深圳市阿美林电子科技有限公司

Shenzhen Amelin Electronic Technology Co., Ltd

SPECIFICATION
Revision 0.1
AML015410 V1

Customer	
Model NO.	**AML015410 V1**
Product Type	**TFT 1.54inch, 240*RGB*240 dots matrix**
Remarks	
Signature by Customer:	

Issued by	**Checked by**	**Approved by**	**Approved by**
		R&D	**QA**

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Revision Record

Rev NO.	Rev Date	Contents	Remarks
0.1	2017-05-11	First issue	Karl

CONTENTS

■ General Information

Item	Contents
LCD type	TFT transmissive
Viewing direction	IPS
Outline area(W*H)	31.52mm *33.72mm*1.8(D)
Active area(W*H)	27.72mm *27.72mm
Number of dots	240*RGB*240
Response Time(Tr+Tf)	25ms(typ)
Colors	16.7M
Interface type	SPI
Input voltage	3.3V

■ External Dimensions

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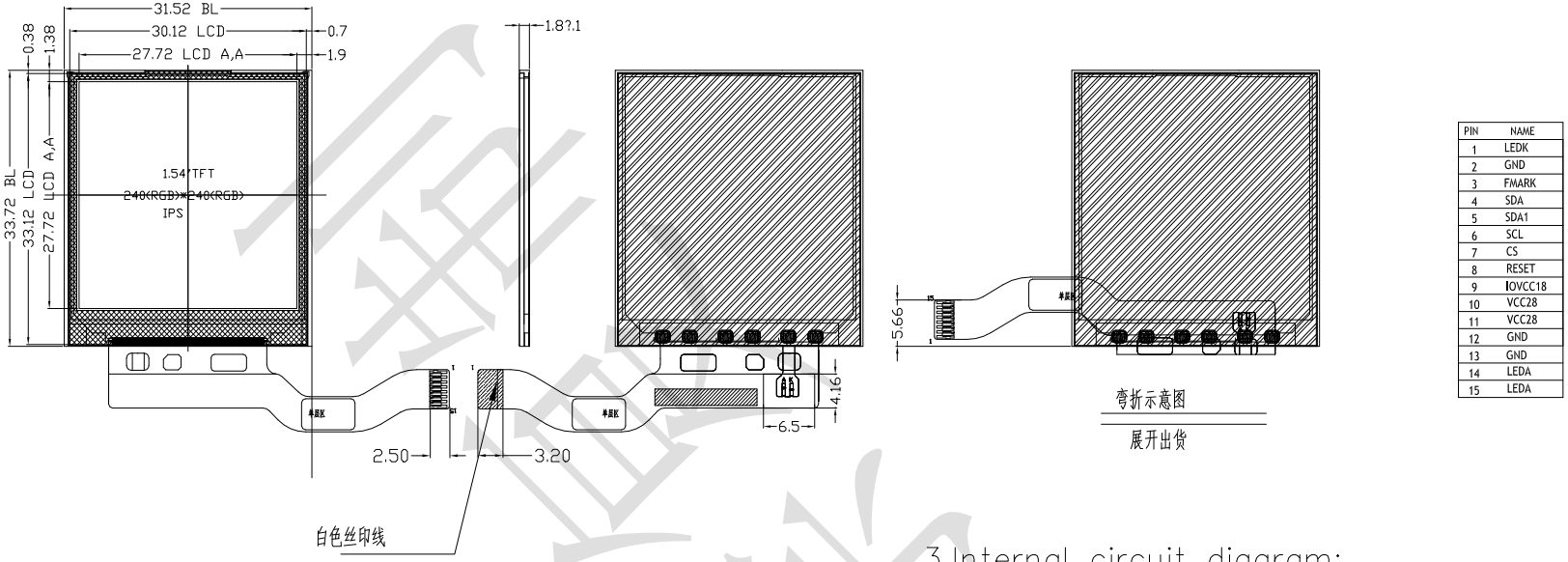
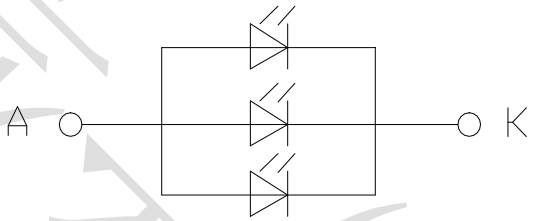


PIN	NAME
1	LEDK
2	GND
3	FMARK
4	SDA
5	SDA1
6	SCL
7	CS
8	RESET
9	IOVCC18
10	VCC28
11	VCC28
12	GND
13	GND
14	LEDA
15	LEDA

3.Internal circuit diagram:



NOTES:

2. VIEWING DIRECTION: IPS
3. POLARIZER MODE: TRANSMISSIVE/NORMALLY BLACK
4. DRIVER IC: ST7789V
5. BACK LIGHT: 3CHIP-WHITE LED; 60MA,3.2V
6. OPERATING TEMP.: -20°C~70°C
7. STORAGE TEMP.: -30°C~80°C
8. UNMARKED TOLERANCE:±0.2
9. 要求机壳泡棉开窗要比LCD V.A区单边小0.3MM以上

VER	REVISED DESCRIPTION	DATE	NAME
B			
A	1ST	2017/03/09	hunter

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Shenzhen Amelin Electronic Technology Co., Ltd

UNIT:mm		Drawn By
DECRIPION	TFT COG MODULE	AML015410 V1
PART NO.		
DRAWING NO.		

■ Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VCC	-0.3	+4.6	V
Analog Supply Voltage	VDD	-0.3	+4.6	V
Gate On Voltage	VGH	-0.3	+19	V
Gate Off Voltage	VGL	-16	+0.3	V
Gate On-Gate Off Voltage	VGH-VVGL	0.3	32	V
Operating temperature	Vop	-20	70	℃
Storage temperature	Tst	-30	80	℃

■ Electrical Characteristics

Parameter	Symbol	Min.	Type.	Max.	Unit.	Note.
Digital Supply Voltage	VCC	1.8	3.3	3.6	V	
Analog Supply Voltage	VDD	2.8	3.3	4.6	V	
Common Voltage	VCOM	3.8	4	4.2	V	Note1
Logic input Voltage	VIH	0.7VDD	-	VDD-	V	
	VIL	GND	-	0.3VDD	V	

Note 1: Please adjust VCOM to make the flicker level be minimun

■ Current consumption

Parameter	Symbol	Min.	Type.	Max.	Unit.	Note.
Gate On Current	IVGH	-	0.5	1	mA	
Gate Off Current	IVGL	-	0.5	1	mA	
Digital Current	IVCC	-	8	15	mA	
Analog Current	IVDD	--	30	40	mA	

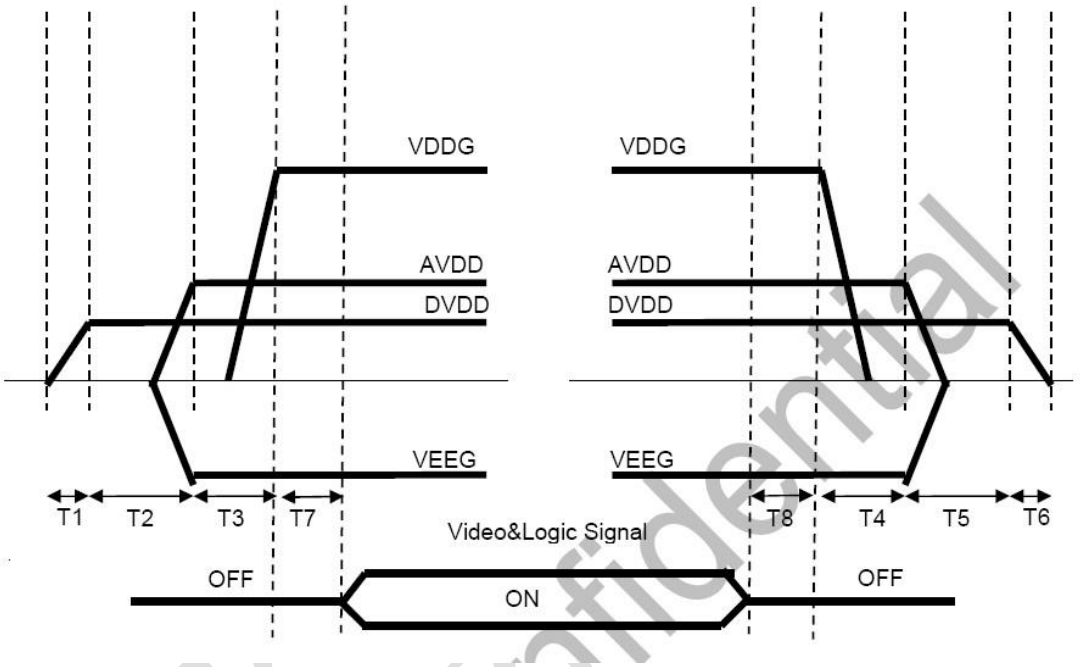
■ Backlight Characteristics

Item	Symbol	Min.	Type	Max.	Unit	Condition
Forward voltage	Vf	2.8	3.2	3.5	V	If=20mA
Luminance	Lv	180	200	300	Cd/㎡	Ta=25℃
Number of LED	-	3			Piece	-
Connection mode	P	0.8IOVcc	-	IOVcc	V	-

■ Timing of Power Supply

Power Signal sequence

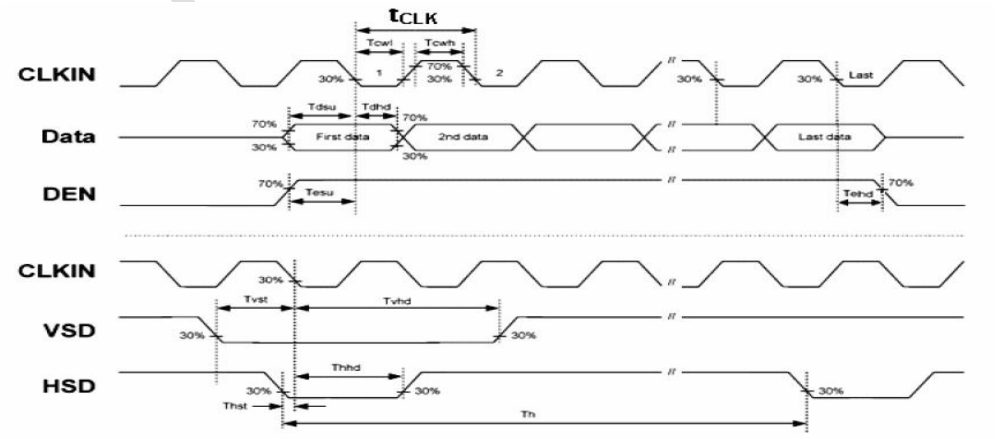
Power On: DVDD→AVDD/VEEG→VDDG→Video & Logic Signal
Power Off: Video & Logic Signal→VDDG→AVDD/VEEG→VDD



0＜T1≤10ms　　T5＞0ms
T2＞20ms　　T6＞0ms
T3＞10ms　　0＜T7≤10ms
T4＞10ms　　0＜T8≤10ms

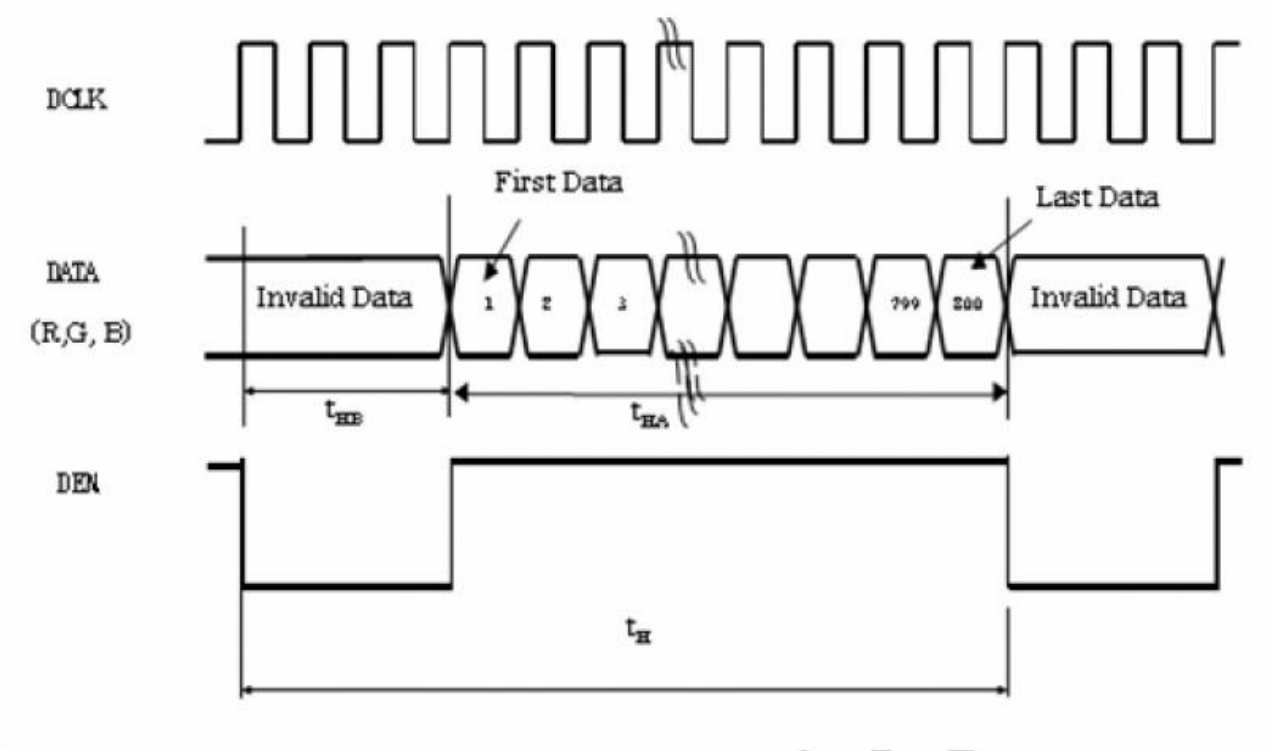
Timing characteristics of input signals

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	Note
DCLK	Dot Clock	1/tclk	5	9	12	MHz	
	DCLK pulse duty	Tcwh	40	50	60	%	
DE	Setup Time	Tesu	8	-	-	ns	
	Hold time	Tehd	8	-	-	ns	
	Horizontal Period	tH	520	525	800	tclk	
	Horizontal Valid	tHA		480		tclk	
	Horizontal Blank	tHB	-	256	-	tclk	
	Vertical Period	tV	277	288	400	tH	
	Vertical Valid	tVA		272		tH	
	Vertical Blank	tVB	-	45	-	tH	
SYNC	HSYNC Setup Time	Thst	8	-	--	ns	
	HSYNC Hold Time	Thhd	8	-	-	ns	
	VSYNC Setup Time	Tvst	8	-	-	ns	
	VSYNC Hold Time	Tvhd	8	-	-	ns	
	Horizontal Period	th	520	525	800	tclk	
	Horizontal Pulse Width	thpw	-	30	-	tclk	
	Horizontal Back Porch	thb	-	16	-	tclk	
	Horizontal Front Porch	thfp	180	210	240	tclk	
	Horizontal Valid	thd		480		tclk	
	Vertical Period	tv	277	288	400	th	
	Vertical Pulse Width	tvpw	-		-	th	
	Vertical Back Porch	tvb	-		-	th	
	Vertical Front Porch	tvfp	12	22	32	th	
	Vertical Vlid	tvd		272		th	
DATA	Setup Time	Tdsu	8	-	-	ns	
	Hold Time	Tdhd	8	-	-	ns	

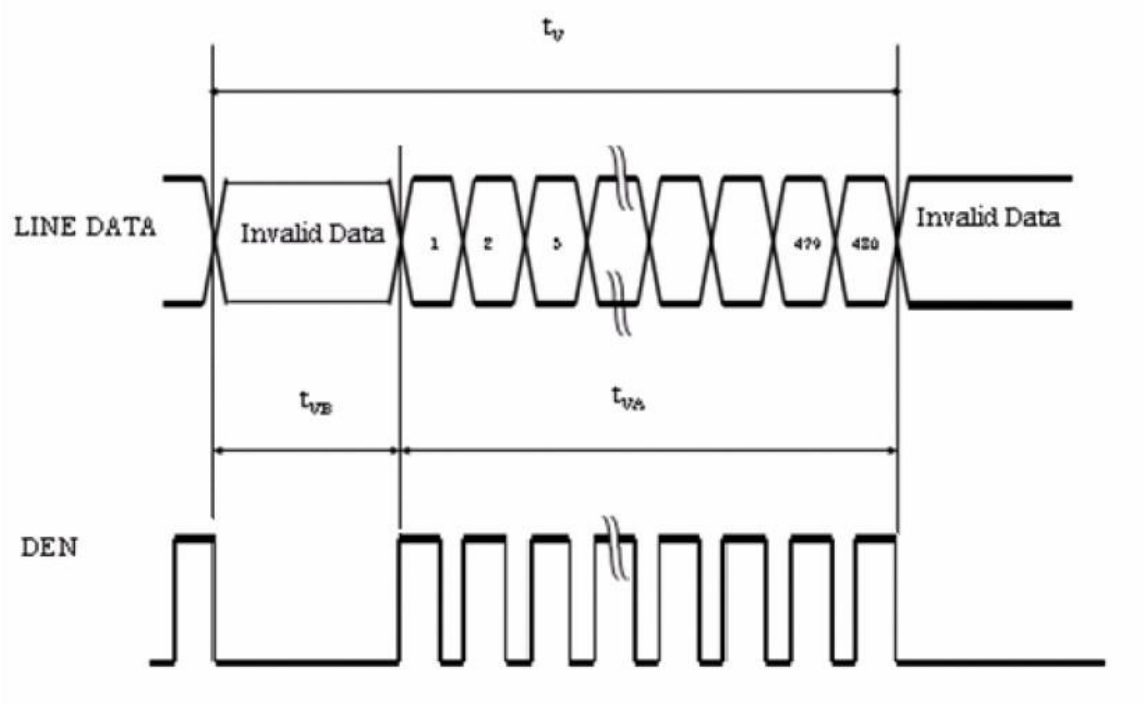


DE mode

Horizontal timing:

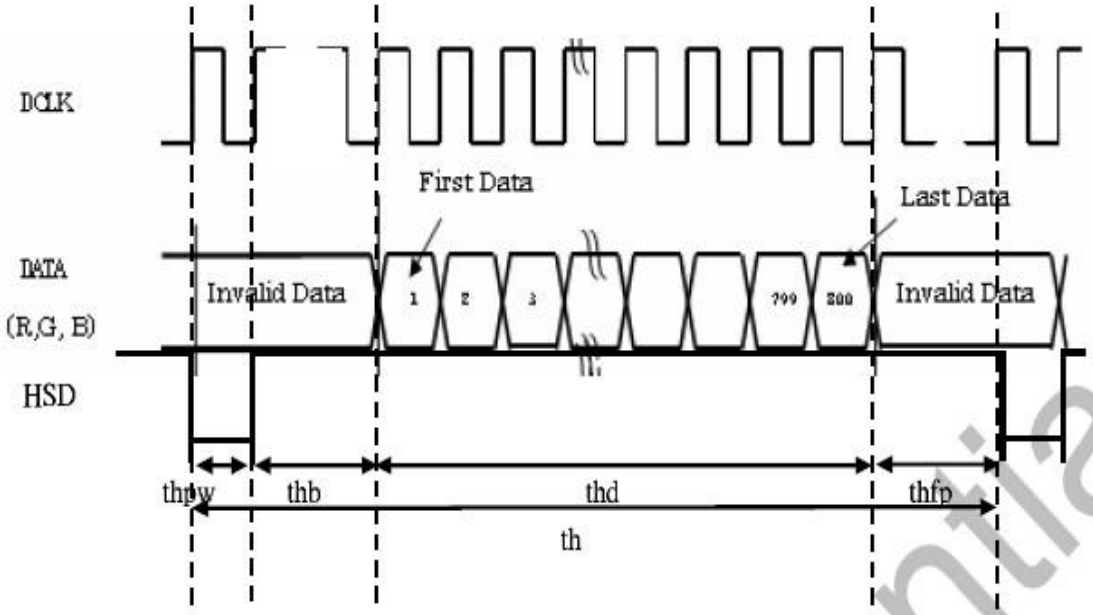


Vertical timing:

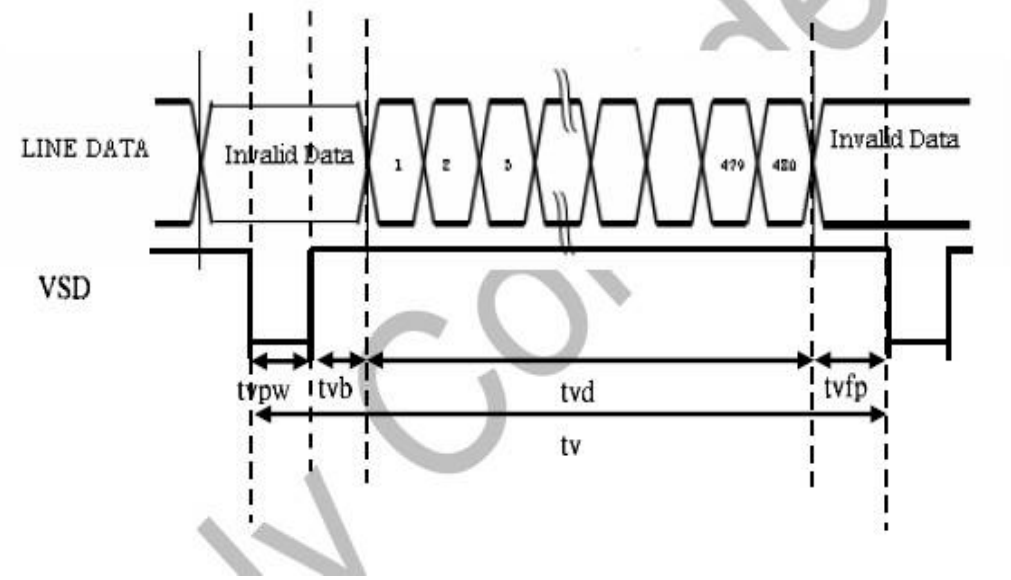


SYNC mode

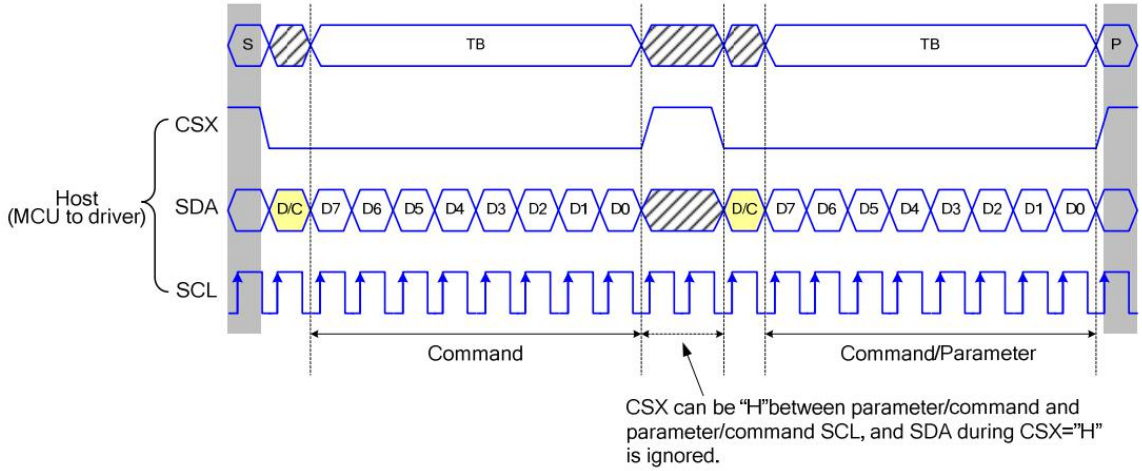
Horizontal timing:



Vertical timing :



SPI mode



■ Interface Description

Pin NO.	Signal	Function
1	LEDK	LED cathode
2	GND	Ground
3	FMARK	
4	SDA	Data bus
5	SDA1	Data bus
6	SCL	serial interface clock
7	CS	Chip selection pin
8	RESET	RESET
9	IOVCC1.8	Power supply 1.8V
10	VCC2.8	Power supply2.8V
11	VCC2.8	Power supply2.8V
12	GND	Ground.
13	GND	Ground.
14	LEDA	LED Power
15	LEDA	LED Power

■ Reliability Test

Test item	Test Condition
High Temperature Storage	80℃/240 hours
Low Temperature Storage	-30℃/240 hours
High Temperature Operating	70℃/240 hours
Low Temperature Operating	-20℃/240 hours
Temperature Cycle	-30℃ ～80℃ × 10cycles (30min.) (5min.) (30min.)
Damp Proof Test	60℃×90%RH/240 hours
ESD test	Voltage:±8KV(Air)/±6KV(Contact) R: 330Ω C:150pF Air discharge, 30time