Anode DP(R)	8	Cathode DP(R)
9	No Pin	9	No Pin
10	Anode C	10	Cathode C
11	Anode B	11	Cathode B
12	No Pin	12	No Pin
13	No Pin	13	No Pin
14	Common Cathode(G)	14	Common Anode(G)



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings		UNIT
		E	G	
Forward Current Per Chip	IF	30	30	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	120	120	mA
Power Dissipation Per Chip	PD	100	100	mW
Reverse Current Per Any Chip	Ir	10		μA
Operating Temperature	Topr	-25 ~ +85		°C
Storage Temperature	Tstg	-25 ~ +85		°C
Solder Temperature 1/16 Inch Below Seating Plane For 3 Seconds At 260 °C				

Part Selection And Application Information(Ratings at 25°C)

PART NO	CHIP		common cathode or anode	λ P (nm)	Δ λ (nm)	Electrical					IV-M
	Material	Emitted				Vf(v)			Iv(mcd)		
						Min.	Typ.	Max.	Min.	Typ.	
LSD401EGR-XX/SRP104-PF	GaAsP/GaP	Orange	Common Cathode	640	45	1.7	2.1	2.6	1.35	2.35	2:1
	GaP	Green		565	30	1.7	2.1	2.6	1.75	3.05	
LSD402EGR-XX/SRP104-PF	GaAsP/GaP	Orange	Common Anode	640	45	1.7	2.1	2.6	1.35	2.35	
	GaP	Green		565	30	1.7	2.1	2.6	1.75	3.05	

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.
2. The luminous intensity data did not including ±15% testing tolerance.

**Test Condition For Each Parameter**

Parameter	Symbol	Unit	Test Condition
Forward Voltage Per Chip	V _f	volt	I _f =20mA
Luminous Intensity Per Chip	I _v	mcd	I _f =10mA
Peak Wavelength	λ_p	nm	I _f =20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	I _f =20mA
Reverse Current Any Chip	I _r	μA	V _r =5V
Luminous Intensity Matching Ratio	IV-M		



Typical Electro-Optical Characteristics Curve

E CHIP

Fig.1 Forward current vs. Forward Voltage

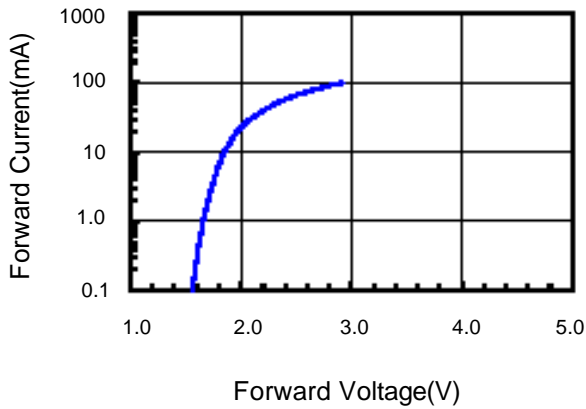


Fig.2 Relative Intensity vs. Forward Current

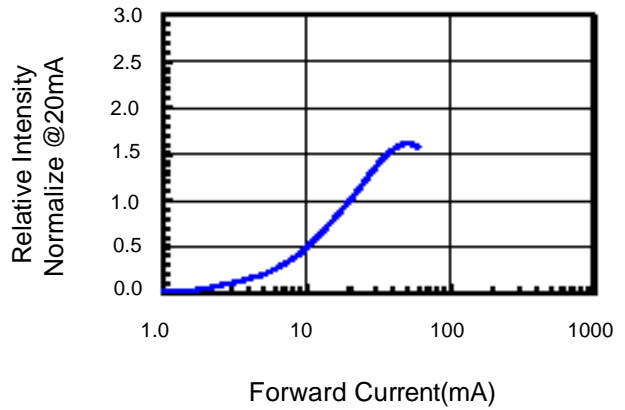


Fig.3 Forward Voltage vs. Temperature

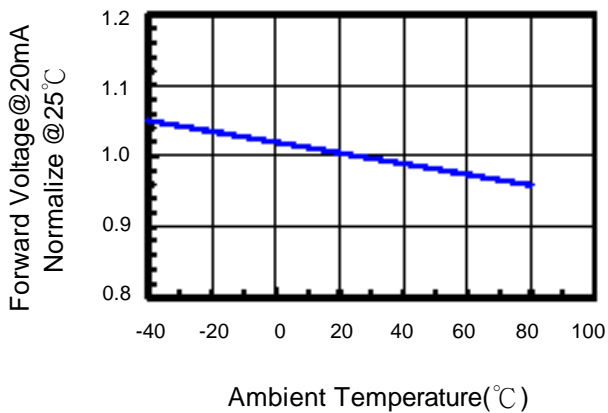


Fig.4 Relative Intensity vs. Temperature

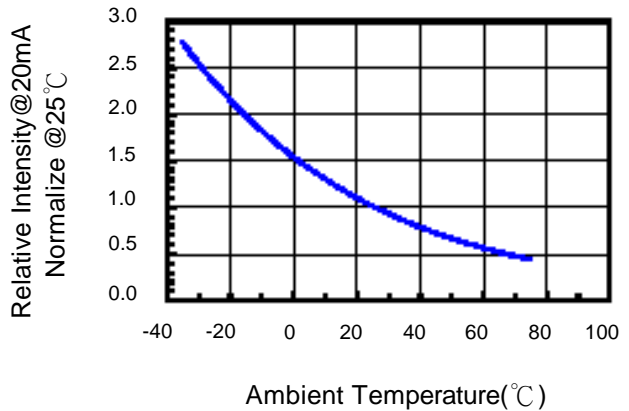
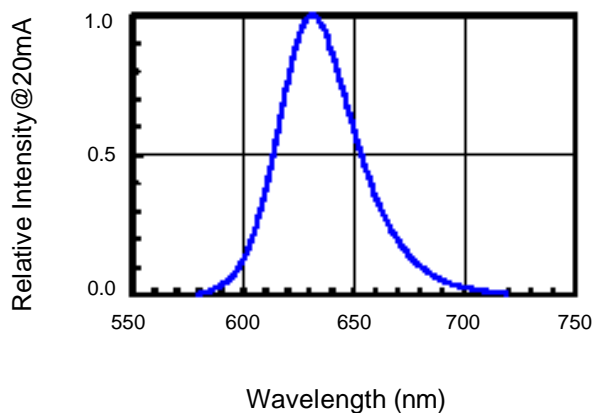


Fig.5 Relative Intensity vs. Wavelength





Typical Electro-Optical Characteristics Curve

G CHIP

Fig.1 Forward current vs. Forward Voltage

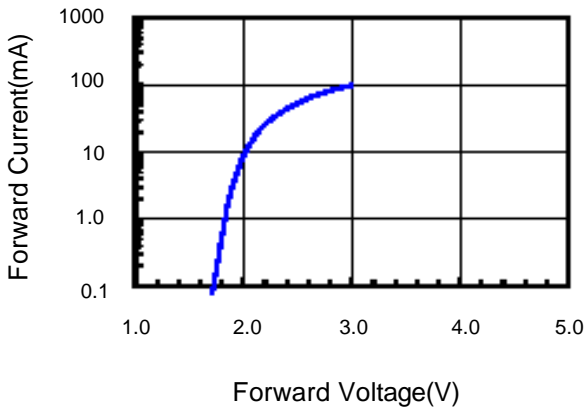


Fig.2 Relative Intensity vs. Forward Current

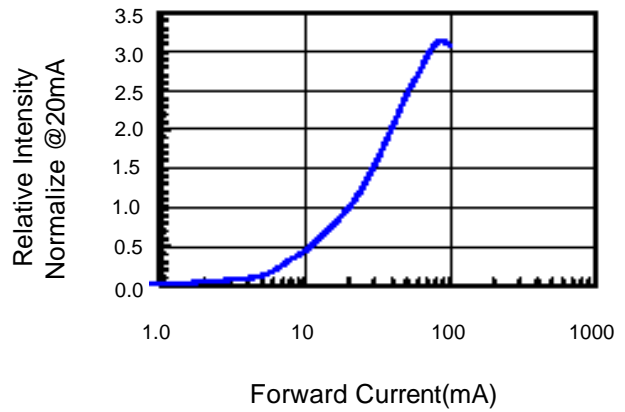


Fig.3 Forward Voltage vs. Temperature

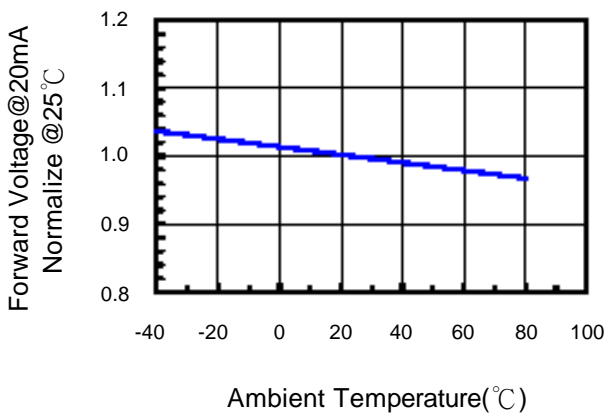


Fig.4 Relative Intensity vs. Temperature

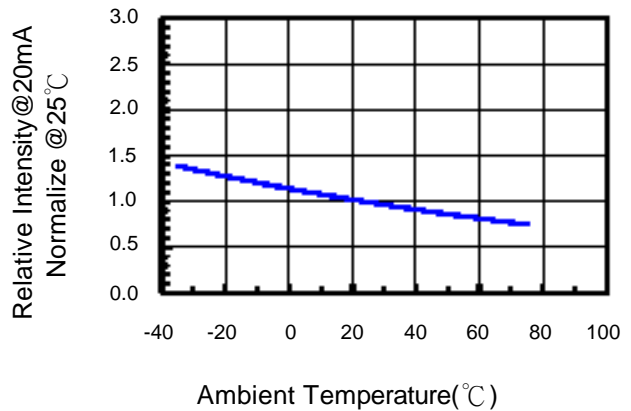
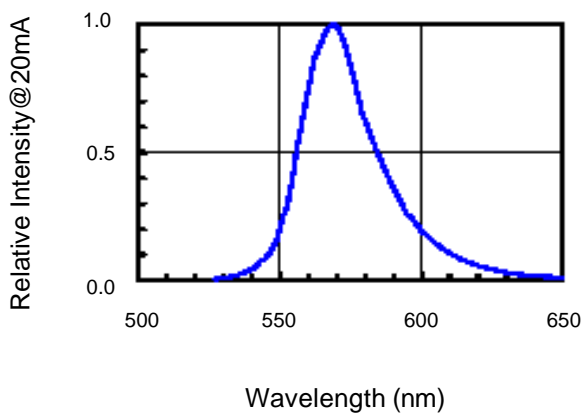


Fig.5 Relative Intensity vs. Wavelength





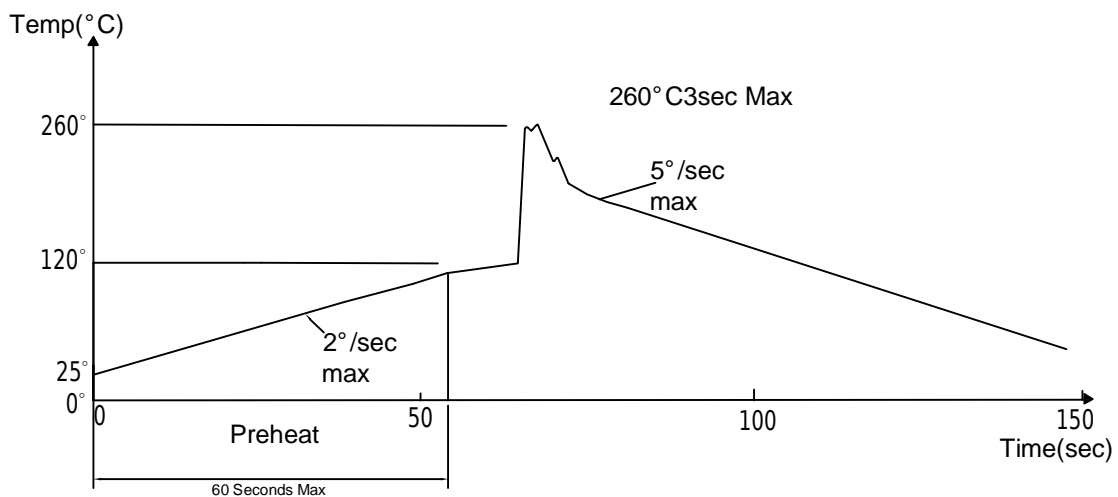
Soldering Condition(Pb-Free)

1.Iron:

Soldering Iron:30W Max
Temperature 350° C Max
Soldering Time:3 Seconds Max(One Time)
Distance:Solder Temperature 1/16 Inch Below Seating
Plane For 3 Seconds At 260° C

2.Wave Soldering Profile

Dip Soldering
Preheat: 120° C Max
Preheat time: 60seconds Max
Ramp-up
2° C/sec(max)
Ramp-Down:-5° C/sec(max)
Solder Bath:260° C Max
Dipping Time:3 seconds Max
Distance:Solder Temperature 1/16 Inch Below Seating
Plane For 3 Seconds At 260° C



Note: 1.Wave solder should not be made more than one time.
2.You can just only select one of the soldering conditions as above.



Reliability Test:

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=10mA 3.t=1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of determining the resistance of a part in electrical and thermal stressed.	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
High Temperature Storage Test	1.Ta=105 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.	MIL-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1.Ta=-40 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1.Ta=65 °C±5°C 2.RH=90 %~95% 3.t=240hrs ±2hrs	The purpose of this test is the resistance of the device under tropical for hours.	MIL-STD-202:103B JIS C 7021: B-11
Thermal Shock Test	1.Ta=105 °C±5°C & -40°C±5°C (10min) (10min) 2.total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
Solder Resistance Test	1.T.Sol=260 °C±5°C 2.Dwell time= 10 ±1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Solderability Test	1.T.Sol=230 °C±5°C 2.Dwell time=5 ±1sec	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MIL-STD-750: 2026 MIL-STD-883: 2003 JIS C 7021: A-2