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FOUR DIGIT LED DISPLAY(0.39Inch)



Lead-Free Parts

LFD415/64-XX-PF

DATA SHEET

DOC. NO : QW0905-LFD415/64-XX-PF

REV. : A

DATE : 24 - Jul. - 2006



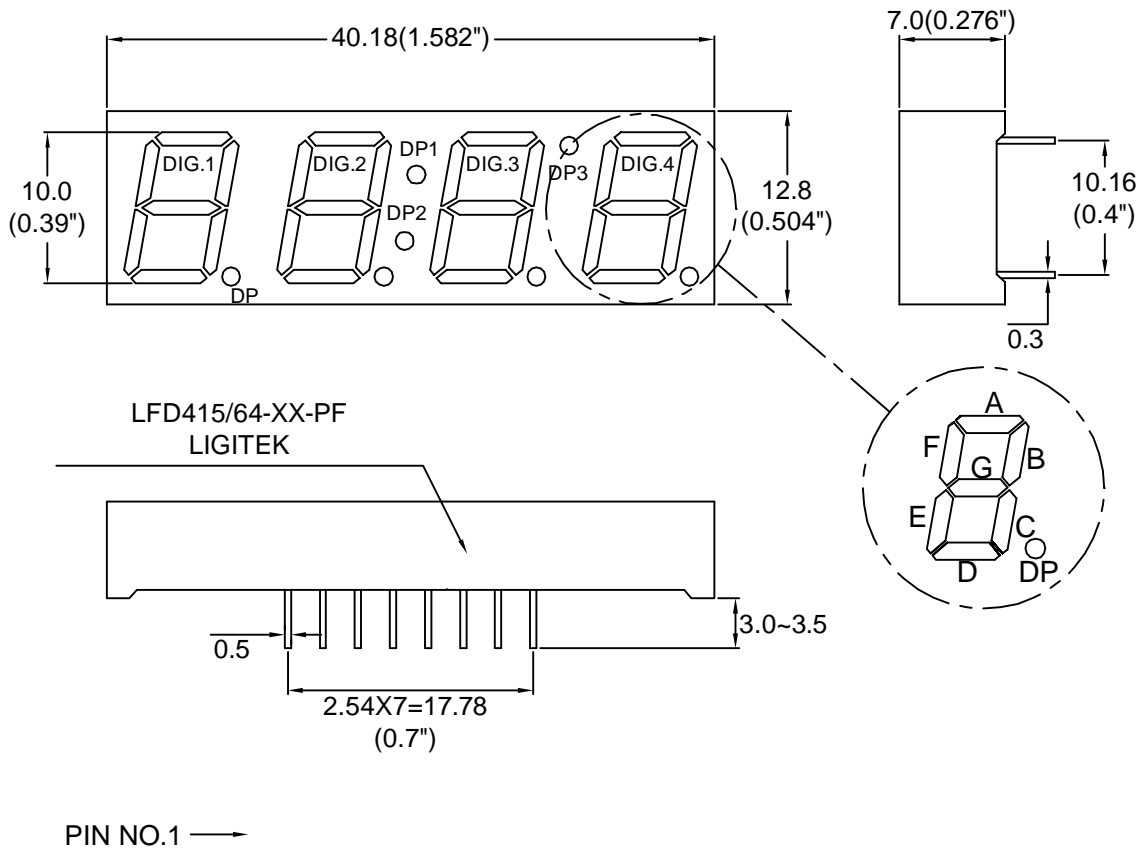
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PART NO. LFD415/64-XX-PF

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Package Dimensions



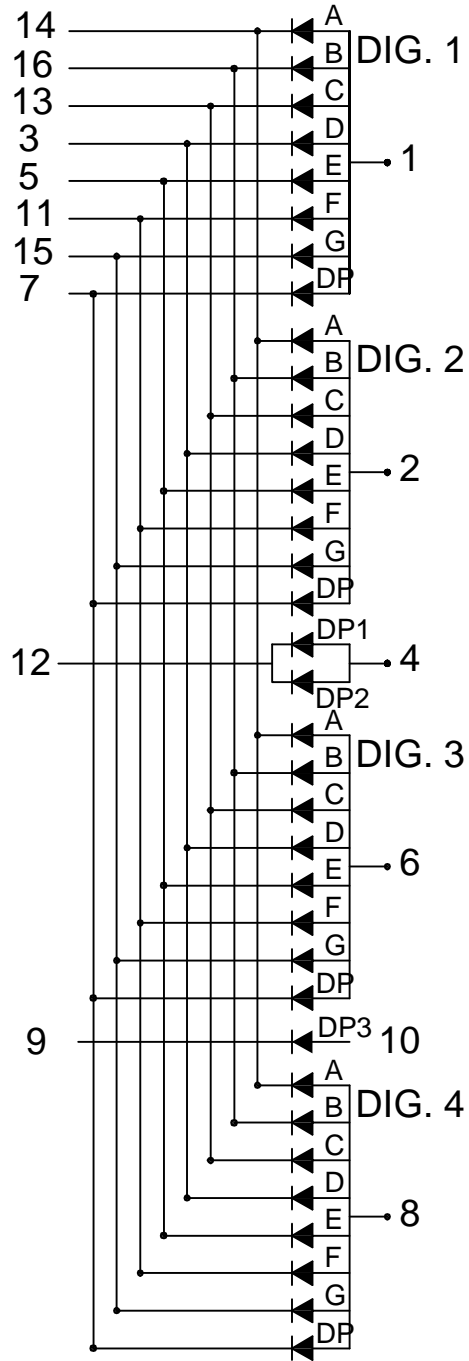
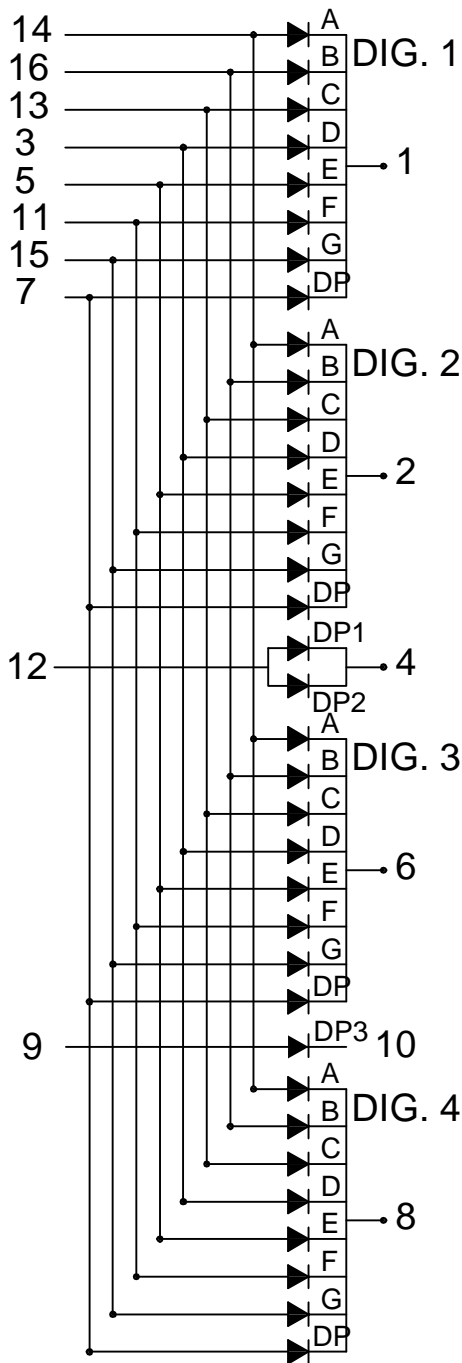
Note : 1.All dimension are in millimeters and (Inch) tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.
2.Specifications are subject to change without notice.



Internal Circuit Diagram

LFD4154-XX-PF

LFD4164-XX-PF



**Electrical Connection**

PIN NO.	LFD4154-XX-PF	PIN NO.	LFD4164-XX-PF
1.	Common Cathode Dig. 1	1.	Common Anode Dig. 1
2.	Common Cathode Dig. 2	2.	Common Anode Dig. 2
3.	Anode D	3.	Cathode D
4.	Cathode DP1,DP2	4.	Anode DP1,DP2
5.	Anode E	5.	Cathode E
6.	Common Cathode Dig. 3	6.	Common Anode Dig.3 3
7.	Anode DP	7.	Cathode DP
8.	Common Cathode Dig. 4	8.	Common Anode Dig.4
9.	Anode DP3	9.	Cathode DP3
10.	Cathode DP3	10.	Anode DP3
11.	Anode F	11.	Cathode F
12.	Anode DP1,DP2	12.	Cathode DP1,DP2
13.	Anode C	13.	Cathode C
14.	Anode A	14.	Cathode A
15.	Anode G	15.	Cathode G
16.	Anode B	16.	Cathode B



Absolute Maximum Ratings at Ta=25 °C

Parameter	Symbol	Ratings	UNIT
		E	
Forward Current Per Chip	IF	30	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	120	mA
Power Dissipation Per Chip	PD	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.	
LFD4154-XX-PF	GaAsP/GaP	Orange	Common Cathode	635	45	1.7	2.1	2.6	1.0	1.75	2:1
LFD4164-XX-PF			Common Anode								

- 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	Δλ	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

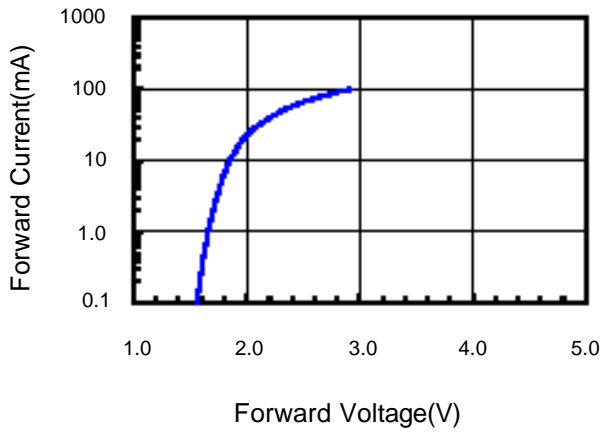


Fig.2 Relative Intensity vs. Forward Current

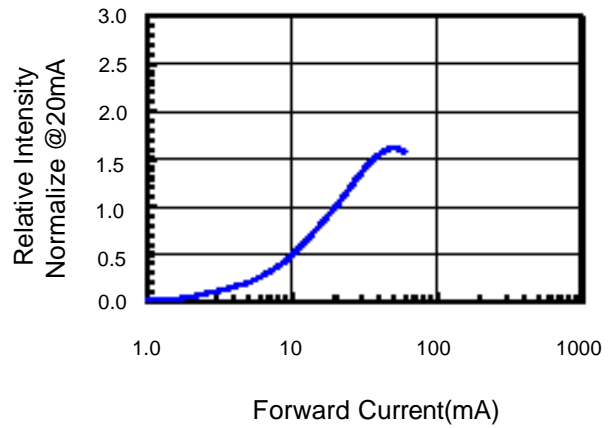


Fig.3 Forward Voltage vs. Temperature

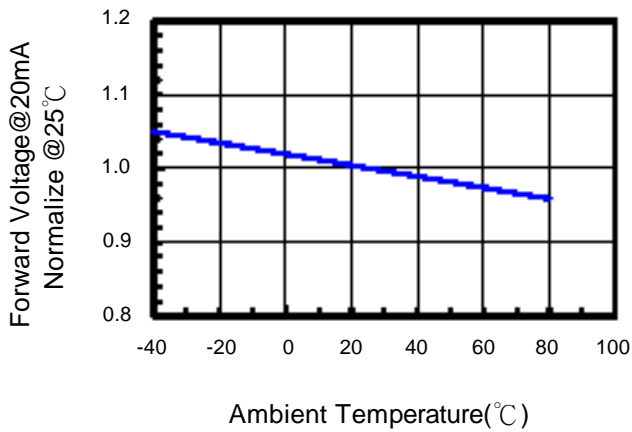


Fig.4 Relative Intensity vs. Temperature

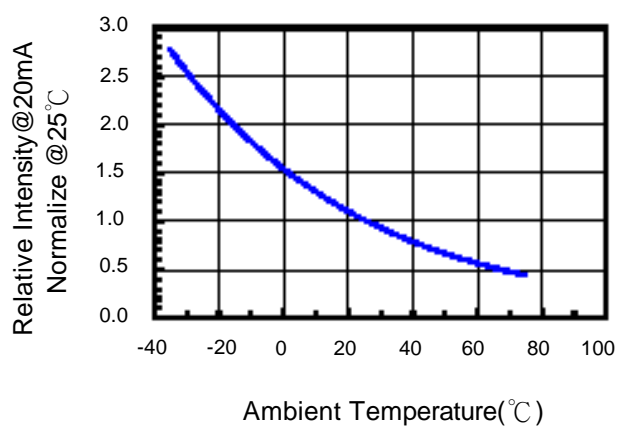
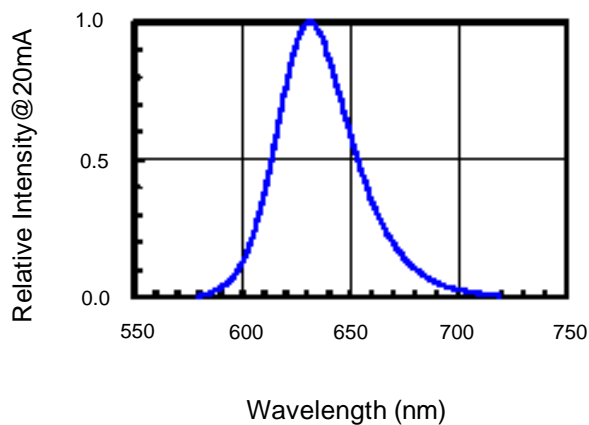


Fig.5 Relative Intensity vs. Wavelength





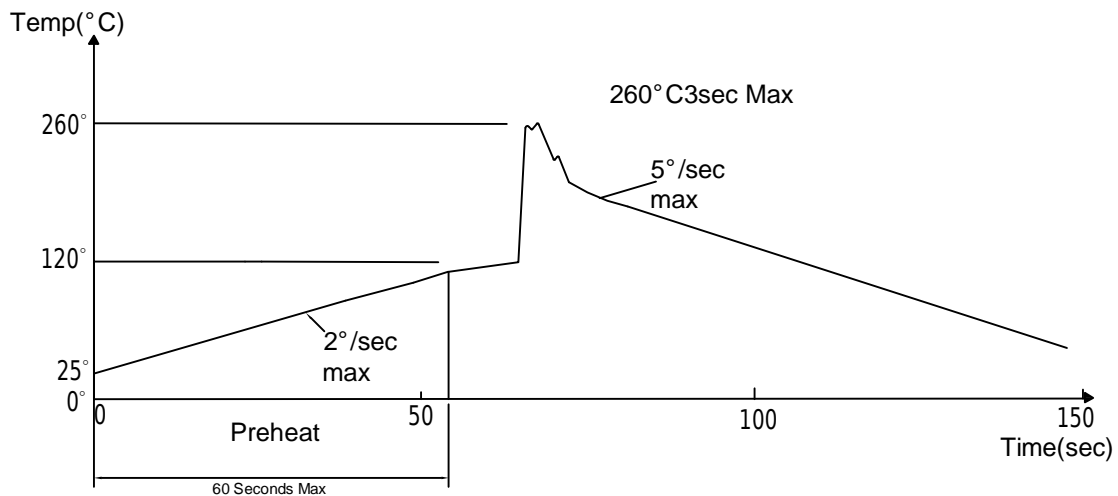
Soldering Condition(Pb-Free)

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 detemining the resistance of a part in electrical and themal 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