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TRIPLE DIGIT LED DISPLAY (0.56 Inch)



Lead-Free Parts

LTD511/22-XX/RP35-PF

DATA SHEET

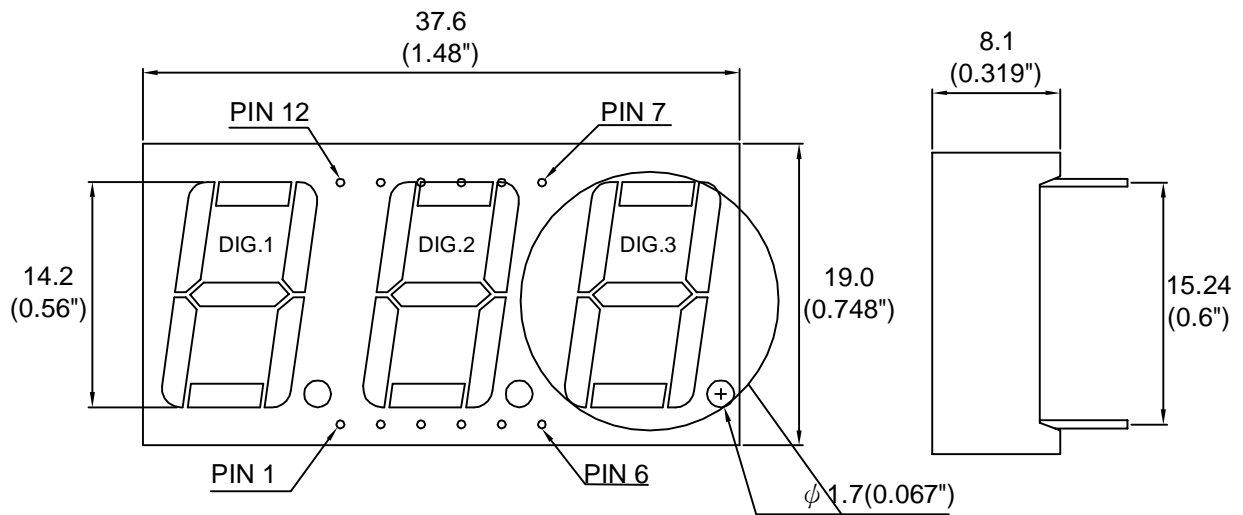
DOC. NO : QW0905-LTD511/22-XX/RP35-PF-08

REV. : A

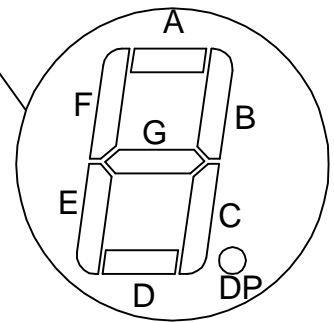
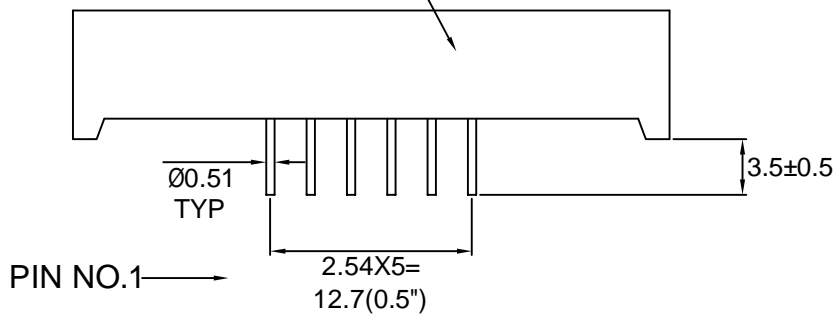
DATE : 16 - Feb.- 2008



Package Dimensions



LTD511/22-XX/RP35-PF
LIGITEK

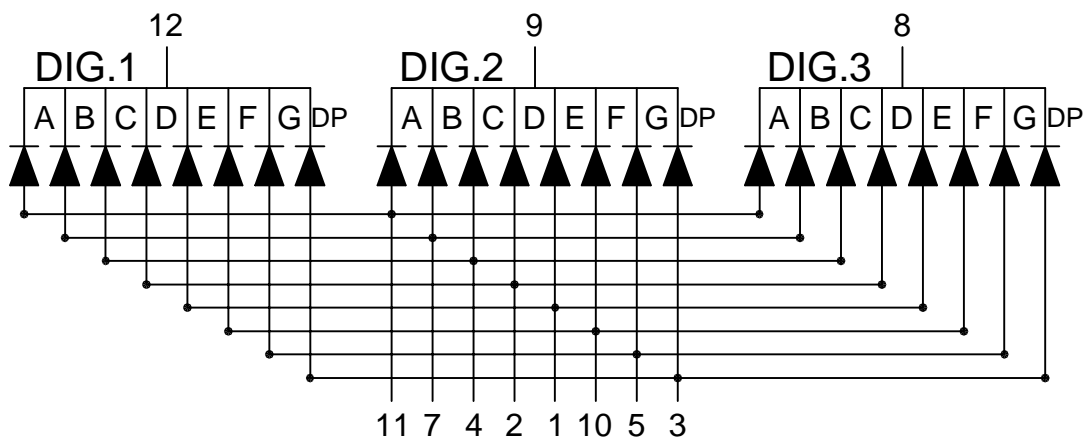


Note : 1.All dimension are in millimeters and (Inch) tolerance is $\pm 0.25(0.01")$ unless otherwise noted.
 2.Specifications are subject to change without notice.

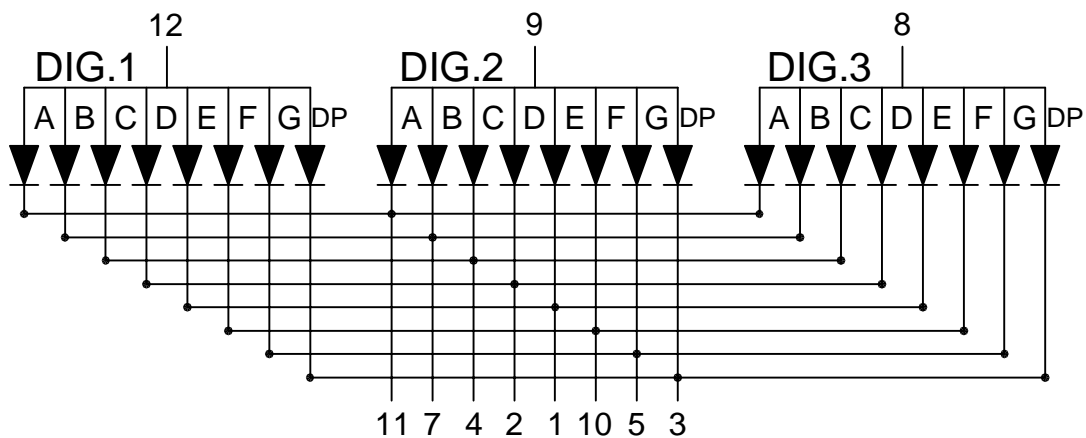


Internal Circuit Diagram

LTD5112-XX/RP35-PF



LTD5122-XX/RP35-PF





Electrical Connection

PIN NO.	LTD5112-XX/RP35-PF	PIN NO.	LTD5122-XX/RP35-PF
1	Anode E	1	Cathode E
2	Anode D	2	Cathode D
3	Anode DP	3	Cathode DP
4	Anode C	4	Cathode C
5	Anode G	5	Cathode G
6	No Connect	6	No Connect
7	Anode B	7	Cathode B
8	Common Cathode Dig.3	8	Common Anode Dig.3
9	Common Cathode Dig.2	9	Common Anode Dig.2
10	Anode F	10	Cathode F
11	Anode A	11	Cathode A
12	Common Cathode Dig.1	12	Common Anode Dig.1



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		Green	
Forward Current Per Chip	IF	15	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	80	mA
Power Dissipation Per Chip	PD	50	mW
Reverse Current Per Any Chip	Ir	10	μA
Operating Temperature	Topr	-25 ~ +85	°C
Storage Temperature	Tstg	-25 ~ +85	°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.	Min.	Typ.	
LTD5112-XX/RP35-PF	GaP	Green	Common Cathode	565	30	1.7	2.1	2.35	4.0	2:1
LTD5122-XX/RP35-PF			Common Anode							

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

**Test Condition For Each Parameter**

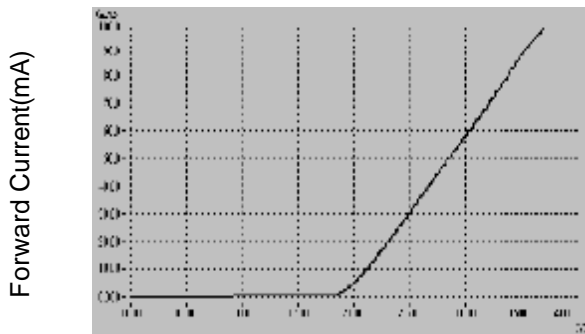
Parameter	Symbol	Unit	Test Condition
Forward Voltage Per Chip	V _f	volt	I _f =10mA
Luminous Intensity Per Chip	I _v	mcd	I _f =10mA
Peak Wavelength	λ_p	nm	I _f =20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	I _f =20mA
Reverse Current Any Chip	I _r	μA	V _r =5V
Luminous Intensity Matching Ratio	IV-M		



Typical Electro-Optical Characteristics Curve

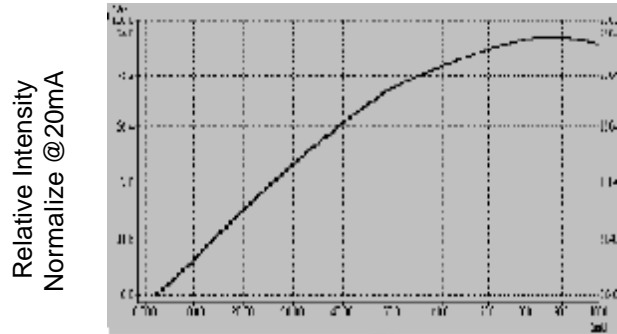
G CHIP

Fig.1 Forward current vs. Forward Voltage



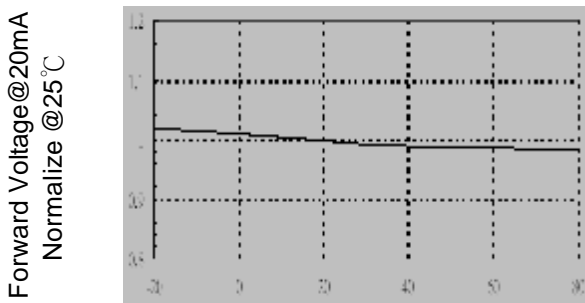
Forward Voltage(V)

Fig.2 Relative Intensity vs. Forward Current



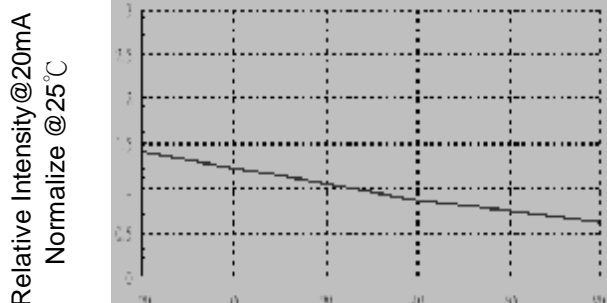
Forward Current(mA)

Fig.3 Forward Voltage vs. Temperature



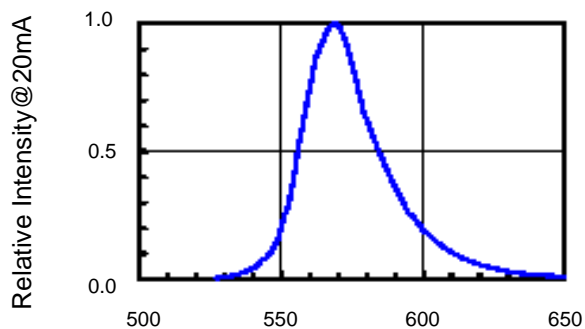
Ambient Temperature(°C)

Fig.4 Relative Intensity vs. Temperature



Ambient Temperature(°C)

Fig.5 Relative Intensity vs. Wavelength



Wavelength (nm)

Fig.6 Directive Radiation



Soldering Condition(Pb-Free)

1.Iron:

Soldering Iron:30W Max

Temperature 350° C Max

Soldering Time:3 Seconds Max(One time only)

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

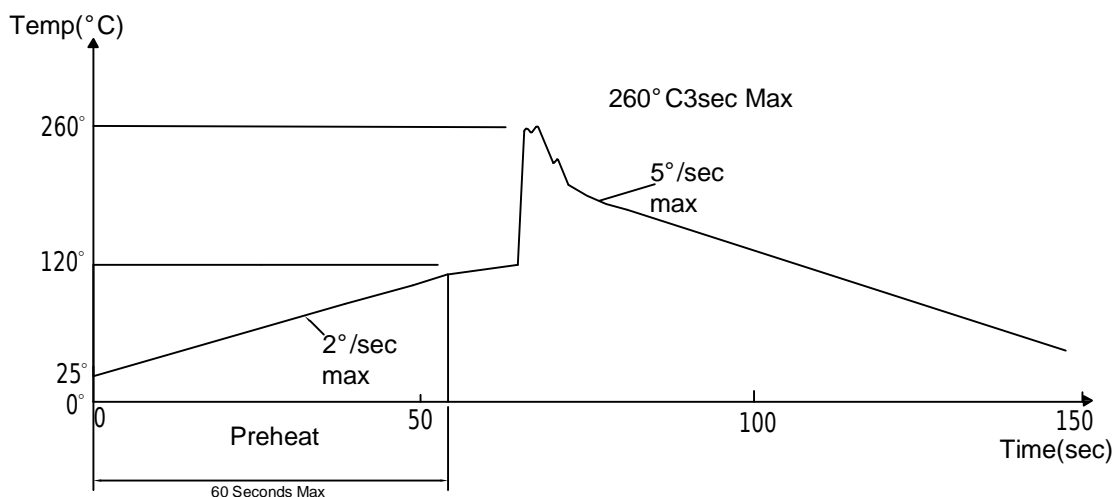
2° C/sec(max)

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