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FOUR DIGIT LED DISPLAY (0.33 Inch)



Lead-Free Parts

LFD355/61-XX-PF

DATA SHEET

DOC. NO : QW0905-LFD355/61-XX-PF

REV. : B

DATE : 02 - Sep. - 2006



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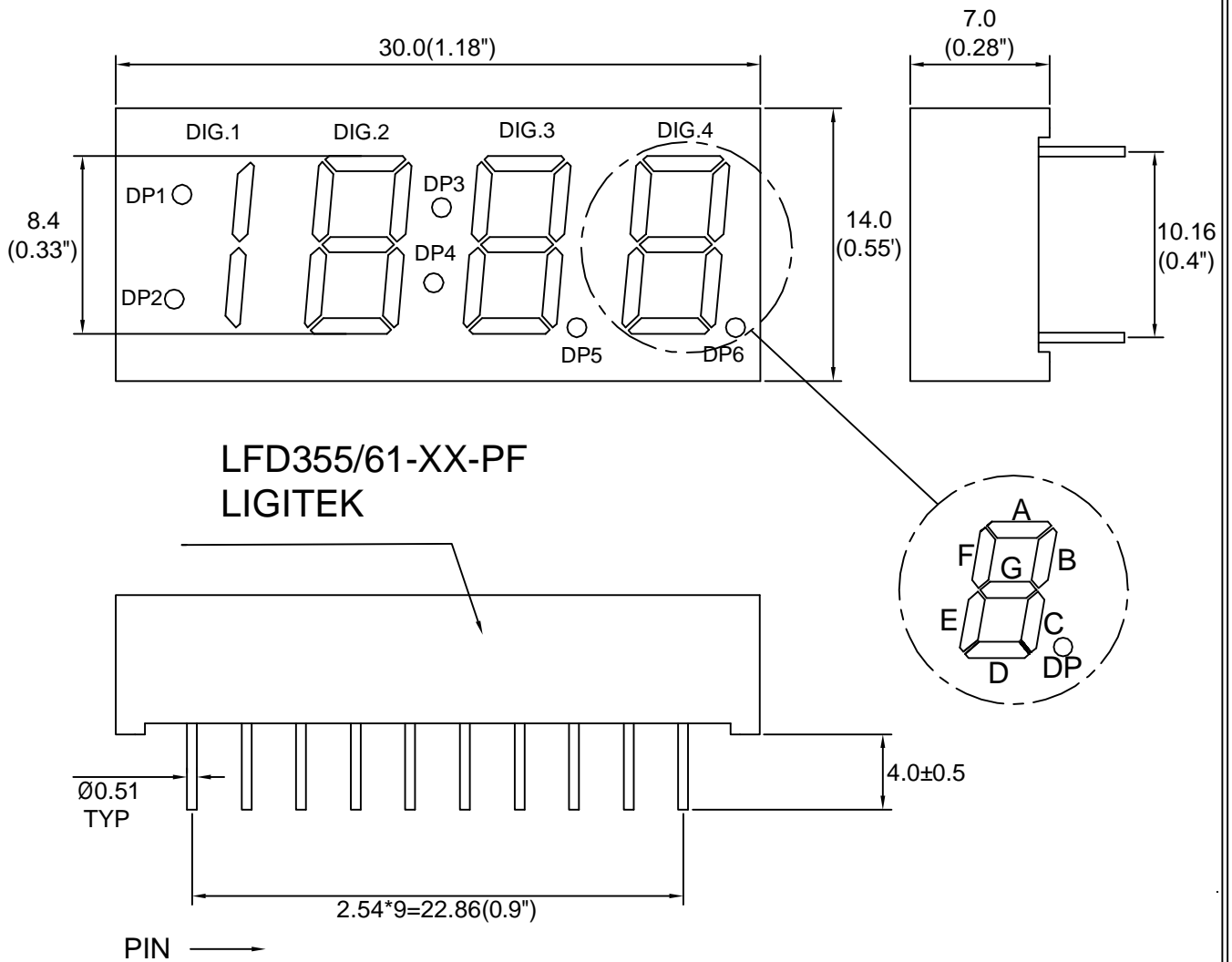
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PART NO. LFD355/61-XX-PF

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Package Dimensions

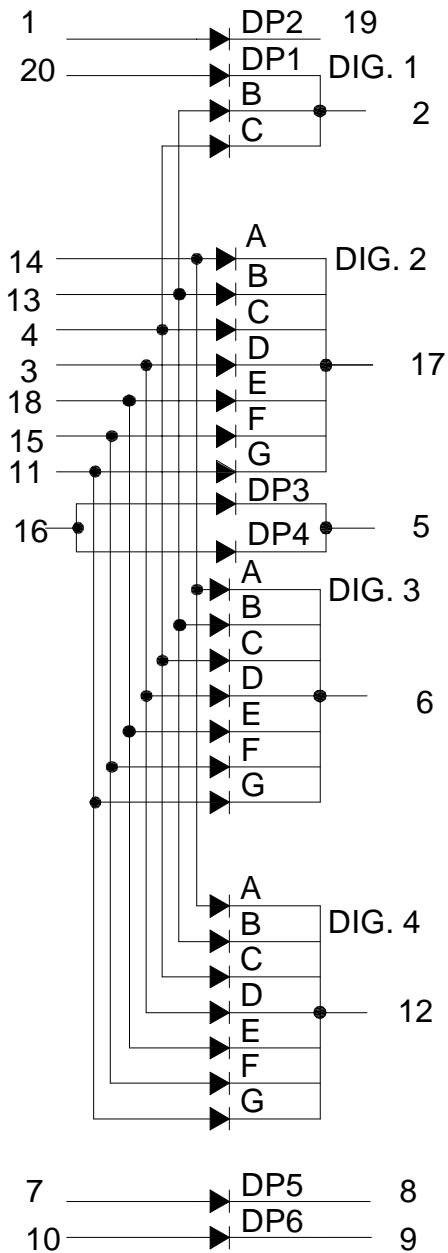


Note : 1.All dimension are in millimeters and (Inch) tolerance is ± 0.25 mm unless otherwise noted.
 2.Specifications are subject to change without notice.

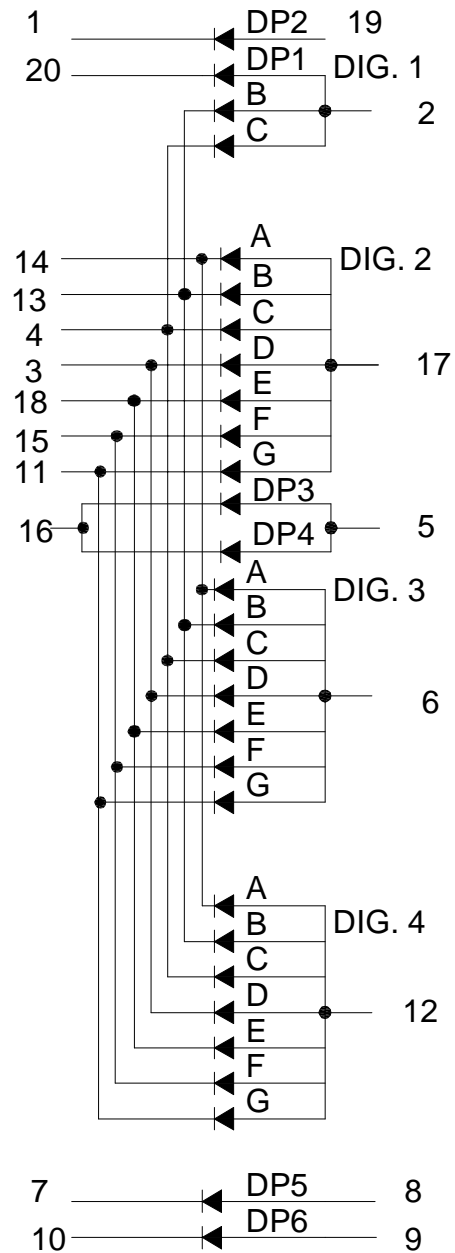


Internal Circuit Diagram

LFD3551-XX-PF



LFD3561-XX-PF



**Electrical Connection**

PIN NO.1	LFD3551-XX-PF	PIN NO.1	LFD3561-XX-PF
1	Anode DP2	1	Cathode DP2
2	Common Cathode Dig.1	2	Common Anode Dig.1
3	Anode D	3	Cathode D
4	Anode C	4	Cathode C
5	Common Cathode DP3,4	5	Common Anode DP3,4
6	Common Cathode Dig.3	6	Common Anode Dig.3
7	Anode DP5	7	Cathode DP5
8	Cathode DP5	8	Anode DP5
9	Cathode DP6	9	Anode DP6
10	Anode DP6	10	Cathode DP6
11	Anode G	11	Cathode G
12	Common Cathode Dig.4	12	Common Anode Dig.4
13	Anode B	13	Cathode B
14	Anode A	14	Cathode A
15	Anode F	15	Cathode F
16	Anode DP3,4	16	Cathode DP3,4
17	Common Cathode Dig.2	17	Common Anode Dig.2
18	Anode E	18	Cathode E
19	Cathode DP2	19	Anode DP2
20	Anode DP1	20	Cathode DP1



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		H	
Forward Current Per Chip	IF	15	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	60	mA
Power Dissipation Per Chip	PD	40	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.	
LFD3551-XX-PF	GaP	Red	Common Cathode	697	90	1.7	2.1	2.6	0.2	0.35	2:1
LFD3561-XX-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 =20mA
Luminous Intensity Per Chip	I _v	mcd	I _f =10mA
Peak Wavelength	λP	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

H CHIP

Fig.1 Forward current vs. Forward Voltage

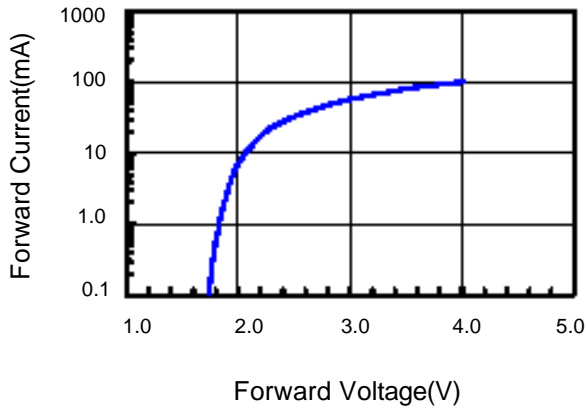


Fig.2 Relative Intensity vs. Forward Current

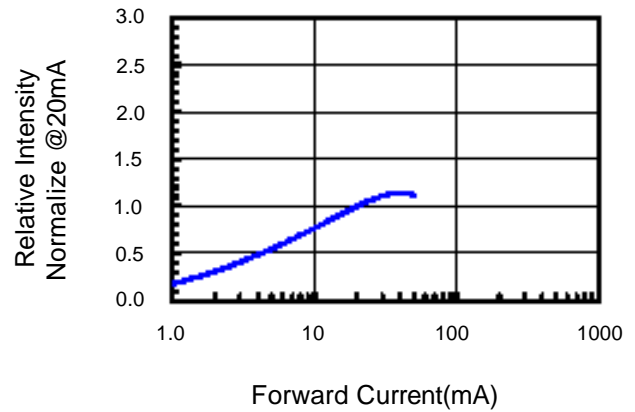


Fig.3 Forward Voltage vs. Temperature

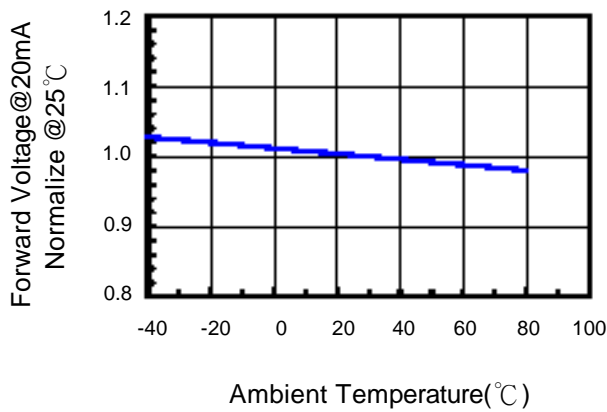


Fig.4 Relative Intensity vs. Temperature

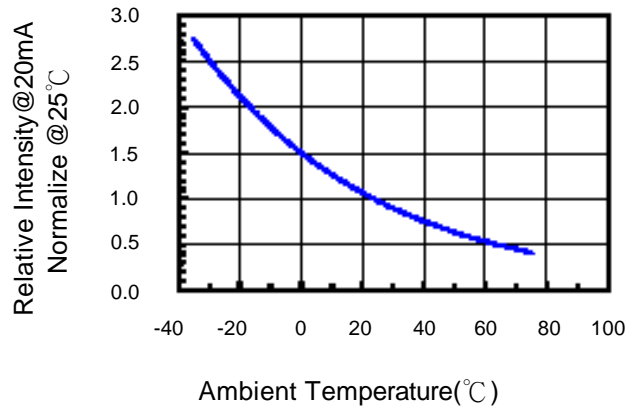
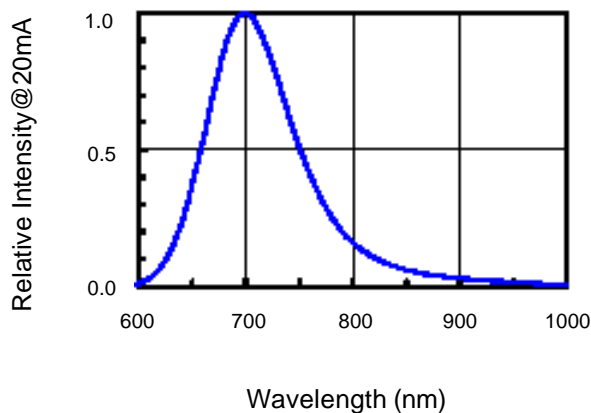


Fig.5 Relative Intensity vs. Wavelength





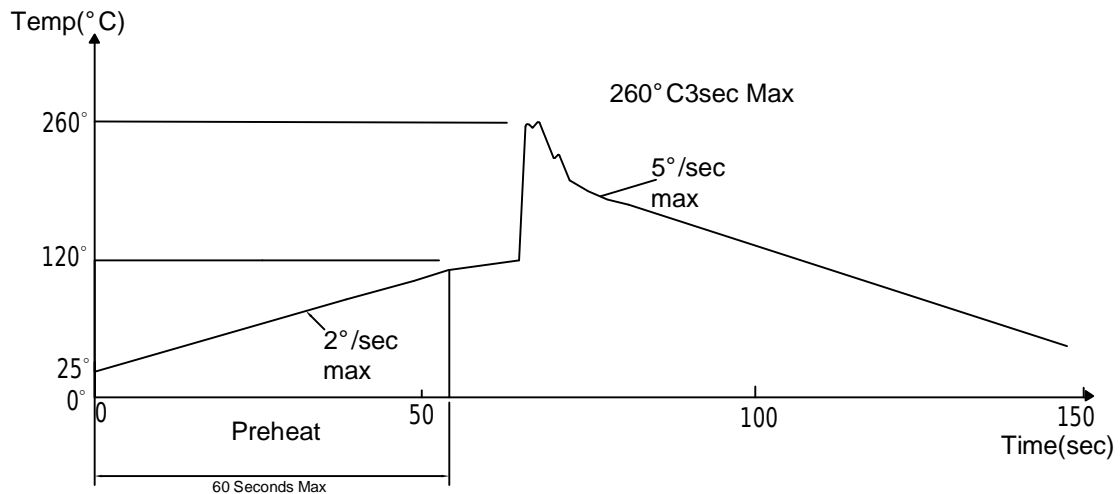
Soldering Condition(Pb-Free)

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



**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