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FOUR DIGIT LED DISPLAY (0.28 Inch)



Lead-Free Parts

**LFD265/63-XX-PF**

**DATA SHEET**

DOC. NO : QW0905- LFD265/63-XX-PF

REV. : A

DATE : 12 - Jul. - 2006



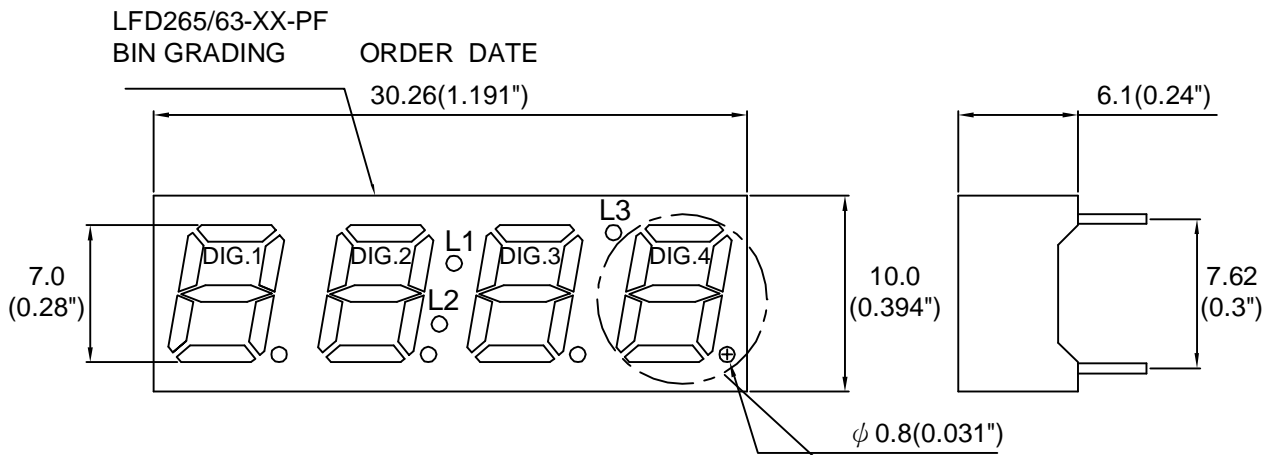
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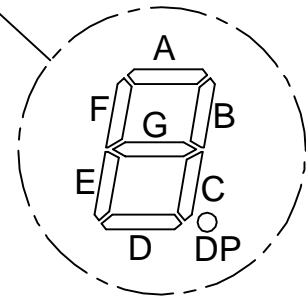
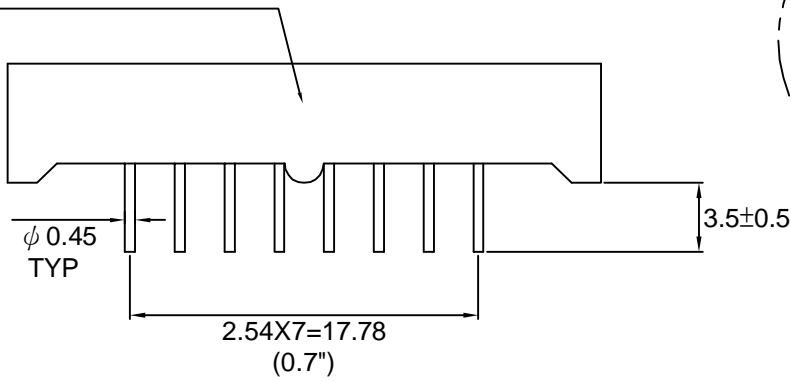
PART NO. LFD265/63-XX-PF

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### Package Dimensions



### CUSTOMER P/N LAPLING



PIN NO.1 →

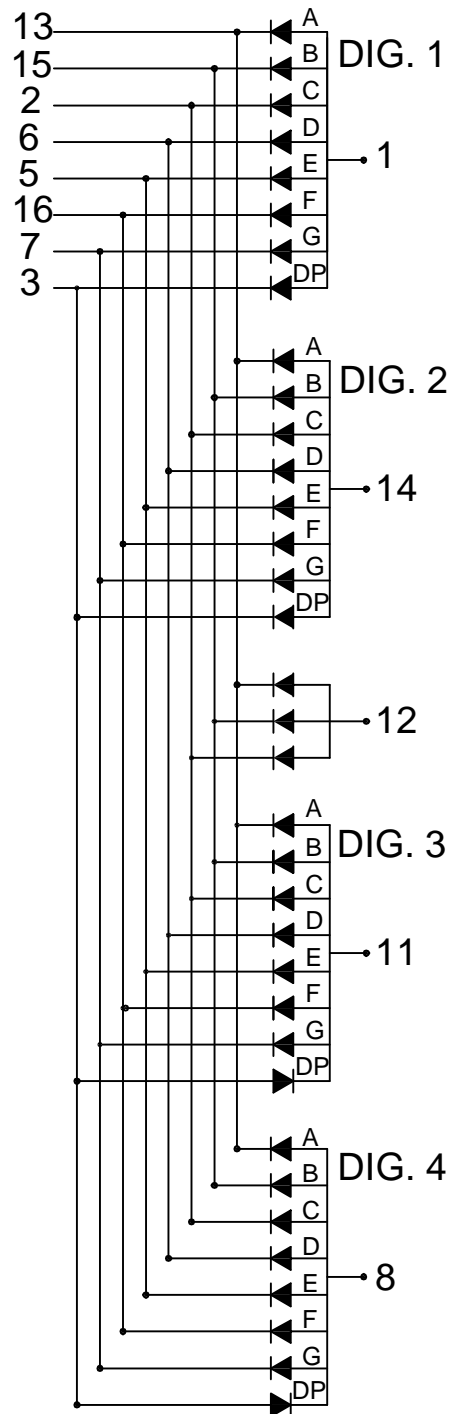
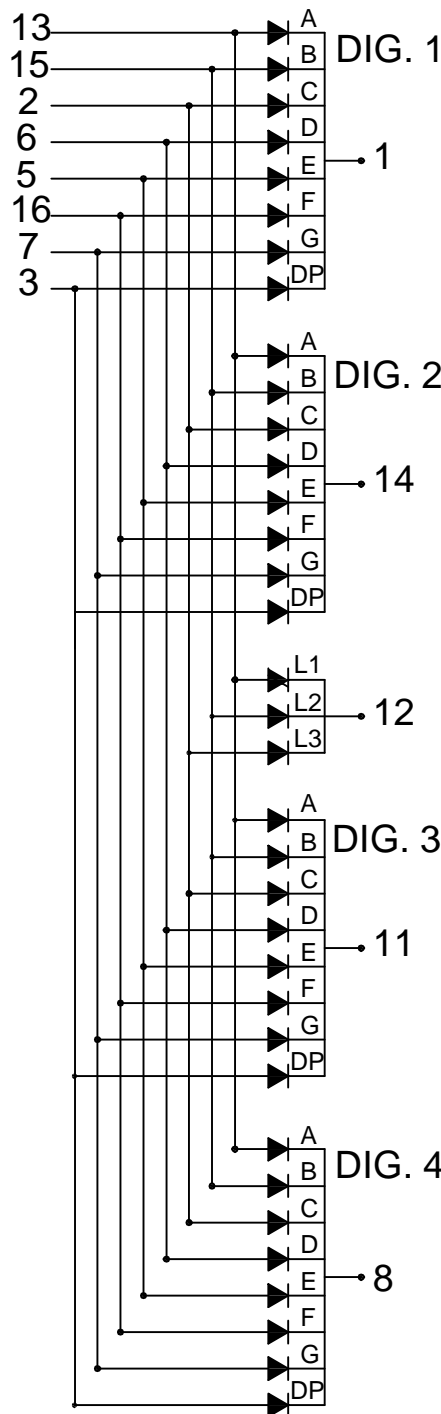
Note : 1.All dimension are in millimeters and (Inch) tolerance is  $\pm 0.25$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.



Internal Circuit Diagram

LFD2653-XX-PF

LFD2663-XX-PF



**Electrical Connection**

PIN NO.1	LFD2653-XX-PF	PIN NO.1	LFD2663-XX-PF
1	Common Cathode Dig.1	1	Common Anode Dig.1
2	Anode C,L3	2	Cathode C,L3
3	Anode DP	3	Cathode DP
4	NC	4	NC
5	Anode E	5	Cathode E
6	Anode D	6	Cathode D
7	Anode G	7	Cathode G
8	Common Cathode Dig.4	8	Common Anode Dig.4
9	NC	9	NC
10	NC	10	NC
11	Common Cathode Dig.3	11	Common Anode Dig.3
12	Common Cathode L1,L2,L3	12	Common Anode L1,L2,L3
13	Anode A ,L1	13	Cathode A,L1
14	Common Cathode Dig.2	14	Common Anode Dig.2
15	Anode B,L2	15	Cathode B,L2
16	Anode F	16	Cathode F

**Absolute Maximum Ratings at Ta=25 °C**

Parameter	Symbol	Ratings	UNIT
		Y	
Forward Current Per Chip	IF	20	mA
Peak Forward Current Per Chip (Duty 1/10,0.1ms Pulse Width)	IFP	80	mA
Power Dissipation Per Chip	PD	60	mW
Reverse Current Per Any Chip	Ir	10	$\mu A$
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	$\lambda P$ (nm)	$\Delta \lambda$ (nm)	Electrical					IV-M
	Material	Emitted				Vf(v)			Iv(mcd)		
						Min.	Typ.	Max.	Min.	Typ.	
LFD2653-XX-PF	GaAsP/GaP	Yellow	Common Cathode	585	35	1.7	2.1	2.6	2.35	4.0	2:1
LFD2663-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	Vf	volt	If=20mA
Luminous Intensity Per Chip	Iv	mcd	If=10mA
Peak Wavelength	$\lambda P$	nm	If=20mA
Spectral Line Half-Width	$\Delta \lambda$	nm	If=20mA
Reverse Current Any Chip	Ir	$\mu A$	Vr=5V
Luminous Intensity Matching Ratio	IV-M		



### Typical Electro-Optical Characteristics Curve

Y CHIP

Fig.1 Forward current vs. Forward Voltage

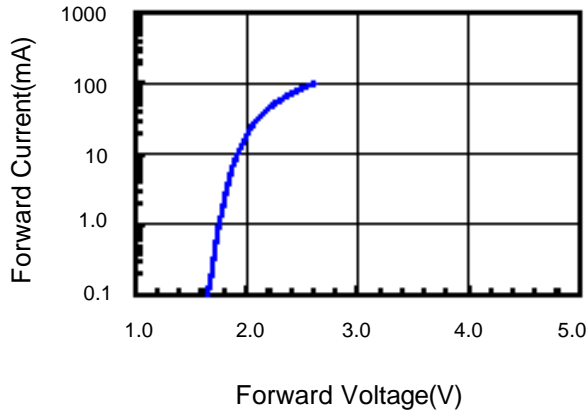


Fig.2 Relative Intensity vs. Forward Current

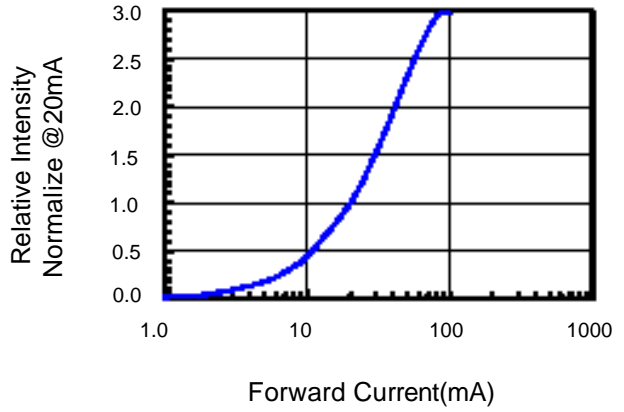


Fig.3 Forward Voltage vs. Temperature

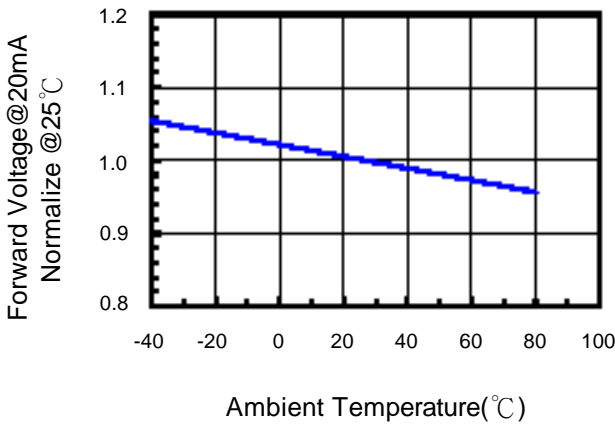


Fig.4 Relative Intensity vs. Temperature

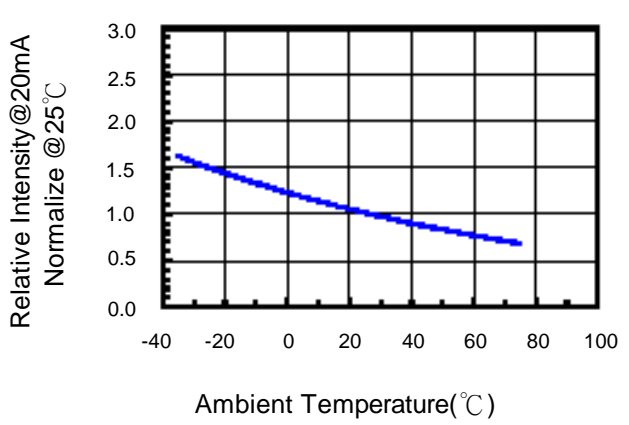
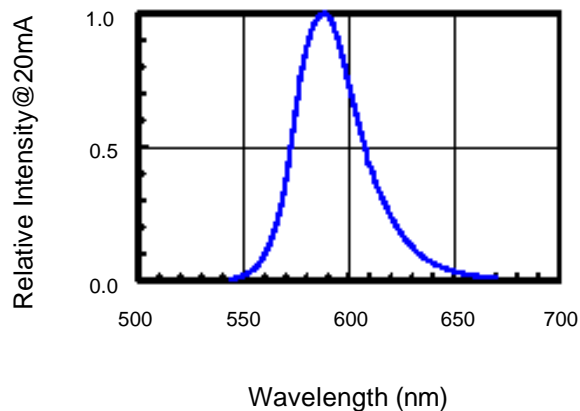


Fig.5 Relative Intensity vs. Wavelength





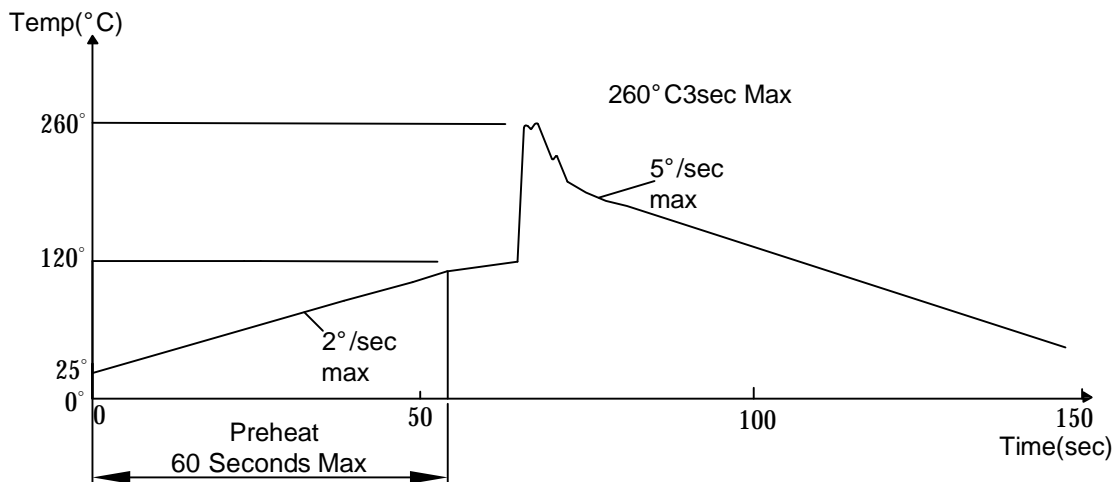
### Soldering Condition(Pb-Free)

#### 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