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DOT MATRIX DIGIT LED DISPLAY (1.2Inch)



Lead-Free Parts

LMD8811/2A9UG-XX-PF

DATA SHEET

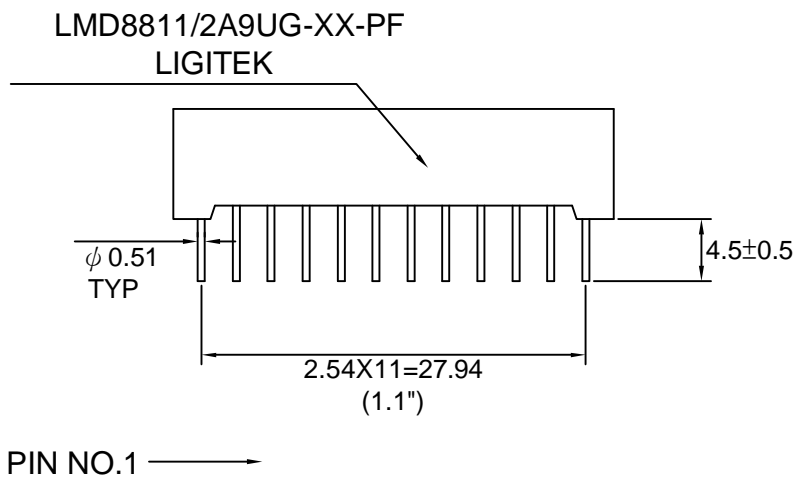
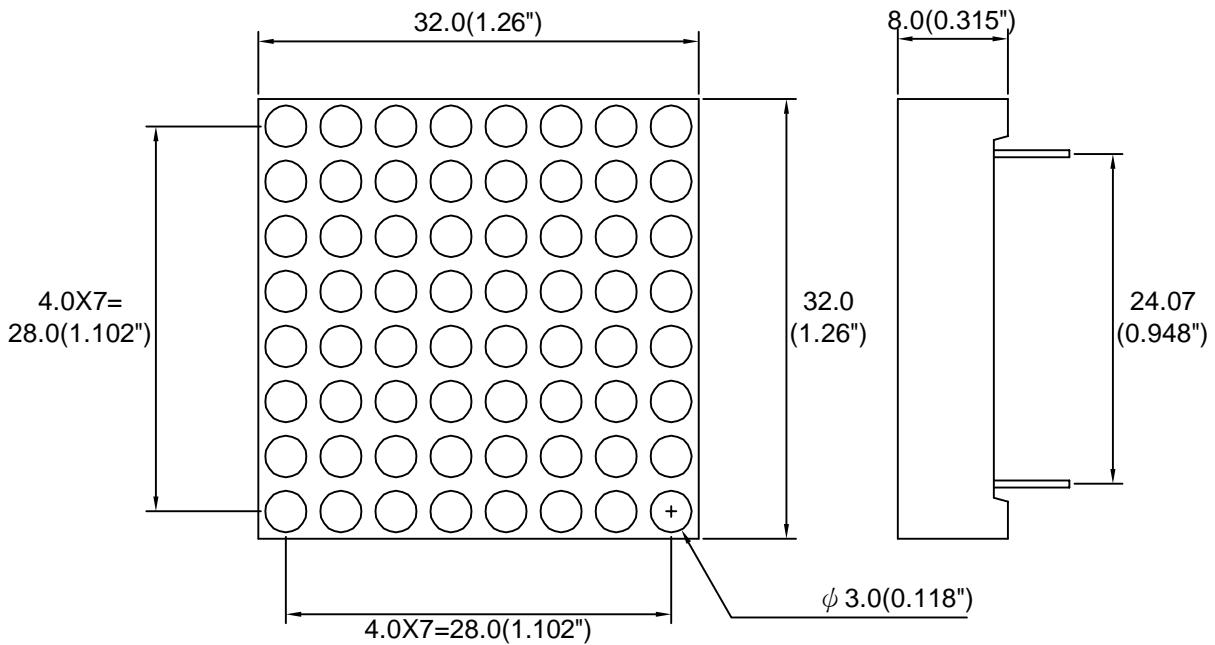
DOC. NO : QW0905-LMD8811/2A9UG-XX-PF

REV. : A

DATE : 15 - Feb. - 2007



Package Dimensions

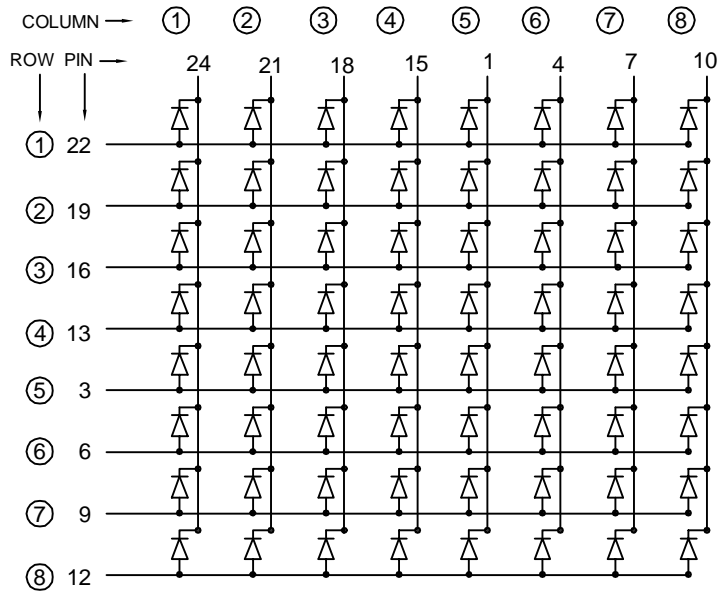


Note : 1.All dimension are in millimeters and (Inch) tolerance is ± 0.25 mm unless otherwise noted.
2.Specifications are subject to change without notice.

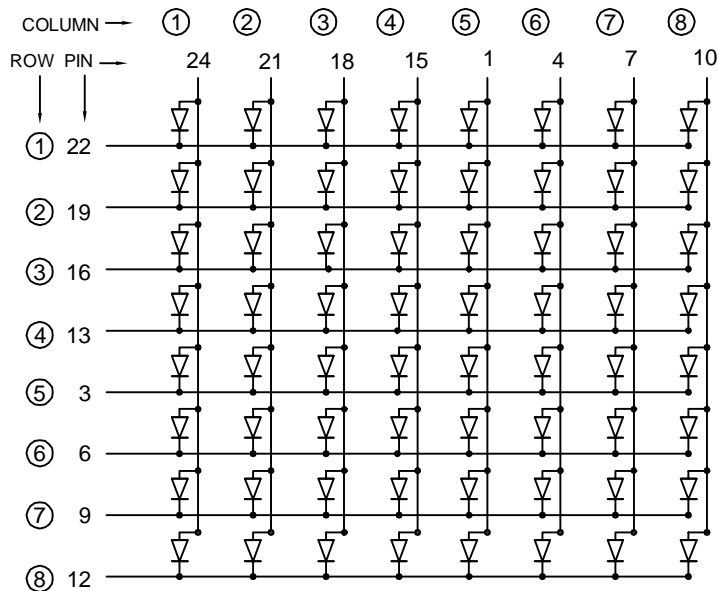


Internal Circuit Diagram

LMD8811A9UG-XX-PF



LMD8812A9UG-XX-PF



2,5,8,11,14,17,20,23PIN NC



Electrical Connection

PIN NO.	LMD8811A9UG-XX-PF	PIN NO.	LMD8811A9UG-XX-PF
1	Cathode Column 5 (Green)	13	Anode Row 4
2	NO CONNECT	14	NO CONNECT
3	Anode Row 5	15	Cathode Column 4 (Green)
4	Cathode Column 6 (Green)	16	Anode Row 3
5	NO CONNECT	17	NO CONNECT
6	Anode Row 6	18	Cathode Column 3 (Green)
7	Cathode Column 7 (Green)	19	Anode Row 2
8	NO CONNECT	20	NO CONNECT
9	Anode Row 7	21	Cathode Column 2 (Green)
10	Cathode Column 8 (Green)	22	Anode Row 1
11	NO CONNECT	23	NO CONNECT
12	Anode Row 8	24	Cathode Column 1 (Green)

**Electrical Connection**

PIN NO.	LMD8812A9UG-XX-PF	PIN NO.	LMD8812A9UG-XX-PF
1	Anode Column 5 (Green)	13	Cathode Row 4
2	NO CONNECT	14	NO CONNECT
3	Cathode Row 5	15	Anode Column 4 (Green)
4	Anode Column 6 (Green)	16	Cathode Row 3
5	NO CONNECT	17	NO CONNECT
6	Cathode Row 6	18	Anode Column 3 (Green)
7	Anode Column 7 (Green)	19	Cathode Row 2
8	NO CONNECT	20	NO CONNECT
9	Cathode Row 7	21	Anode Column 2 (Green)
10	Anode Column 8 (Green)	22	Cathode Row 1
11	NO CONNECT	23	NO CONNECT
12	Cathode Row 8	24	Anode Column 1 (Green)

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

Parameter	Symbol	Ratings	UNIT
		9UG	
Forward Current	IF	30	mA
Peak Forward Current Duty 1/10@10KHz	IFP	60	mA
Power Dissipation	PD	75	mW
Reverse Current @5V	Ir	10	μA
Electrostatic Discharge(*)	ESD	2000	V
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			

* Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling 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.	Typ.	Max.	Min.	Typ.	
LMD8811A9UG-XX-PF	AlGaInP	Green	Common Cathode	574	20	1.7	2.1	2.6	7.2	12.8	2:1
LMD8812A9UG-XX-PF	AlGaInP	Green	Common Anode	574	20	1.7	2.1	2.6	7.2	12.8	

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
Dominant Wavelength	λD	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 9UG CHIP

Fig.1 Forward current vs. Forward Voltage

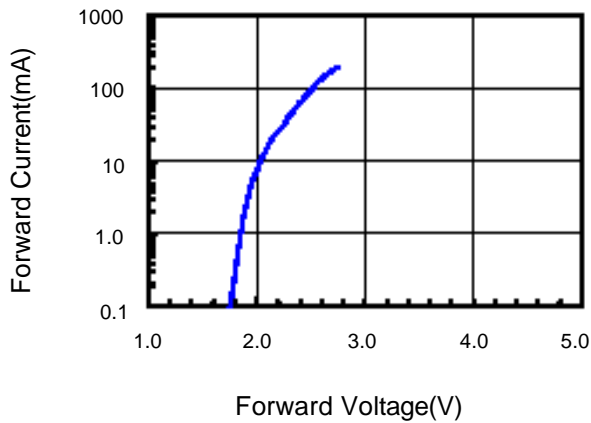


Fig.2 Relative Intensity vs. Forward Current

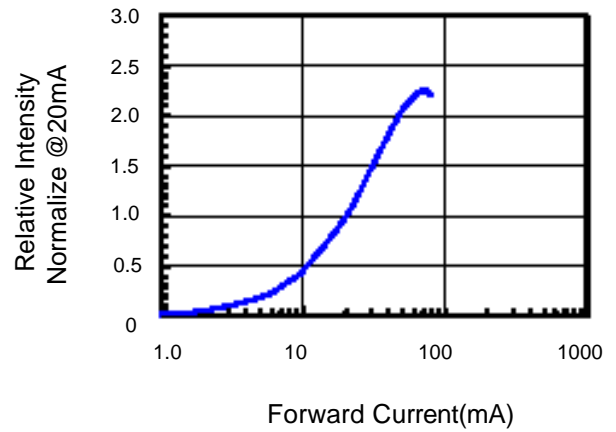


Fig.3 Forward Voltage vs. Temperature

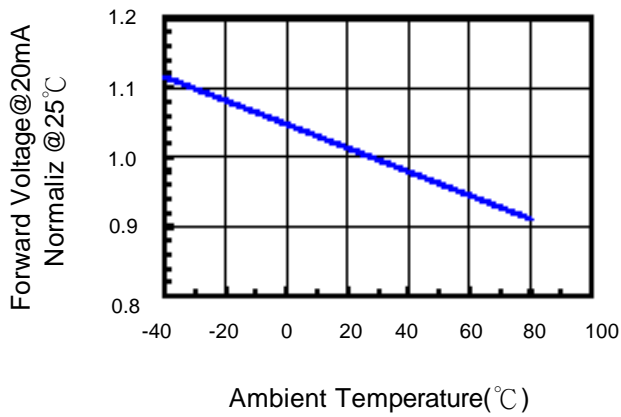


Fig.4 Relative Intensity vs. Temperature

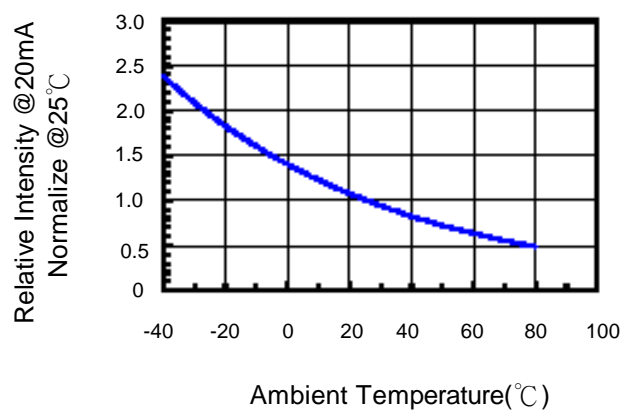
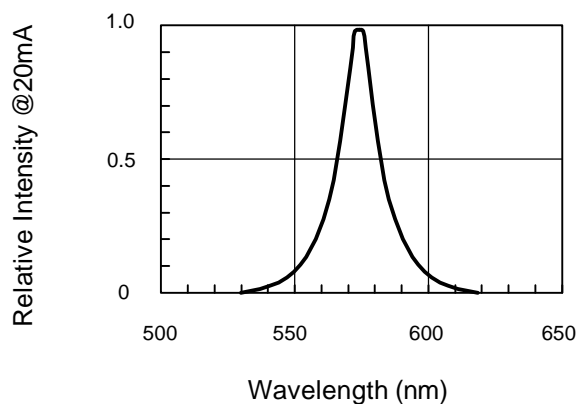


Fig.5 Relative Intensity vs. Wavelength





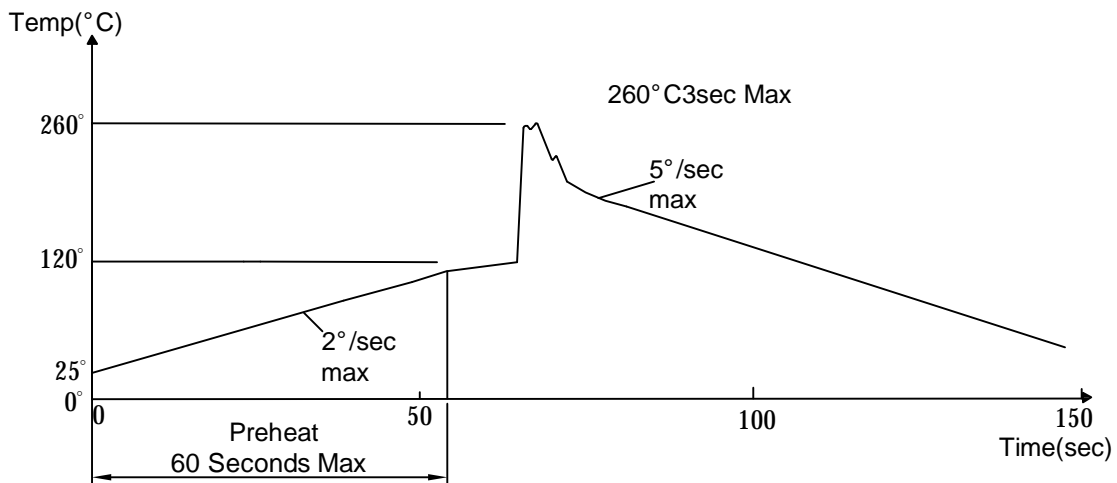
Soldering Condition(Pb-Free)

1.Iron:

- Soldering Iron:30W Max
- Temperature 350 ° C Max
- Soldering Time:3 Seconds Max(One time 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