

荧光显示屏产品规格书

SPECIFICATION OF VACUUM FLUORESCENT DISPLAY

型号 MODEL

13-ST-84GINK

	Date	Description	Drawn By
1	2023.3.30	ORIGINAL	XACT

已解密

EEI TECHNOLOGY 20230330

产品概要 Product Summary

用途 Application	STB	概要 Summary
显示颜色 Color Of Illumination	绿色 Green X= 0.24 Y = 0.41 红色 Red X= 0.65 Y = 0.33	13Grid X 37 Anode 2Colors Cadmium Free Phosphor Lead Free solder

装配参数 Assembly parameters			
外形尺寸 Outer Dimensions	长 Panel Length	110	mm
	宽 Panel Height	20.5	mm
	厚 Panel Thickness	6.6	mm
引出端子 Lead	端子间距 Lead Pitch	2.0	mm
	端子引出形式 Lead Out	单列折弯 Single column bending	

极限工作条件 Absolute Maximum Condition

*以下所有项目不得超过最大值，否则会对产品造成不可逆的损坏。

*All the following items shall not exceed the maximum value, otherwise the product will be irreversibly damaged.

项目 Item	符号 Symbol	端子符号 Terminals	变动范围 Ratings	单位 Unit
灯丝电压 Filament Voltage	Ef	F+ F-	2.5 - 7	Vdc
逻辑电压 Logic Voltage	VDD	VDD	-0.3 - 6.0	Vdc
驱动电压 Driver Voltage	VH	VH	-0.3 - 38.0	Vdc
逻辑电平 Logic Level	VL	CS,CLK,SDA,RST	-0.3 - VDD + 0.3	Vdc
使用温度 Operating Temperature	Top	-----	-55 - +80	℃

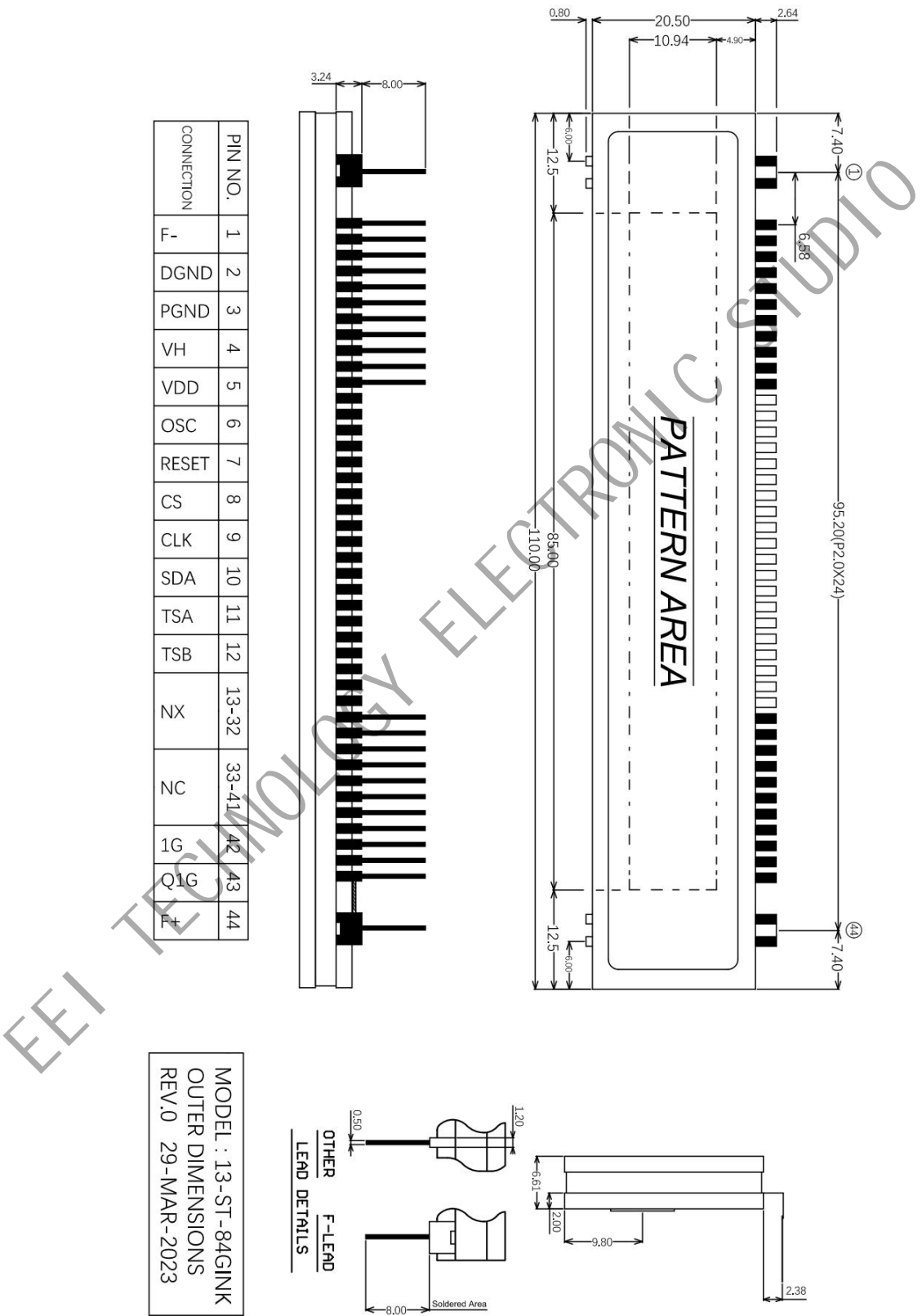
推荐工作条件 Recommended Operating Condition

项目 Item	符号 Symbol	条件 Condition	最小值 Min	推荐值 TYP	最大值 Max	单位 Unit
灯丝电压 Filament Voltage	Ef	----	3.5	3.9	4.3	Vdc
截止电压 Cut-Off Voltage	Ek	----	--	2.5	--	Vdc
逻辑电压 Logic Voltage	VDD	----	3.0	3.3	5.5	Vdc
驱动电压 Driver Voltage	VH	----	29.0	32.0	35.0	Vdc
逻辑高电平输入 Hi-Level Logic Input	VIH	CS,CLK,SDA,RST	VDD x 0.8	--	--	Vdc
逻辑低电平输入 Lo-Level Logic Input	VIL	CS,CLK,SDA,RST	--	--	VDD x 0.2	Vdc

功能表 Function Table

功能 Function	符号 Symbol	输入/ 输出 Input/ Output	描述 Description
测试端 TEST PIN	TSA,TSB	Input	Connect it with VDD
串行数据输入 Serial Data Input	DIO	Input/ Output	Serial Data Input,LSB First
片选信号 Chip Select Input	CS	Input	Chip Select,LOW Active
串行时钟输入 Serial Clock Input	CLK	Input	Serial Clock Input
复位输入 Reset Input	RESET	Input	Reset Input,LOW Active
逻辑电源输入 Logic Power Input	VDD	Input	Power Pin For Logic Circuit
驱动电源输入 Driver Power Input	VHG	Input	Power Pin For Driver
灯丝电源输入 Filament Power Input	F+,F-	Input	Filament Power Input
1G 栅极驱动输入 1G Grid Driver Input	1G	Input	Power Pin For 1G
1G 栅极驱动输出 1G Grid Driver Output	Q1G	Output	Power Pin For IC Driver output
振荡器频率设定 Oscillation Frequency Setting	OSC	Input/ Output	Set Internal Oscillation Frequency

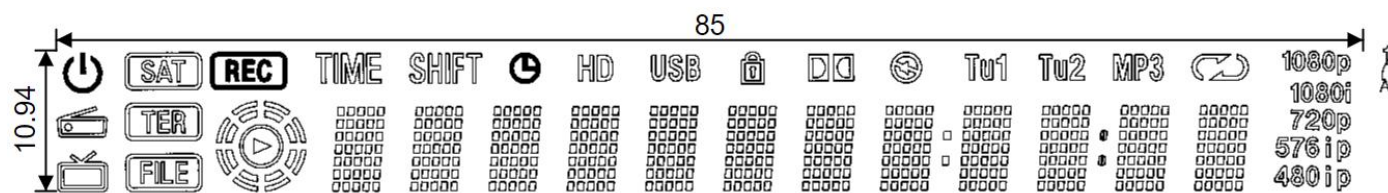
外形图 Outline Drawing (Unit : mm)



Futaba

13-ST-84GINK

显示内容 Display Pattern (Unit : mm)



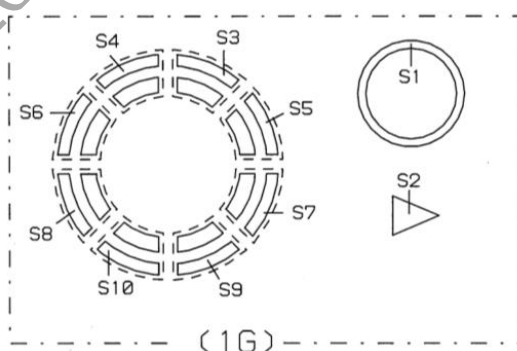
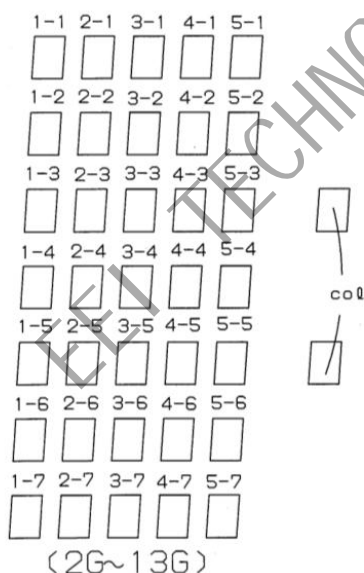
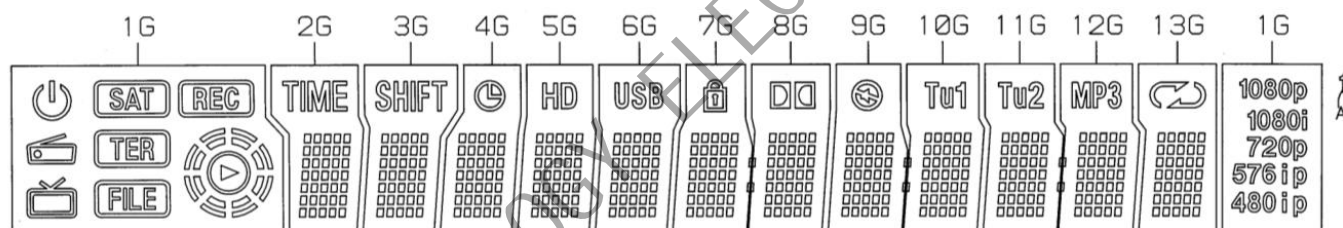
显示颜色 Color of Illumination :

红色 RED($X=0.65, Y=0.33$): 填充部分 Hatched Patterns

绿色 Green($X=0.24, Y=0.41$): 其它 Others

Cadmium Free Phosphor used

栅网分割 Grid Assignment



MODEL : 13-ST-84GINK
GRID ASSIGNMENT
REV.0 29-MAR-2023

内部驱动芯片连接 Connection of Internal IC

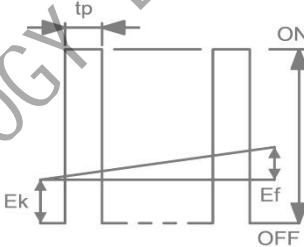
	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
D0		1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1
D1		2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1
D2		3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1
D3		4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1
D4		5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1
D5		1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
D6		2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2
D7	S1	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2
D8	S2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2
D9	S3	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2
D10	S4	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
D11	S5	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
D12	S6	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3
D13	S7	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3
D14	S8	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3
D15	S9	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4
D16	S10	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
D17	1080p	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
D18	1080i	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4
D19	720p	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4
D20	576	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
D21	(576) i	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5
D22	(576) p	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5
D23	480	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
D24	(480) i	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5
D25	(480) p	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
D26	*	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6
D27	*	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6
D28	*	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
D29	*	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6
D30	*	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7
D31	*	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7
D32	*	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7
D33	*	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7
D34	*	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7
AD1	*	*	*	*	*	*	Col		Col		Col		*
AD2	*	TIME	SHIFT	⏮	HD	USB				Tu1	Tu2	MP3	

驱动时序 Timing Chart

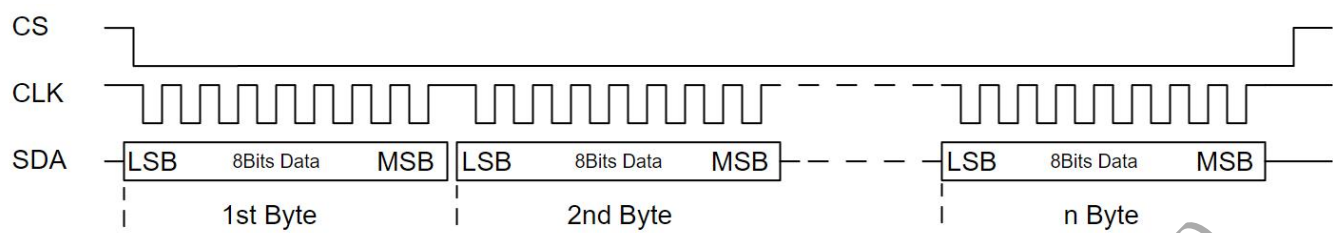
Grid Scan Timing	DCRAM/ADRAM Address	ON/OFF Timing of Grid												
		1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
T1	00H	H	L	L	L	L	L	L	L	L	L	L	L	L
T2	01H	L	H	L	L	L	L	L	L	L	L	L	L	L
T3	02H	L	L	H	L	L	L	L	L	L	L	L	L	L
T4	03H	L	L	L	H	L	L	L	L	L	L	L	L	L
T5	04H	L	L	L	L	H	L	L	L	L	L	L	L	L
T6	05H	L	L	L	L	L	H	L	L	L	L	L	L	L
T7	06H	L	L	L	L	L	L	H	L	L	L	L	L	L
T8	07H	L	L	L	L	L	L	L	H	L	L	L	L	L
T9	08H	L	L	L	L	L	L	L	L	H	L	L	L	L
T10	09H	L	L	L	L	L	L	L	L	L	H	L	L	L
T11	0AH	L	L	L	L	L	L	L	L	L	L	H	L	L
T12	0BH	L	L	L	L	L	L	L	L	L	L	L	H	L
T13	0CH	L	L	L	L	L	L	L	L	L	L	L	L	H
T14	0DH													
T15	0EH													
T16	0FH													
T17	10H													
T18	11H													
T19	12H													
T20	13H													
T21	14H													
T22	15H													
T23	16H													
T24	17H													

Doesn't use it on this type.

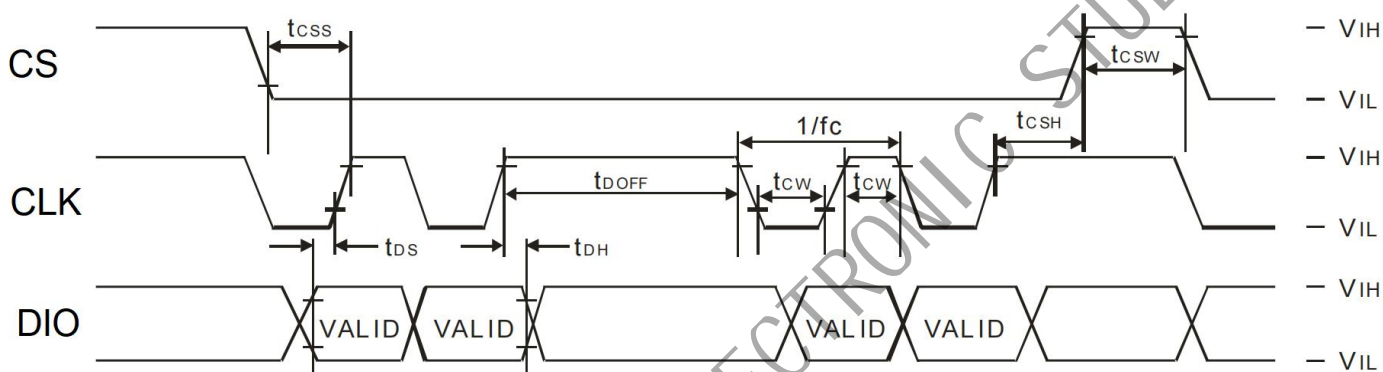
电气特性 Electrical Characteristic

项目 Item	符号 Symbol	测试条件 Test Condition		最小 值 Min	典型 值 TYP	最大 值 Max	单位 Unit
灯丝电流 Filament Current	If	Ef = 3.9 Vdc	全点灯 All Output Lights ON 亮度设置 255 Dimming Level 255	100	110	115	mA
驱动电流 Driver Current	IHG(AVG)	VHG = 32.0Vdc		--	4.0	5.0	mA
逻辑供电电流 Logic Power Current	IVDD	VDD = 3.3Vdc		--	--	5.0	mA
		VDD = 5.0Vdc		--	--	7.0	mA
低电平输入电流 L-level Current	I IL	VDD = 3.3Vdc		--	--	1.0	uA
高电平输入电流 H-level Current	I IH			--	--	-1.0	uA
亮度 Luminance	L(G)	Ef = 3.9 Vdc VHG = 32.0 Vdc		500	800	--	Cd/m²
	L(R)	Ek = 2.5 Vdc Duty = 1/13		70	140	--	Cd/m²
	---			--	--	--	Cd/m²
	---			--	--	--	Cd/m²
	---			--	--	--	Cd/m²
	---			--	--	--	Cd/m²
位间亮度比 Luminance Ratio	Lmin/Lmax			--	--	50	--

串行数据传输时序 Serial Data Transmission Timing Chart

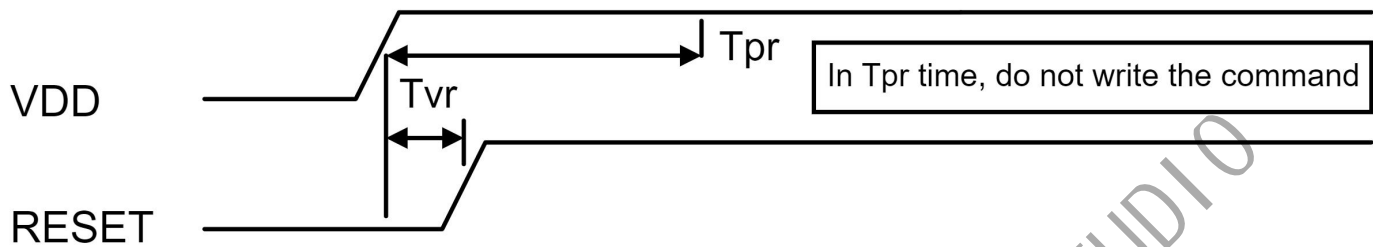


交流特性 AC Characteristics

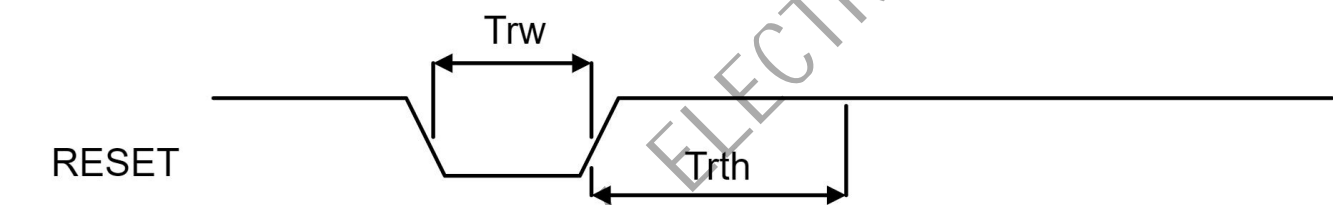


项目 Item	符号 Symbol	条件 Condition	最小值 Min	最大值 Max	单位 Unit
串行时钟频率 CLK Frequency	fc	Frequency = 1MHz	--	0.5	MHz
串行时钟脉宽 CLK Pulse width	tCW	--	700	--	ns
串行数据建立时间 SDA Setup Time	tDS	--	300	--	ns
串行数据保持时间 SDA Hold Time	tDH	--	300	--	ns
片选建立时间 CS Setup Time	tCSS	--	1000	--	ns
片选保持时间 CS Hold Time	tCSH	Frequency = 1MHz	1000	--	ns
片选等待时间 CS Wait Time	tCSW	--	1000	--	ns
数据处理时间 Data Processing Time	tDOFF	Frequency = 1MHz	2000	--	ns

上电复位时序 Power on Reset Timing Chart

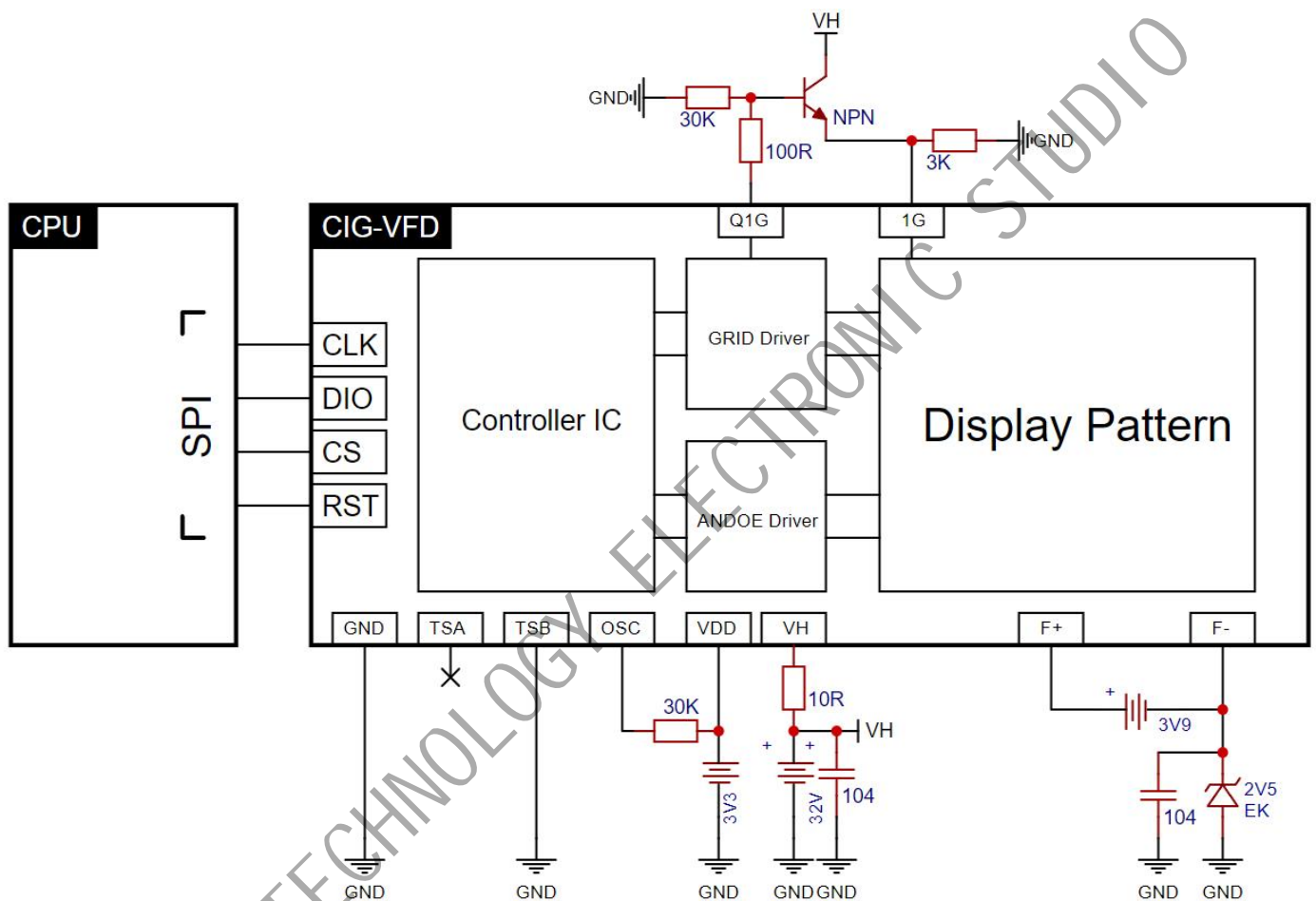


复位时序 Reset Timing Chart



项目 Item	符号 Symbol	条件 Condition	最小值 Min	最大值 Max	单位 Unit
电源复位时间 Power on Reset Time	T_{pr}	--	1	--	ms
复位延时 Reset Delay	T_{vr}	--	0	--	us
复位保持时间 Reset Hold Time	T_{rw}	--	100	--	us
复位等待时间 Reset Wait Time	T_{rth}	--	1	--	ms

典型应用原理图 Application Circuit



指令列表 Command List

	指令 Command	字节 Byte	MSB								内容 Description	初始值 Default
			B7	B6	B5	B4	B3	B2	B1	B0		
1	写入字符生成器 Write DGRAM	1st	0	0	1	0	A3	A2	A1	A0	选择栅极映射地址 Select Grid address	--
		2nd	D7	D6	D5	D4	D3	D2	D1	D0	写入字符数据 Write character data	--
2	显示模式设定 Display mode setting	1st	0	0	0	0	0	0	0	0	初始化设定 Initialize setting	--
		2nd	*	*	0	0	0	0	0	0		--
3	扫描时序设定 Scan timing setting	1st	1	1	1	0	0	0	*	*		
		2nd	0	0	0	0	1	1	0	0		
4	写入自定义内存 Write CGRAM	1st	0	1	0	*	*	A2	A1	A0	选择自定义内存地址 Select CGRAM address	--
		2nd	*	D30	D25	D20	D15	D10	D5	D0	写入数据 Write Data	--
		3rd	*	D31	D26	D21	D16	D11	D6	D1		--
		4th	*	D32	D27	D22	D17	D12	D7	D2		--
		5th	*	D33	D28	D23	D18	D13	D8	D3		--
		6th	*	D34	D29	D24	D19	D14	D9	D4		--
5	写入辅助驱动寄存器 Write ADRAM	1st	0	1	1	0	0	A2	A1	A0	选择栅极映射地址 Select Grid address	--
		2nd	*	*	0	0	0	0	AD2	AD1	写入数据 Write Data	--
6	亮度设定 Dimming setting	1st	1	1	1	0	0	1	*	*	亮度设定指令 Dimming setting command	--
		2nd	C7	C6	C5	C4	C3	C2	C1	C0	0-255 (DEC) 调节 0-255 (DEC) Adjust	--
7	灰度设定 Gray setting	1st	1	1	0	0	A3	A2	A1	A0	选择栅极映射地址 Select Grid address	
		2nd	0	0	0	0	K2	K1	*	K0	灰度是否启用 AD Gray Enable/Disable	
8	灰度等级设定 Gray level setting	1st	1	0	1	*	*	A2	A1	A0	选择设定目标 Select setting target	
		2nd	G7	G6	G5	G4	G3	G2	G1	G0	灰度等级(0-255) Gray level(0-255)	
9	显示开关控制 Display light ON/OFF	1st	1	1	1	0	1	0	LS	HS	LS = 0 HS = 0 : Normal operation LS = 1 HS = 0 : All Light OFF LS = 0 HS = 1 : All Light ON LS = 1 HS = 1 : All Light ON	
10	待机模式设定 Stand-By mode setting	1st	1	1	1	0	1	1	*	ST	ST = 0 : exit stand-by mode ST = 1 : entry stand-by mode	

指令概要 Command Summary

0x20 ADDR		写入字符生成器 Write DCRAM																																																																																												
Bit		B1	B2	B3	B4	B5	B6	B7	B8	Hex																																																																																				
指令 Command		0	0	1	0	A3	A2	A1	A0	0x20 ADDR																																																																																				
参数 Parameter		D7	D6	D5	D4	D3	D2	D1	D0	--																																																																																				
内容 Description	<p>此命令用于生成字符。This command is used to generate characters.</p> <p>(1) 此命令完成一次写入操作后，栅极地址将会自增，不需要再次设置地址。</p> <p>(2) 当地址超过 13 (0x0C) ,地址自动归零。</p> <p>(3) D7:0 为字符映射数据，输入 ASCII 码(CGROM 地址)即可将字符或自定义内存映射到指定栅极的点阵上。</p> <p>(1) After this command completes a write operation, the address will increase automatically.No need to set the address again.</p> <p>(2) When the address exceeds 13 (0x0C), the address is automatically reset to zero.</p> <p>(3) D7:0 is the character mapping data, enter the ASCII code (CGROM address) to map the character or custom memory to the dot matrix of the specified GRID.</p> <p>其中地址和 A3:0 的关系如下图所示 The relationship between the address and A3:0 is shown in the figure below</p> <table><tr><th>Hex</th><th>A0</th><th>A1</th><th>A2</th><th>A3</th><th>Grid Address</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>G1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>G2</td></tr><tr><td>2</td><td>0</td><td>1</td><td>0</td><td>0</td><td>G3</td></tr><tr><td>3</td><td>1</td><td>1</td><td>0</td><td>0</td><td>G4</td></tr><tr><td>4</td><td>0</td><td>0</td><td>1</td><td>0</td><td>G5</td></tr><tr><td>5</td><td>1</td><td>0</td><td>1</td><td>0</td><td>G6</td></tr><tr><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td><td>G7</td></tr><tr><td>7</td><td>1</td><td>1</td><td>1</td><td>0</td><td>G8</td></tr><tr><td>8</td><td>0</td><td>0</td><td>0</td><td>1</td><td>G9</td></tr><tr><td>9</td><td>1</td><td>0</td><td>0</td><td>1</td><td>G10</td></tr><tr><td>A</td><td>0</td><td>1</td><td>0</td><td>1</td><td>G11</td></tr><tr><td>B</td><td>1</td><td>1</td><td>0</td><td>1</td><td>G12</td></tr><tr><td>C</td><td>0</td><td>0</td><td>1</td><td>1</td><td>G13</td></tr></table>										Hex	A0	A1	A2	A3	Grid Address	0	0	0	0	0	G1	1	1	0	0	0	G2	2	0	1	0	0	G3	3	1	1	0	0	G4	4	0	0	1	0	G5	5	1	0	1	0	G6	6	0	1	1	0	G7	7	1	1	1	0	G8	8	0	0	0	1	G9	9	1	0	0	1	G10	A	0	1	0	1	G11	B	1	1	0	1	G12	C	0	0	1	1	G13
	Hex	A0	A1	A2	A3	Grid Address																																																																																								
	0	0	0	0	0	G1																																																																																								
	1	1	0	0	0	G2																																																																																								
	2	0	1	0	0	G3																																																																																								
	3	1	1	0	0	G4																																																																																								
	4	0	0	1	0	G5																																																																																								
	5	1	0	1	0	G6																																																																																								
	6	0	1	1	0	G7																																																																																								
	7	1	1	1	0	G8																																																																																								
8	0	0	0	1	G9																																																																																									
9	1	0	0	1	G10																																																																																									
A	0	1	0	1	G11																																																																																									
B	1	1	0	1	G12																																																																																									
C	0	0	1	1	G13																																																																																									

0x60 | ADDR		写入辅助驱动寄存器 Write ADRAM								
Bit		B1	B2	B3	B4	B5	B6	B7	B8	Hex
指令 Command		0	1	1	0	A3	A2	A1	A0	0x60 | ADDR
参数 Parameter		*	*	0	0	0	0	AD2	AD1	--
内容 Description	<p>此命令用于控制辅助驱动寄存器输出。</p> <p>This command is used to control the auxiliary driver register output.</p> <p>(1) 其中 A3:0 和地址的关系参考“写入字符生成器命令”。</p> <p>(2) AD2:1 决定辅助驱动寄存器 AD2 和 AD1 是否使能。</p> <p>(1) The relationship between A3:0 and the address refers to "Write DCRAM Command"</p> <p>(2) AD2:1 determines whether the auxiliary driver registers AD2 and AD1 are enabled.</p>									

0xE4	亮度设定 Dimming setting								
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex
指令 Command	1	1	1	0	0	1	*	*	0xE4
参数 Parameter	C7	C6	C5	C4	C3	C2	C1	C0	--
内容 Description	此命令用于调节屏幕亮度。This command is used to adjust the screen brightness.								

0xA4 ADDR	灰度等级设定 Gray level setting																										
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex																		
指令 Command	1	0	1	*	*	A2	A1	A0	0xA4 ADDR																		
参数 Parameter	G7	G6	G5	G4	G3	G2	G1	G0	--																		
内容 Description	此命令用于调节某一栅极的灰度等级。This command is used to adjust the gray level																										
	(1)其中 A2:0 用于选择调整的目标，关系如下图所示																										
	(2)灰度等级取决于 G7:0。																										
	(1) Among them, A2:0 is used to select the target for adjustment, and the relationship is shown in the figure below																										
	(2) Gray scale depends on G7:0.																										
<table><tr><th colspan="3">Address</th><th rowspan="2">Tagret</th></tr><tr><th>A2</th><th>A1</th><th>A0</th></tr><tr><td>0</td><td>0</td><td>0</td><td>D0- D34</td></tr><tr><td>0</td><td>0</td><td>1</td><td>AD1</td></tr><tr><td>0</td><td>1</td><td>0</td><td>AD2</td></tr></table>									Address			Tagret	A2	A1	A0	0	0	0	D0- D34	0	0	1	AD1	0	1	0	AD2
Address			Tagret																								
A2	A1	A0																									
0	0	0	D0- D34																								
0	0	1	AD1																								
0	1	0	AD2																								

0xC0 | ADDR	灰度设定 Gray setting								
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex
指令 Command	1	1	0	0	A3	A2	A1	A0	0xC0 | ADDR
参数 Parameter	0	0	0	0	K2	K1	*	K0	--
内容 Description	<p>此命令用于启用/禁用灰度调节功能。 This command is used to enable/disable the grayscale adjustment function.</p> <p>(1) 其中 A3:0 和地址的关系参考“写入字符生成器命令”。 (2) K2,K1 分别控制 AD2 AD1 是否启用灰度调节功能。 (3) K0 控制 D0-D34 是否启用灰度调节功能。</p> <p>(1) The relationship between A3:0 and the address refers to "Write DGRAM Command" (2) K2 and K1 respectively control whether AD2 and AD1 enable the gray scale adjustment function. (3) K0 controls whether D0-D34 enable the grayscale adjustment function.</p>								

0xE8 | COMM	显示开关控制 Display light ON/OFF								
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex
指令 Command	1	1	1	0	1	0	LS	HS	0xE8 | COMM
内容 Description	<p>此命令用于控制驱动输出。This command is used to control the drive output.</p> <p>其中 LS 和 HS 与屏幕的关系如下</p> <p>Among them, the relationship between LS and HS and the screen is as follows</p> <p>LS = 0 HS = 0 : Normal operation</p> <p>LS = 1 HS = 0 : All Light OFF</p> <p>LS = 0 HS = 1 : All Light ON</p> <p>LS = 1 HS = 1 : All Light ON</p>								

0xEC | COMM	待机模式设定 Stand-By mode setting								
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex
指令 Command	1	1	1	0	1	1	*	ST	0xE8 | COMM
内容 Description	<p>此命令用于进入待机模式。This command is used to enter standby mode.</p> <p>其中 ST 与屏幕的关系如下</p> <p>Among them, the relationship between ST and the screen is as follows</p> <p>ST = 0 : exit stand-by mode</p> <p>ST = 1 : entry stand-by mode</p>								

0x40 ADDR		写入自定义内存 Write CGRAM																																									
Bit	B1	B2	B3	B4	B5	B6	B7	B8	Hex																																		
指令 Command	0	1	0	*	*	A2	A1	A0	0x40 ADDR																																		
参数 1 Parameter1	*	D30	D25	D20	D15	D10	D5	D0	--																																		
参数 2 Parameter2	*	D31	D26	D21	D16	D11	D6	D1	--																																		
参数 3 Parameter3	*	D32	D27	D22	D17	D12	D7	D2	--																																		
参数 4 Parameter4	*	D33	D28	D23	D18	D13	D8	D3	--																																		
参数 5 Parameter5	*	D34	D29	D24	D19	D14	D9	D4	--																																		
内容 Description	此命令用于写入自定义内存 This command is used to Write CGRAM.																																										
	(1) 其中 A3:0 和地址的关系参考“写入字符生成器命令”。																																										
	(2) 内存数据与点阵的关系如下图所示。																																										
	(1) The relationship between A3:0 and the address refers to "Write DGRAM Command"																																										
	(2) The relationship between memory data and dot matrix is shown in the figure below.																																										
<div><table><tr><td>D0</td><td>D1</td><td>D2</td><td>D3</td><td>D4</td></tr><tr><td>D5</td><td>D6</td><td>D7</td><td>D8</td><td>D9</td></tr><tr><td>D10</td><td>D11</td><td>D12</td><td>D13</td><td>D14</td></tr><tr><td>D15</td><td>D16</td><td>D17</td><td>D18</td><td>D19</td></tr><tr><td>D20</td><td>D21</td><td>D22</td><td>D23</td><td>D24</td></tr><tr><td>D25</td><td>D26</td><td>D27</td><td>D28</td><td>D29</td></tr><tr><td>D30</td><td>D31</td><td>D32</td><td>D33</td><td>D34</td></tr></table></div>									D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21	D22	D23	D24	D25	D26	D27	D28	D29	D30	D31	D32	D33	D34
D0	D1	D2	D3	D4																																							
D5	D6	D7	D8	D9																																							
D10	D11	D12	D13	D14																																							
D15	D16	D17	D18	D19																																							
D20	D21	D22	D23	D24																																							
D25	D26	D27	D28	D29																																							
D30	D31	D32	D33	D34																																							

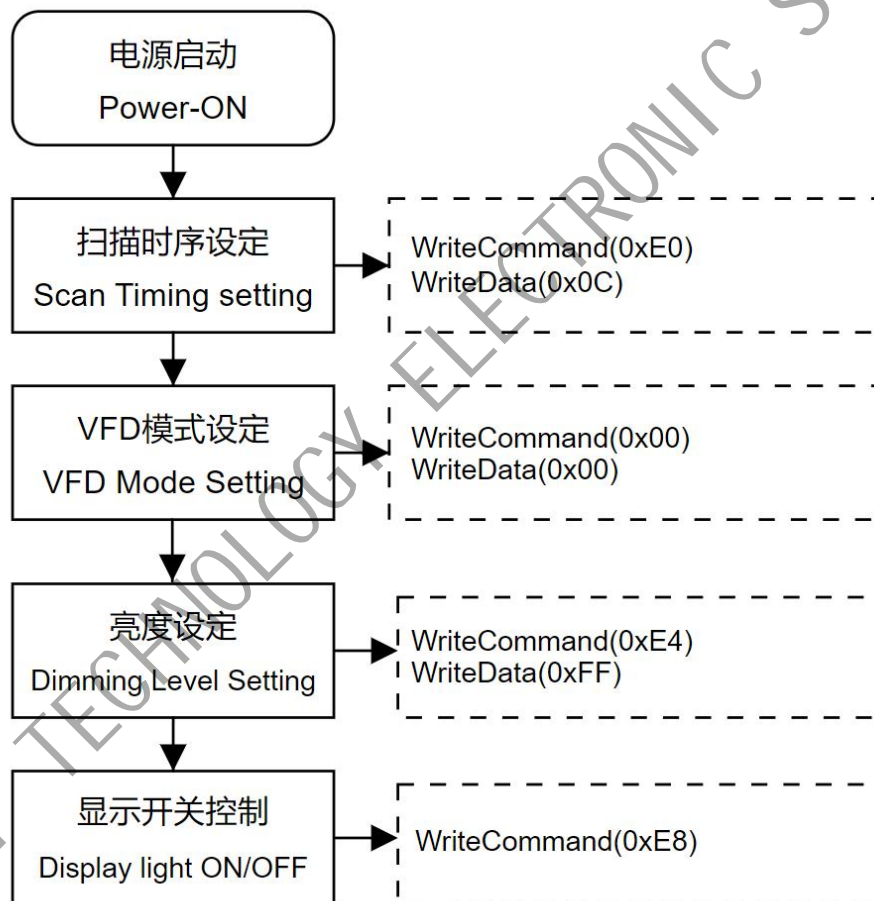
Futaba

13-ST-84GINK

CGROM 映射表 CGROM Map

MSB LSB		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	RAM0	'		0	0	P	I	F	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
0001	RAM1	Φ	!	1	A	Q	a	9	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
0010	RAM2	羊	"	2	B	R	b	r	é	é	é	é	é	é	é	é	é
0011	RAM3	!	#	3	C	S	c	s	è	è	è	è	è	è	è	è	è
0100	RAM4	"	π	4	D	T	d	t	i	i	i	i	i	i	i	i	i
0101	RAM5	*	%	5	E	U	e	w	i	i	i	i	i	i	i	i	i
0110	RAM6	*	&	6	F	V	f	v	ö	ö	ö	ö	ö	ö	ö	ö	ö
0111	RAM7	~	'	7	G	W	w	w	ö	ö	ö	ö	ö	ö	ö	ö	ö
1000		▲	'	(	8	H	x	h	x	ú	ú	π	W	ú	ú	ú	ú
1001		▼	°	)	9	I	Y	i	y	ú	ú	é	é	ú	ú	ú	ú
1010		▲	η	*	:	J	Z	j	z	ñ	ñ	é	÷	ñ	ñ	ñ	ñ
1011		▲	~	+	;	K	[	k	(	C	c	\$	°	ö	ö	ö	ö
1100		▼	°	,	<	L	\	l	l	é	é	+	+	é	é	é	é
1101		,	ü	-	=	M	]	m	)	B	Δ	+	+	é	é	é	é
1110		l	Q	.	>	N	^	n	~	i	i	+	+	Q	d	干	干
1111		l	~	/	?	O	_	o	■	W	ü	+	+	é	é	é	é

初始化流程 Example of Display initialization



显示流程 Example of Display

