

DLC Display Co., Limited

德爾西顯示器有限公司



Application notes

MODEL No: DLC0695CCG-2

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1. Module Introduction

Model name	Pin Num.	Recommended Connector
DLC0695CCG-2	40 pin	F62240-H1210A

2. Pin Assignment Table

Pin No.	Symbol	I/O	Function	Remark
1	VCOM	P	Common Voltage	
2	VDD	P	Power Voltage for digital circuit	
3	VDD	P	Power Voltage for digital circuit	
4	NC	---	No connection	
5	NC	---	No connection	
6	NC	---	No connection	
7	GND	P	Ground	
8	RXIN0-	I	- LVDS differential data input	
9	RXIN0+	I	+ LVDS differential data input	
10	GND	P	Ground	
11	RXIN1-	I	- LVDS differential data input	
12	RXIN1+	I	+ LVDS differential data input	
13	GND	P	Ground	
14	RXIN2-	I	- LVDS differential data input	
15	RXIN2+	I	+ LVDS differential data input	
16	GND	P	Ground	
17	RXCLKIN-	I	- LVDS differential clock input	
18	RXCLKIN+	I	+ LVDS differential clock input	
19	GND	P	Ground	
20	RXIN3-	I	- LVDS differential data input	
21	RXIN3+	I	+ LVDS differential data input	
22	GND	P	Ground	
23	NC	---	No connection	
24	NC	---	No connection	
25	GND	P	Ground	
26	NC	---	No connection	
27	NC	---	No connection	
28	NC	---	No connection	
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	NC	---	No connection	
34	NC	---	No connection	
35	VGL	P	Gate OFF Voltage	
36	NC	---	No connection	
37	NC	---	No connection	
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

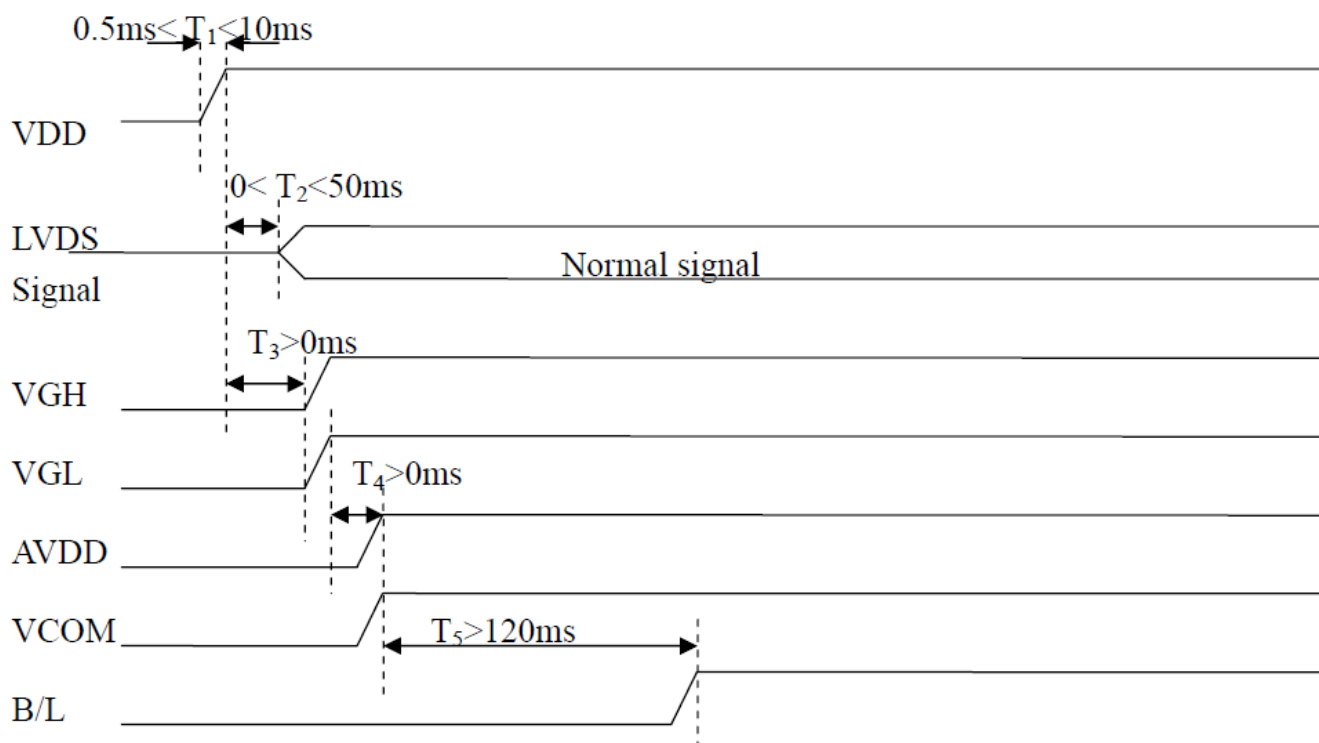
I: input, O: output, P: Power

3. Power & Timing characteristic

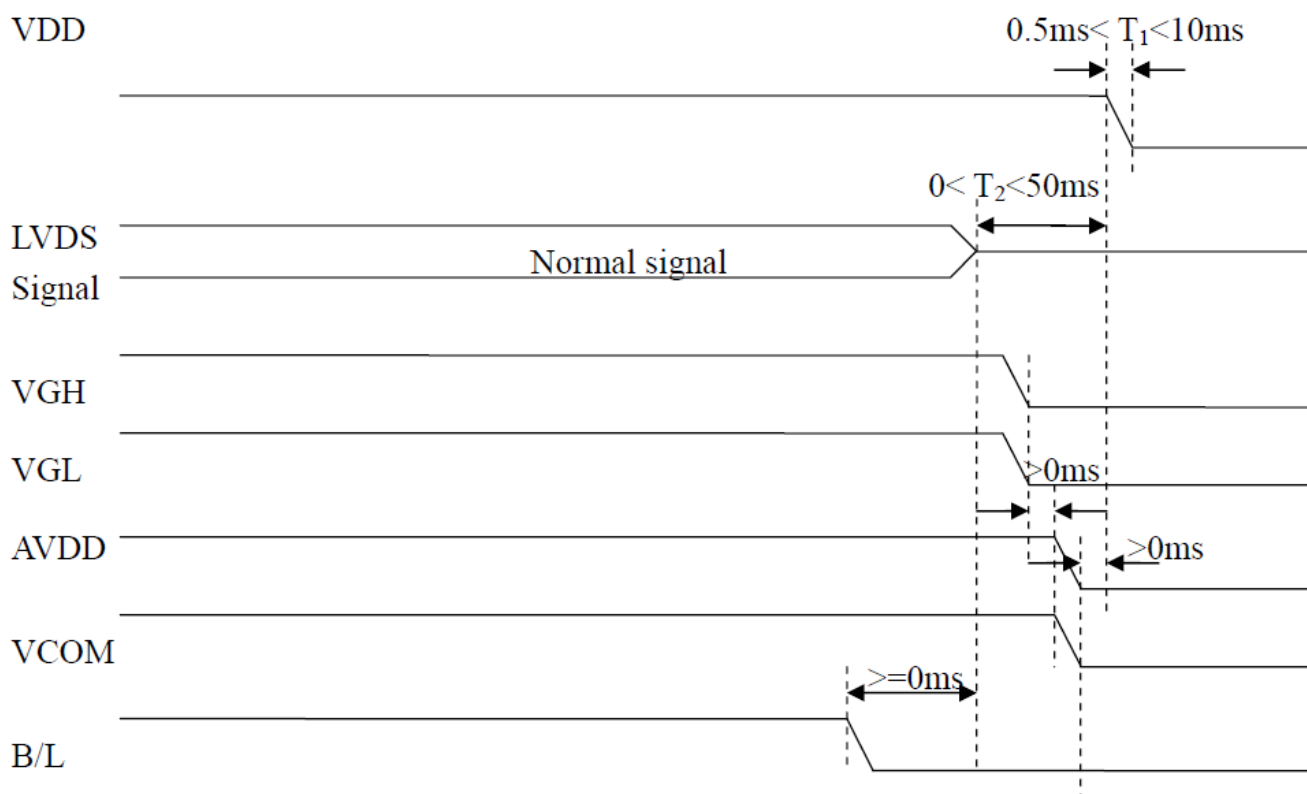
3.1 Power sequence

Customer should follow our product power sequence; otherwise it would lead to display abnormal. Please refer to the figures as below.

Power on:



Power off:



3.2 Typical Operation conditions

Customer should notice the red mark specially, if you do not follow it, it would lead to display abnormal.

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	DVDD	3.0	3.3	3.5	V	Note 1
	AVDD	9.54	9.74	9.94	V	
	VGH	22.4	22.7	23.0	V	
	VGL	-7.7	-8.0	-8.3	V	
Input signal voltage	VCOM	2.9	3.5	4.1	V	Note 3
Input logic high voltage	VIH	0.7VDD	-	VDD	V	Note 2
Input logic low voltage	VIL	0	-	0.3VDD	V	

Note 1: VDD setting should match the signals output voltage (refer to Note 2) of customer's system board.

Note 2: LVDS,

Note 3: Typ. VCOM is only a reference value, it must be optimized according to each LCM.

Be sure to use VR;

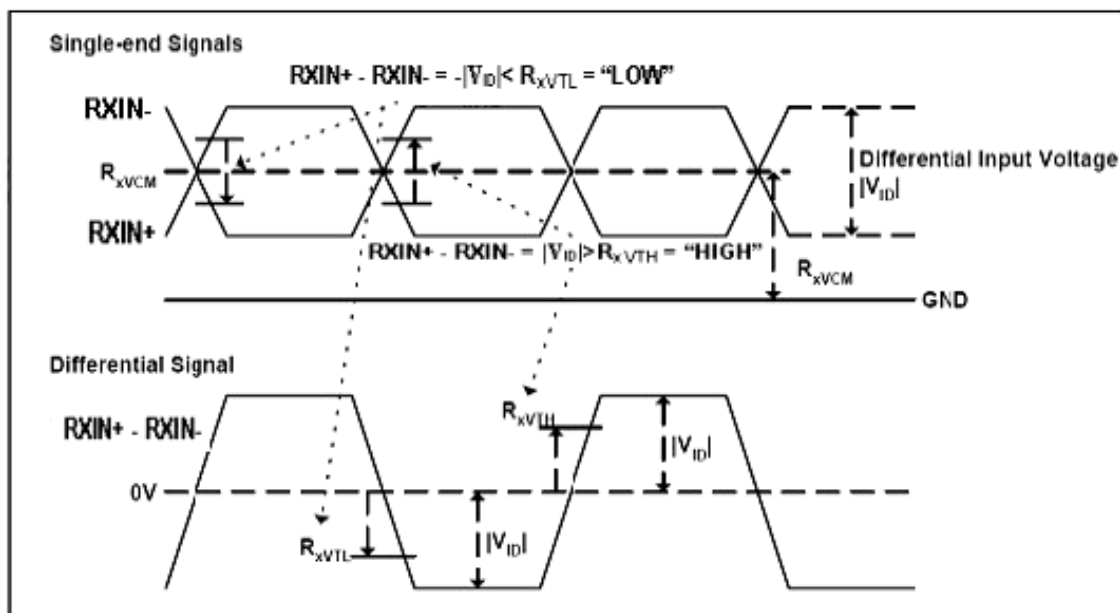
3.3 Timing characteristic.

Input signals must follow our timing specification, Otherwise the LCM will display abnormally.

About the detail timing parameters of LCD display, please follow the product specification.

3.3.1 DC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	RxVTH	-	-	0.1	V	RXVCM=1.2V
Differential input low Threshold voltage	RxVTL	-0.1	-	-	V	
Differential input common mode voltage	RxVCM	1.125	-	1.375	V	
Differential voltage	VID	0.2	-	0.6	V	

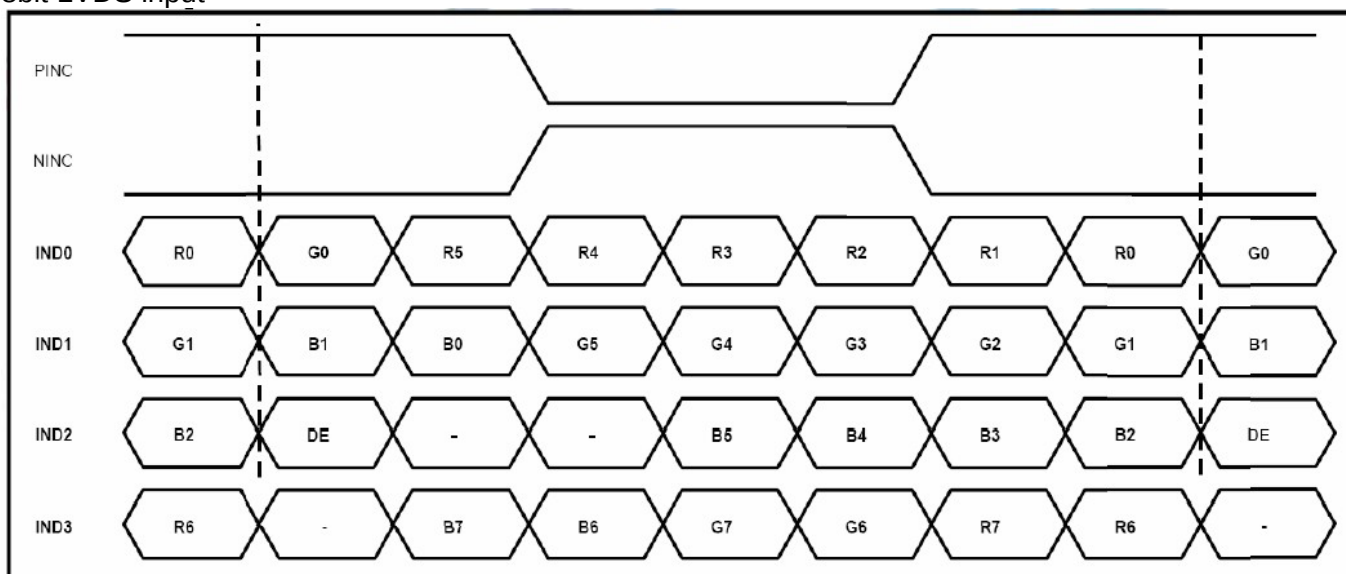


3.3.2 Timing

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	(67.55)	(71.11)	(78.22)	MHz	Frame rate =60Hz
Horizontal display area	thd	1280				
HS period time	th	(1410)	(1440)	(1470)	DCLK	
HS Blanking	thb	130	160	190	DCLK	
Vertical display area	tvd	800				
VS period time	tv	(813)	(823)	(833)	H	
VS Blanking	thb	13	23	33	H	

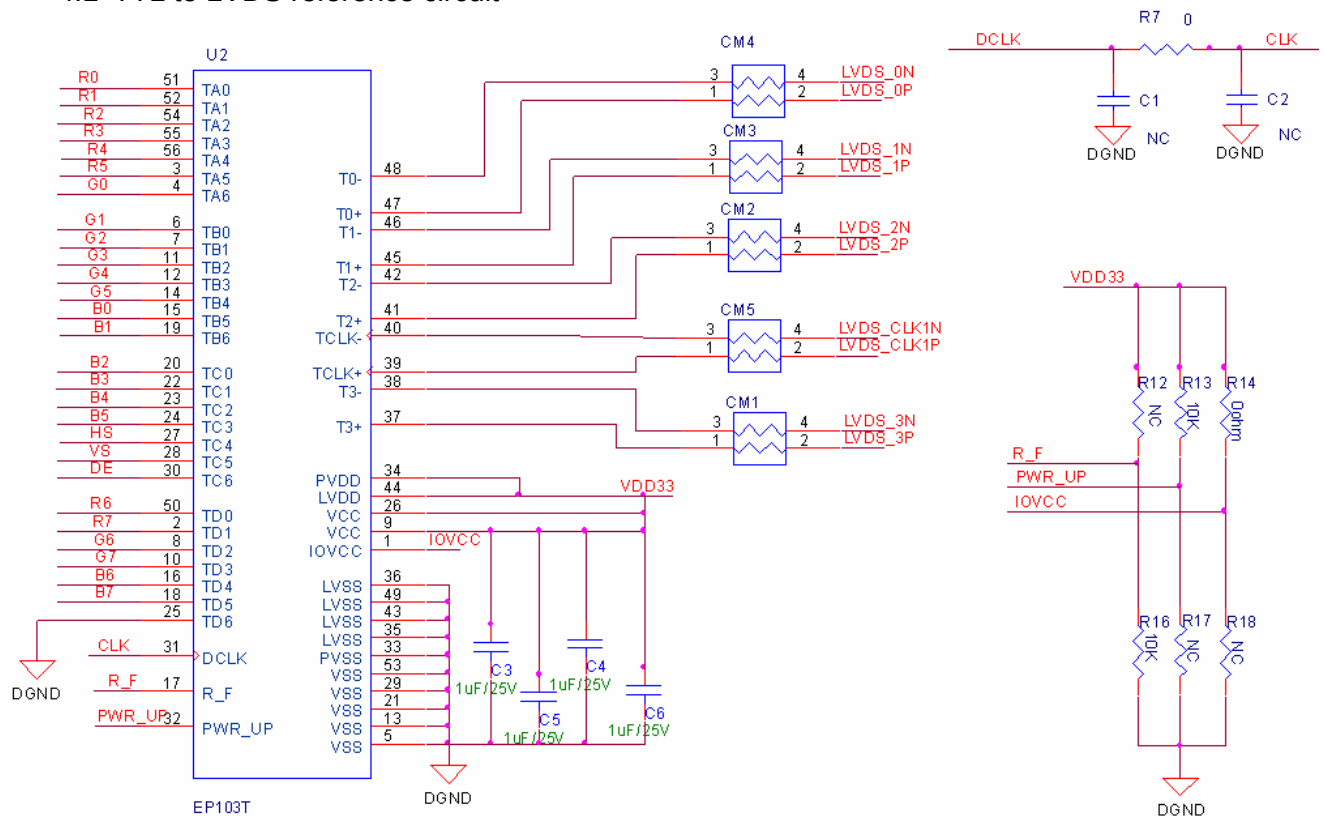
3.3.3 Data Input Format

8bit LVDS input



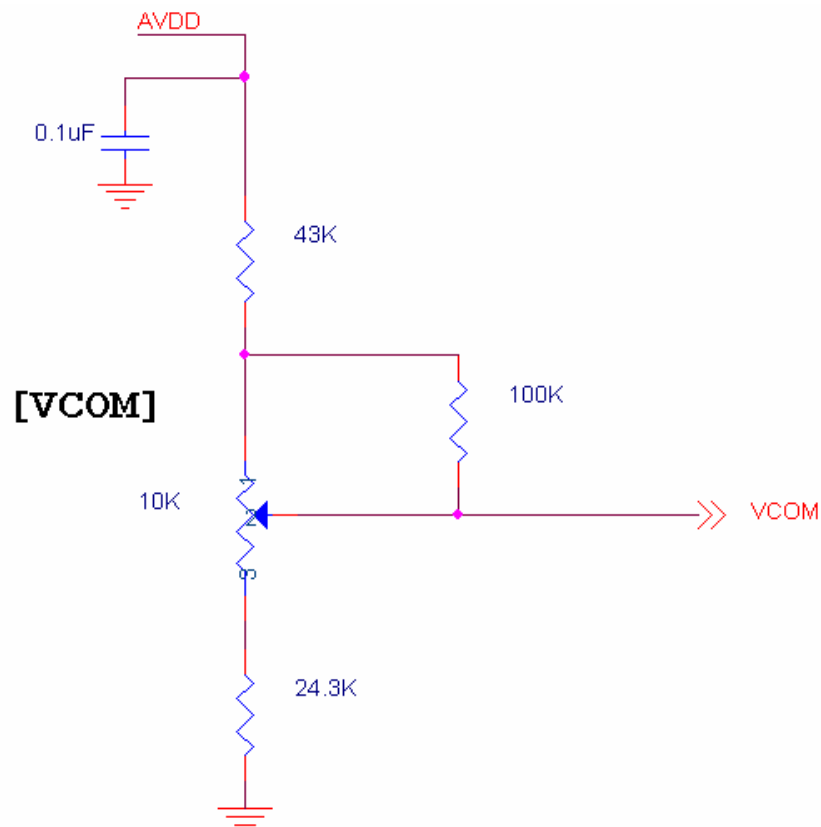
4. Reference circuit

4.1 TTL to LVDS reference circuit

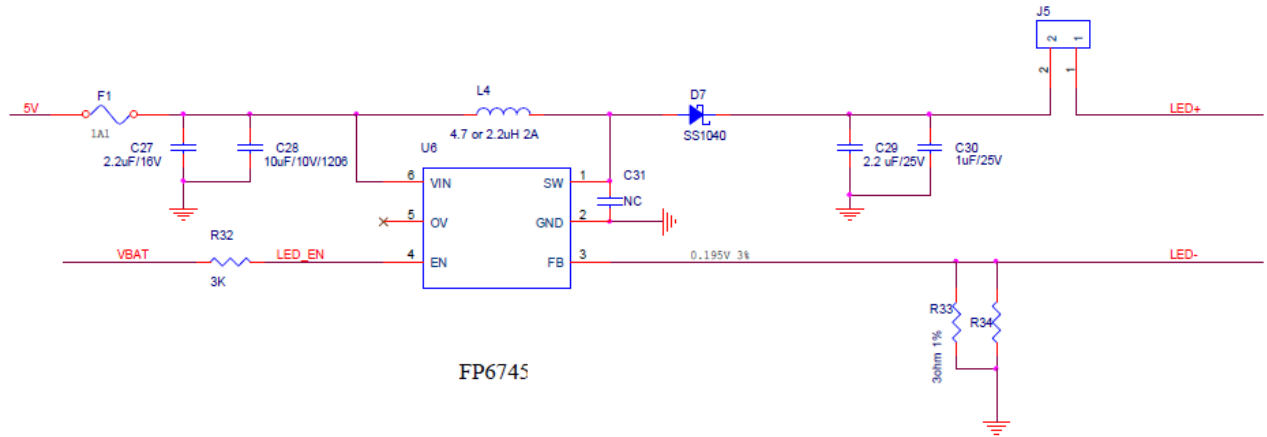


Remark: If the data output is TTL interface, this reference circuit can be used to adapt the LVDS interface for this LCM.

4.2 Vcom Reference Circuit

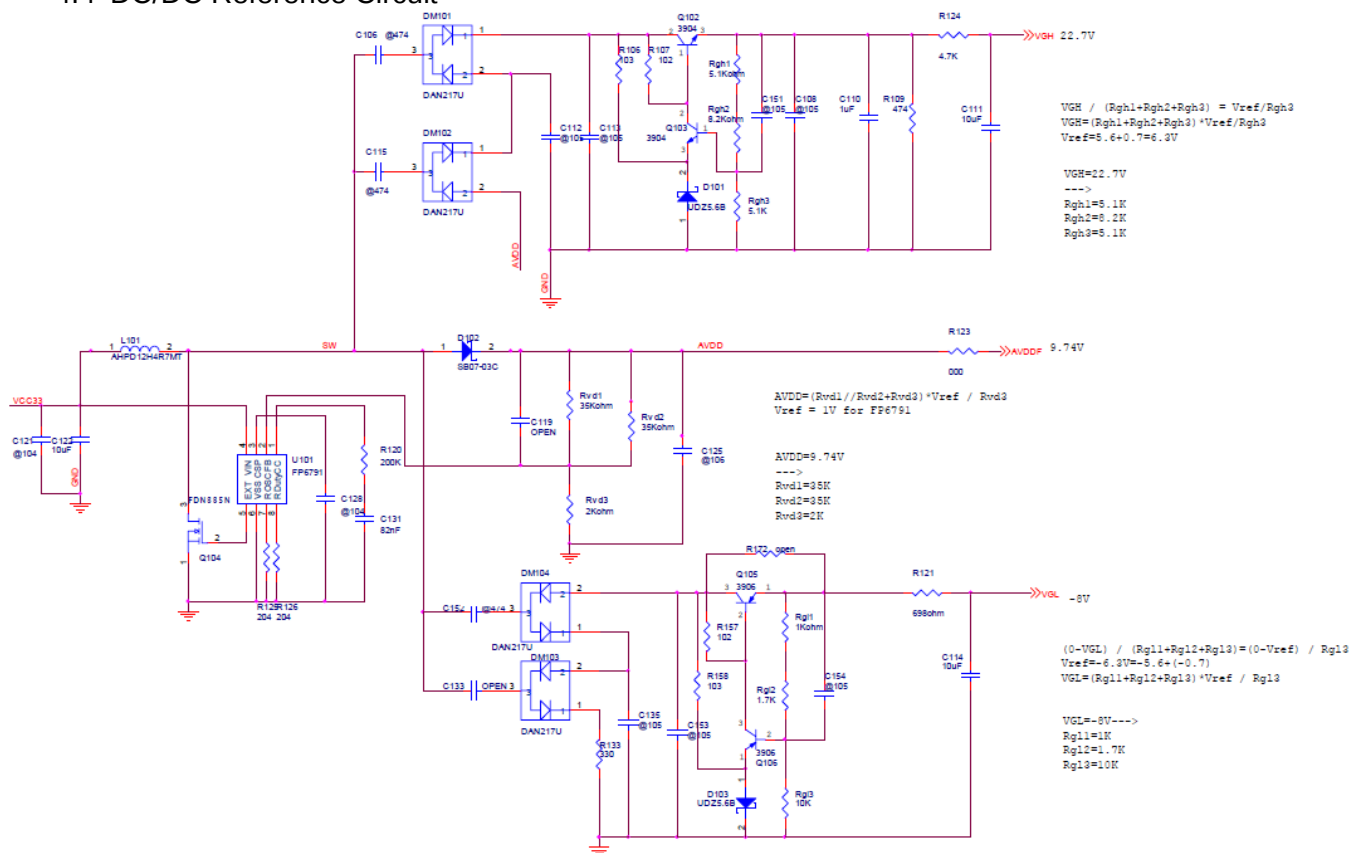


4.3 Backlight Driver Reference Circuit



Note: $I = V_{FB} / (R_{33} // R_{34})$

4.4 DC/DC Reference Circuit



DC-DC reference circuit BOM

Item	Quantity	Reference	Description
1	1	U101	PWM IC FP6791,8 PIN TSSOP,Fitipower
2	4	DM101,DM102,DM103,DM104	Diode module DAN217U, Rohm
3	2	Q102,Q103	TRANSISTOR (NP N),MMST3904,SC-59,Rohm
4	2	Q105,Q106	TRANSISTOR (PNP),MMST3906,SC-59,ROHM
5	1	Q104	MOSFET N-channel,FDN335N,SOT-23,Fairchild
6	2	D101,D103	Zener Diode,UDZ5.6B,SOD-323.Rohm
7	1	D102	SCHOTTKY BARRIER DIODE.SB07-03C, Sanyo

4.5 Vendor Recommend

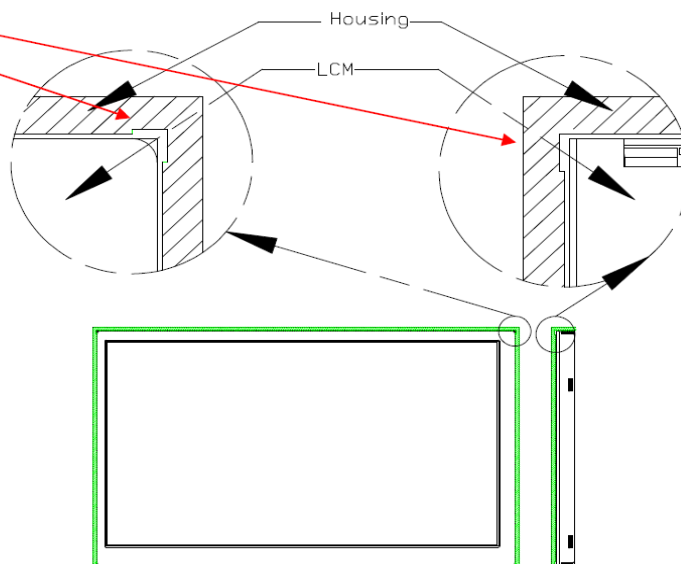
Item	Vendor	Type	Remark
DC/DC	Fiti Power	FP6791	
LED Driver	Fiti Power	FP6745	PWM Frequency:100Hz~50KHz

5. Suggestions for housing design.

5.1 LCM corner /edge avoidable cutting.

If you design a avoidable cutting as the right drawing. LCM will easier to assemble in the housing.

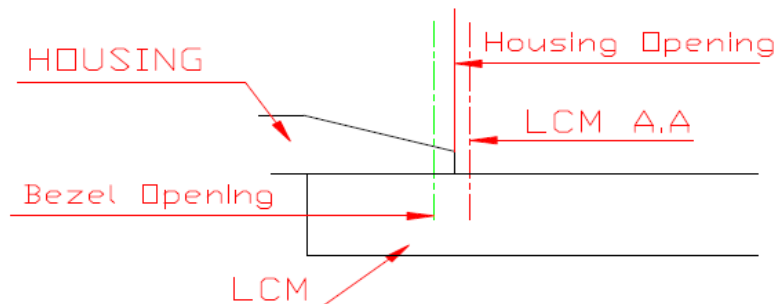
When you use the LCM with TSP, the cutting will avoid damage the edge or corner of TSP during the assembly.



Suggestions of housing design

5.2 Housing opening design guide.

5.2.1 If without TSP, the suggestion for housing design as below:



Section sketch

Notes: 1. Housing opening mast bigger than LCMA.A and cover the bezel .

2. If you want to provide more protection for LCM, you can add same buffer material on the top or bottom of LCM.