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FOUR DIGIT LED DISPLAY(0.39Inch)



Lead-Free Parts

## LFD415/63HS-XX-PF

# DATA SHEET

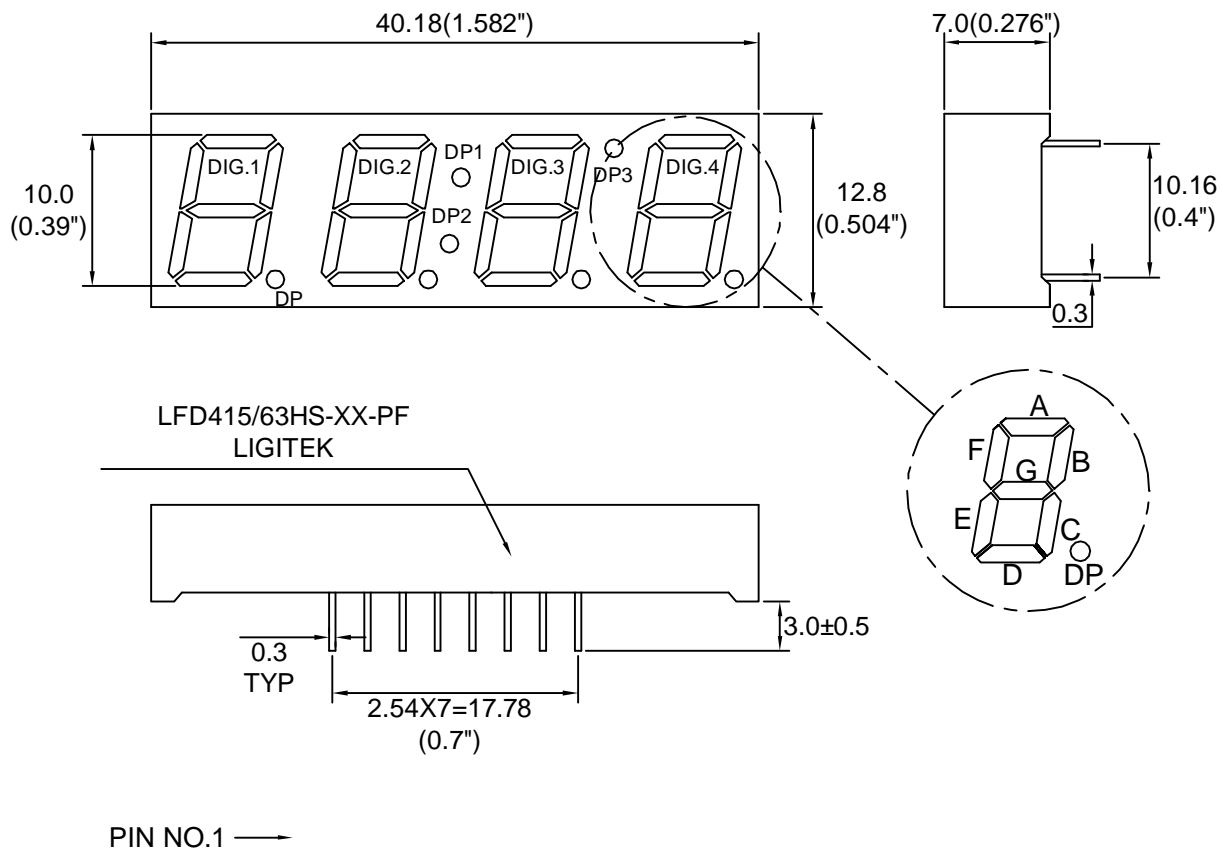
DOC. NO : QW0905-LFD415/63HS-XX-PF-08

REV. : A

DATE : 18 - Jul. - 2011



Package Dimensions

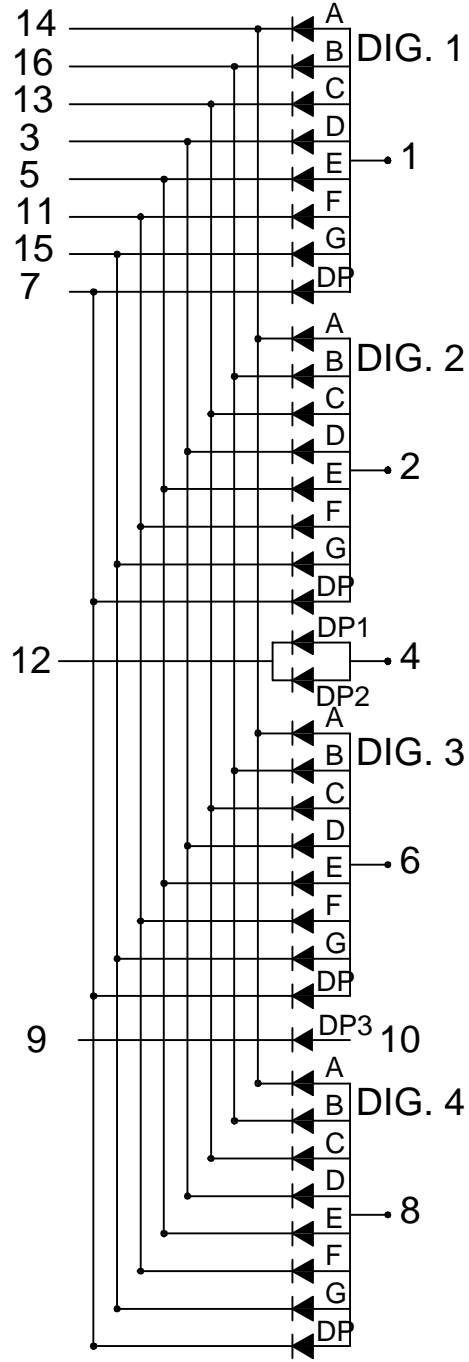
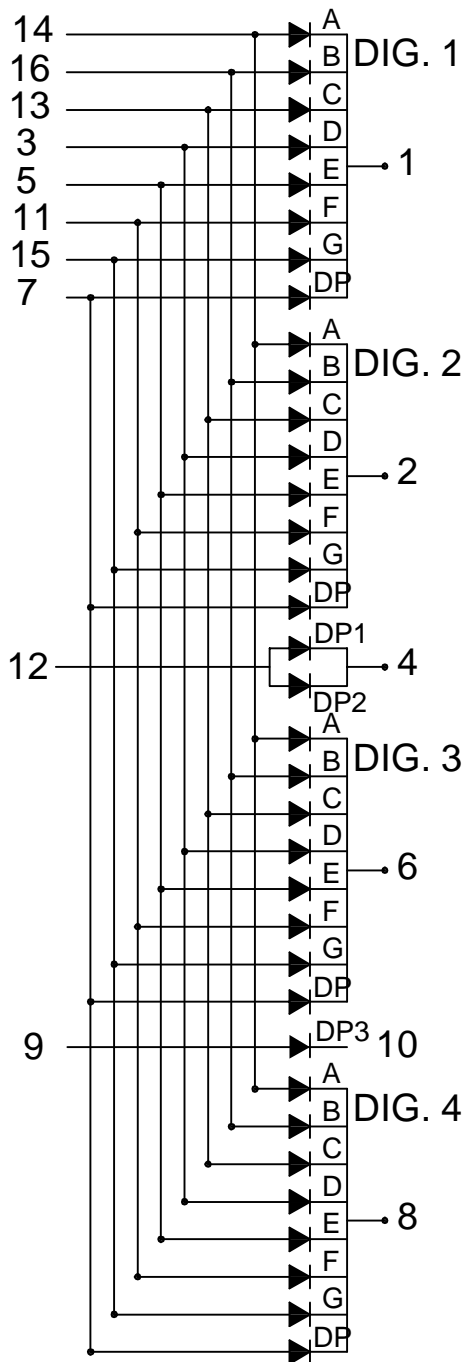


Note : 1.All dimension are in millimeters and (Inch) tolerance is  $\pm 0.25$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.

Internal Circuit Diagram

LFD4153HS-XX-PF

LFD4163HS-XX-PF



### Electrical Connection

PIN NO.	LFD4153HS-XX-PF	PIN NO.	LFD4163HS-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
		HYS	
Forward Current Per Chip	IF	30	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	60	mA
Power Dissipation Per Chip	PD	75	mW
Reverse Current Per Any Chip	Ir	10	μA
Electrostatic Discharge ( * )	ESD	2000	V
Operating Temperature	Topr	-25 ~ +85	°C
Storage Temperature	Tstg	-25 ~ +85	°C

\* Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.

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

PART NO	CHIP		Common Cathode or Anode	λ D (nm)	Δ λ (nm)	Electrical				IV-M
	Material	Emitted				Vf(v)		Iv(mcd)		
						Min.	Max.	Min.	Typ.	
LFD4153HS-XX-PF	AlGaInP	Yellow	Common Cathode	587	15	1.7	2.6	12.8	18	2:1
LFD4163HS-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 <sub>f</sub>	volt	I <sub>f</sub> =20mA
Luminous Intensity Per Chip	I <sub>v</sub>	mcd	I <sub>f</sub> =10mA
Dominant Wavelength	$\lambda$ D	nm	I <sub>f</sub> =20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	I <sub>f</sub> =20mA
Reverse Current Any Chip	I <sub>r</sub>	$\mu$ A	V <sub>r</sub> =5V
Luminous Intensity Matching Ratio	IV-M		

## Typical Electro-Optical Characteristics Curve

### 8HYS CHIP

Fig.1 Forward current vs. Forward Voltage

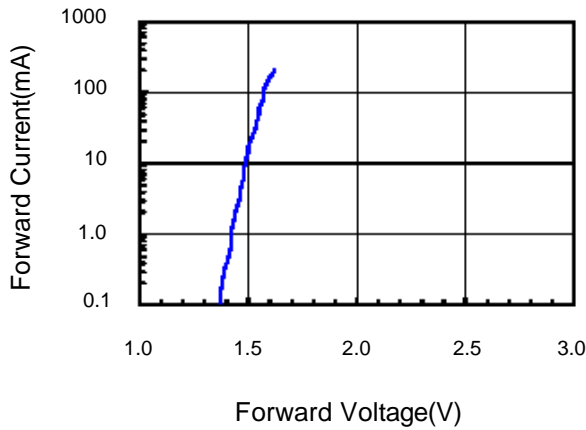


Fig.2 Relative Intensity vs. Forward Current

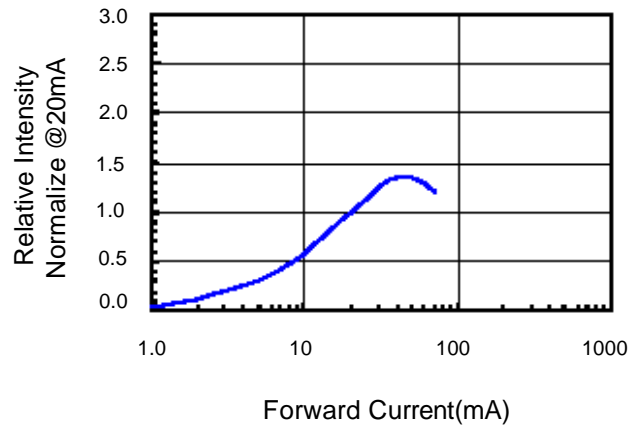


Fig.3 Forward Voltage vs. Temperature

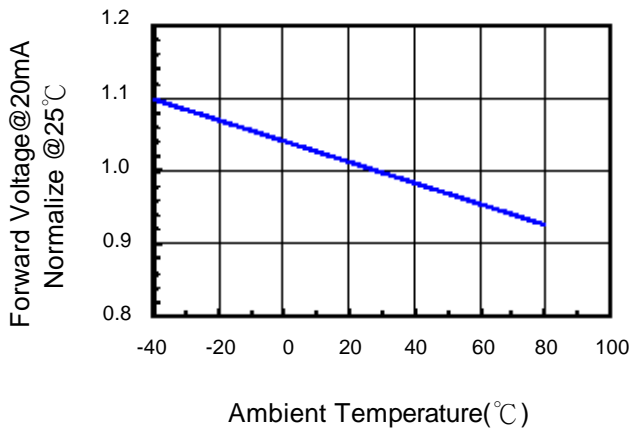


Fig.4 Relative Intensity vs. Temperature

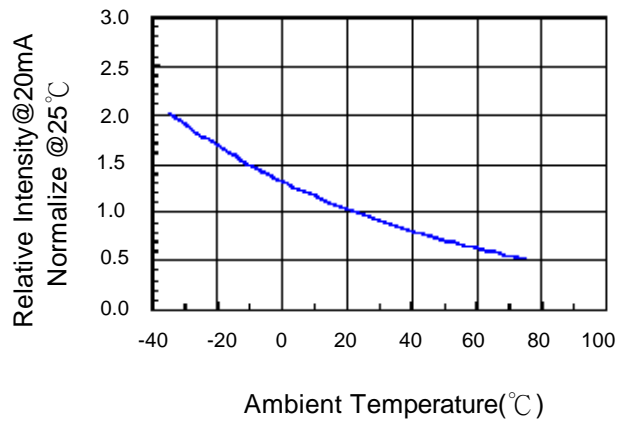
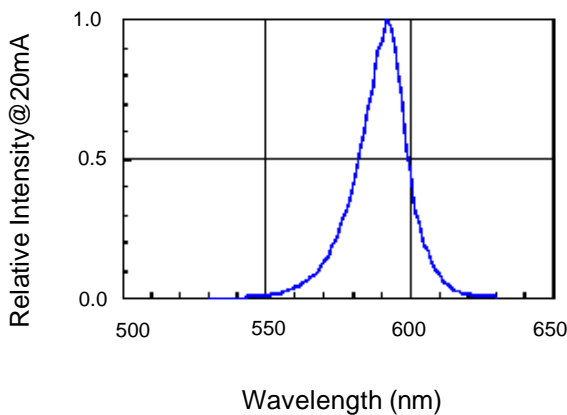


Fig.5 Relative Intensity vs. Wavelength



**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

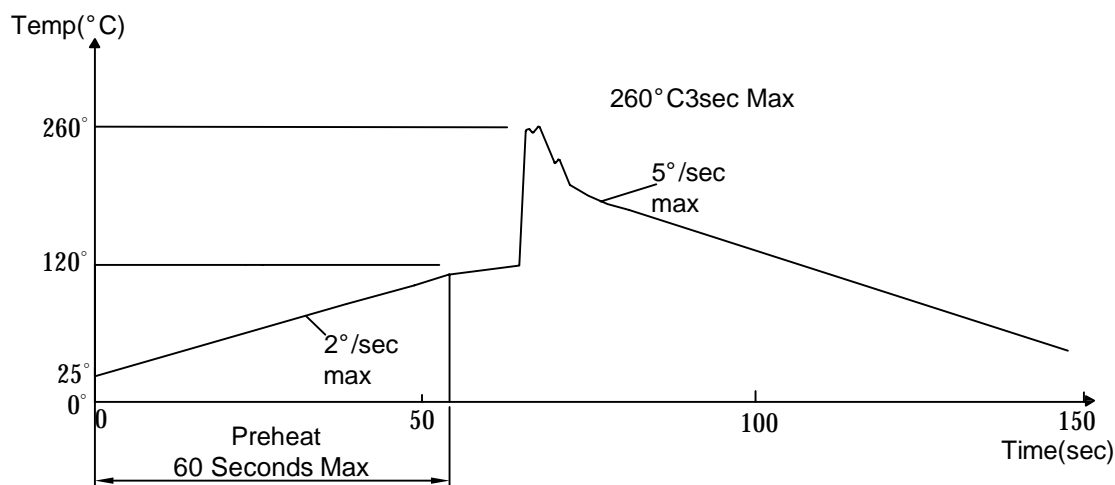
Ramp-up

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