

深圳市联合光学技术有限公司

产 品 规 格 书

Product Acknowledgment

客 户 模 组 型 号

Customer's Model Name: 地平线/4663

模 组 型 号

United Optical Model Name: LH-DPX-001-4663-V4.0

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修订记录(Revision History)

日期 (Date)	版本 (Version)	描述 (Description)
2022.01.17	V4.0	第一次发行 First Release

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1. 范围 (Scope)

The content of this acceptance letter is the basic information of the camera module model LH-DPX-001-4663-V4.0 designed and manufactured by Shenzhen United Optical Technology Co., Ltd. It contains the main functions of the module, quality inspection and reliability test purposes.

2. 概要 (Summary)

GC4663 is a high quality 4Mega CMOS image sensor, for security camera products, digital camera products and mobile phone camera applications. The full-scale integration of high-performance makes the GC4663 fit the design and reduce the implementation process.

GC4663 incorporates a 2560H x 1440V pixel array, on-chip 12/10-bit ADC, and image signal processor. It provides RAW12 and RAW10 data format with MIPI interface. It has a commonly used two-wire serial interface for host to control the operation of the whole sensor.

Additionally, it has HDR function by staggered output mode, letting user use 2 different exposure time frames combine one picture to improve dynamic range and avoid smearing.

3. 产品特点 (Features)

- Standard optical format of 1/3 inch
- 2.0um*2.0um BSI pixel
- Output formats: Raw Bayer 12bit/10bit
- Power supply requirement: AVDD28: 2.7-2.9V(Typical: 2.8V)

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DVDD: 1.15-1.3V(Typical: 1.2)

IOVDD: 1.7-1.9V(Typical: 1.8V)

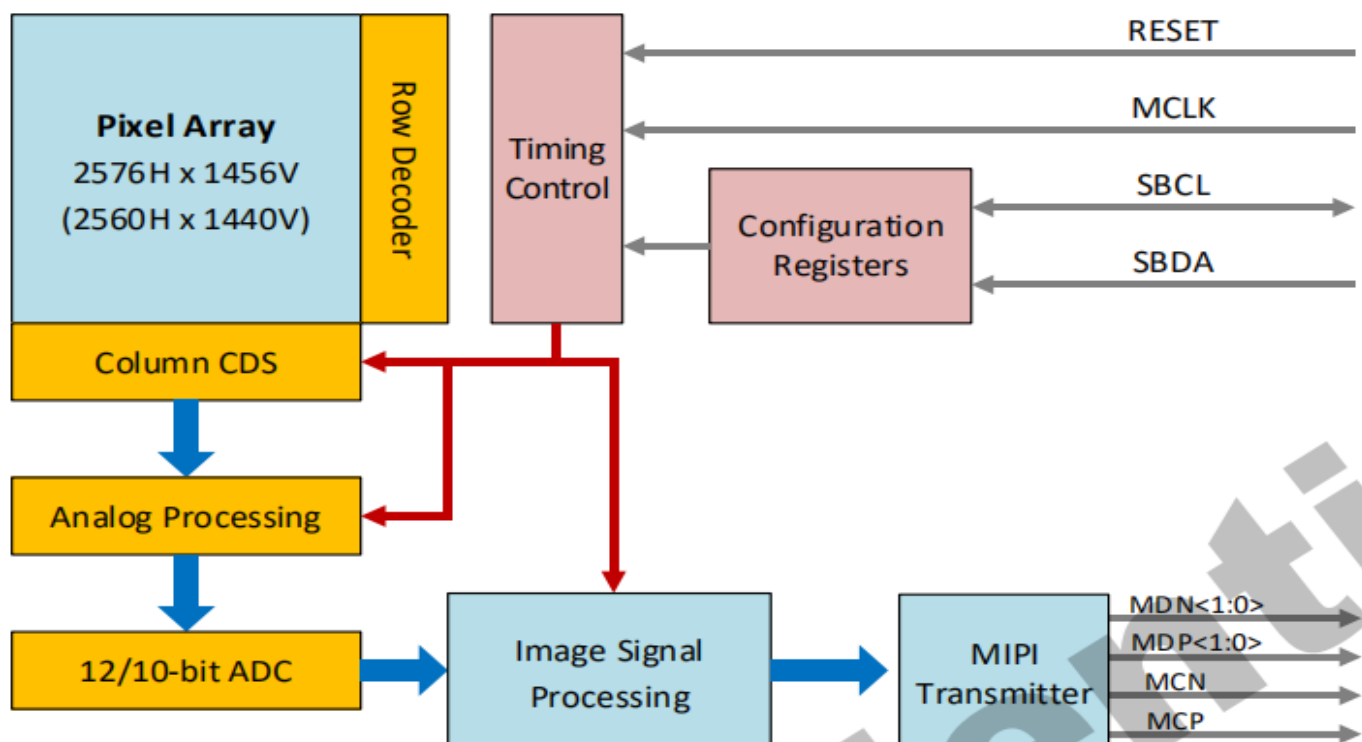
- PLL support
- Support frame sync
- MIPI(2_lane) interface support
- Horizontal vertical mirror
- Image processing module
- OTP support(2Kbits total)
- Package: CSP

4. 应用 (Application)

- ◆ Surveillance Cameras
- ◆ Smart Home Systems
- ◆ IoT Cameras
- ◆ Car Driving Records
- ◆ Video telephony and conferencing equipment

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5. 系统框架

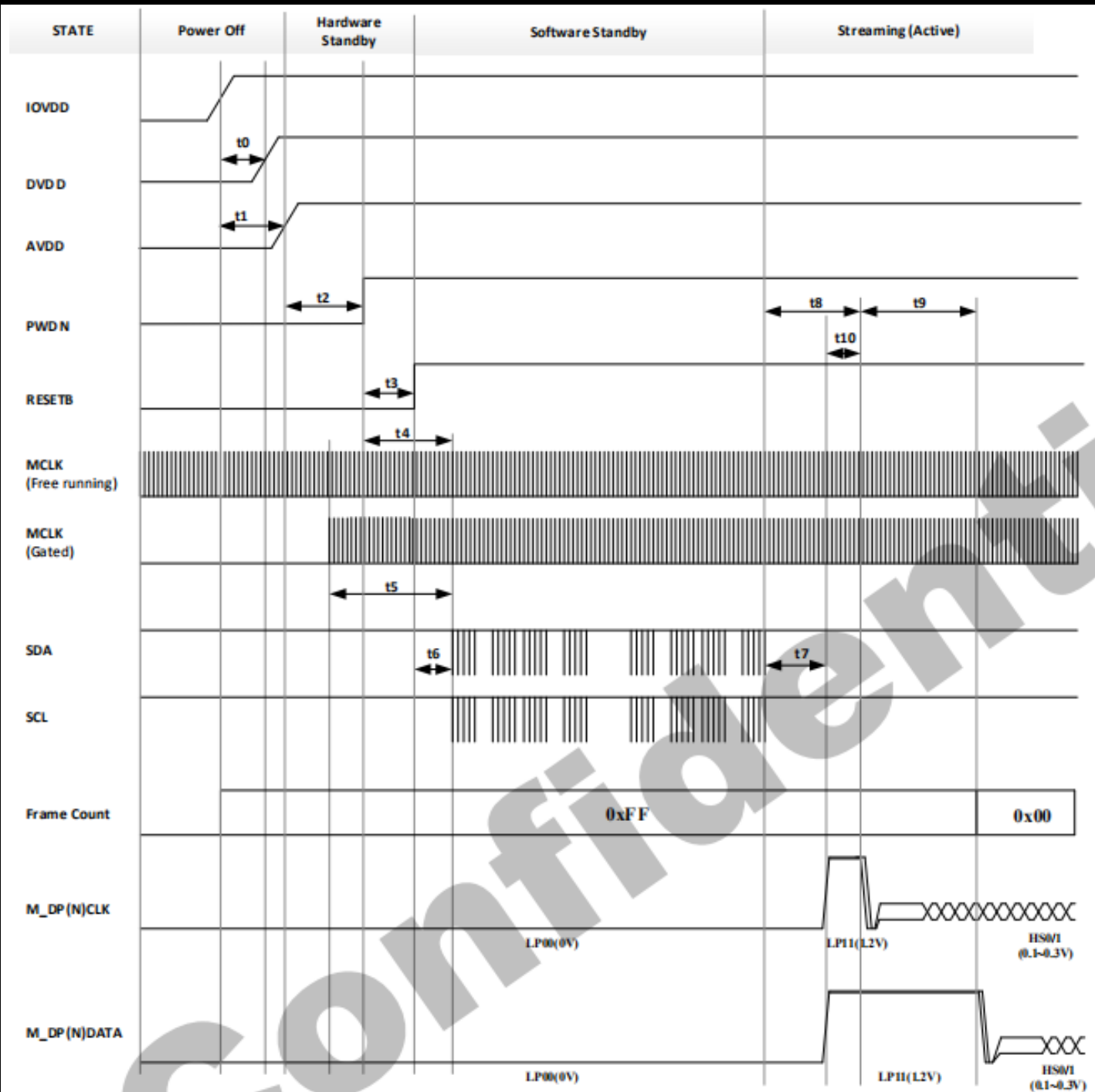


6. 摄像头初始化

6.1 上电时序

Parameter	Description	Min.	Max	Unit
t0	From IOVDD to DVDD12	50	-	μs
t1	From IOVDD to AVDD28	50	-	μs
t2	From AVDD28 to PWDN pull high	0	-	μs
t3	From PWDN pull high to RESETB pull high	0	-	μs
t4	PWDN rising to first I2C transaction	50	-	μs
t5	Minimum No. of MCLK cycles prior to the first I2C transaction	1200	-	MCLK
t6	From RESETB rising to first I2C transaction	50	-	μs
t7	PLL start up/lock time	-	1	ms
t8	Entering streaming mode – First frame start sequence (fixed part)		10	ms
t9	Entering streaming mode – First frame start sequence (variable part)	-		lines

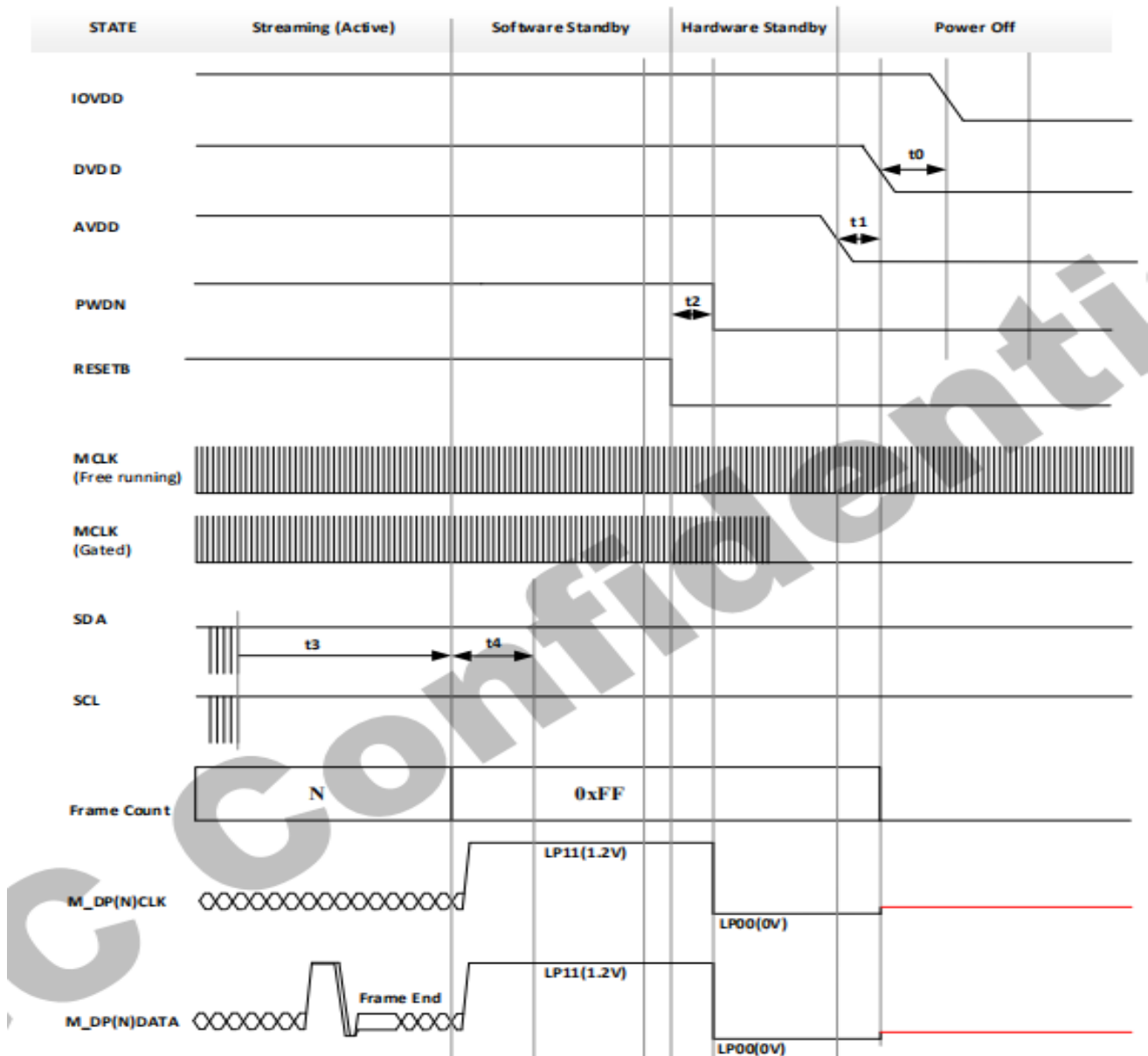
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6. 2. 下电时序 (Power Off Sequence)

Parameter	Description	Min.	Max.	Unit
t0	From DVDD12 pull down to IOVDD pull down	0	-	μs
t1	From AVDD28 pull down to DVDD12 pull down	0	-	μs
t2	From RESETB pull low to PWDN pull low	0	-	μs
t3	Enter Software Standby CCI command – Device in Software Standby mode	0	-	μs
t4	Minimum number of MCLK cycles after the last CCI transaction or MIPI frame end code.	2000		MCLK



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6.3 直流参数

Item	Symbol	Min	Typ	Max	Unit
Analog	I_{AVDD}	—	29.96	—	μA
Digital	I_{DVDD}	—	772	—	μA
I/O	I_{IOVDD}	—	10.56	—	μA

@30fps

RST: L, PWND: L

Typ. Analog: 2.8V, Digital: 1.2V, I/O: 1.8V, $T_j=25^{\circ}C$

Item	Symbol	Min	Typ	Max	Unit
Analog	I_{AVDD}	—	TBD	—	μA
Digital	I_{DVDD}	—	TBD	—	μA
I/O	I_{IOVDD}	—	TBD	—	μA

@60fps

RST: L, PWND: L

Typ. Analog: 2.8V, Digital: 1.2V, I/O: 1.8V, $T_j=25^{\circ}C$

Item	Symbol	Min	Typ	Max	Unit
Analog	I_{AVDD}	—	TBD	—	μA
Digital	I_{DVDD}	—	TBD	—	μA
I/O	I_{IOVDD}	—	TBD	—	μA

@30fps

Power off, $T_j=25^{\circ}C$

Item	Symbol	Min	Typ	Max	Unit
Analog	I_{AVDD}	—	TBD	—	μA
Digital	I_{DVDD}	—	TBD	—	μA
I/O	I_{IOVDD}	—	TBD	—	μA

@60fps

Power off, $T_j=25^{\circ}C$

Item	Symbol	Min	Typ	Max	Unit
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Analog	I_{AVDD}	—	36.6	—	mA
Digital	I_{DVDD}	—	36.8	—	mA
I/O	I_{IOVDD}	—	4.5	—	mA

@30fps

INCLK: 27MHz, Frame rate: 30fps, Raw 10

Typ. Analog: 2.8V, Digital: 1.2V, I/O:1.8V, $T_j=25$

Item	Symbol	Min	Typ	Max	Unit
Analog	I_{AVDD}	—	TBD	—	mA
Digital	I_{DVDD}	—	TBD	—	mA
I/O	I_{IOVDD}	—	TBD	—	mA

@60fps

INCLK: 27MHz, Frame rate: 30fps, Raw 10

Typ. Analog: 2.8V, Digital: 1.2V, I/O:1.8V, $T_j=2$

Item	Symbol	Min	Typ	Max	Unit
Power supply	V_{AVDD}	2.7	2.8	3.3	V
	V_{DVDD}	1.15	1.2	1.3	V
	V_{IOVDD}	1.7	1.8	3.3	V

Digital Input(Conditions: AVDD = 2.8V, DVDD = 1.2V, IOVDD = 1.8V)

Input voltage HIGH	V_{IH}	0.7*VIF			V
Input voltage LOW	V_{IL}			0.3*VIF	V

Digital Output(Conditions: AVDD = 2.8V, IOVDD = 1.8V, standard Loading 25PF)

Output voltage HIGH	V_{OH}	0.8*VIF			V
Output voltage LOW	V_{OL}			0.2*VIF	V

7. 摄像头模组规格 (Camera module specification)

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项目 (Item)		规格 (Specification)
模组型号 (Module No.)		LH-DPX-001-4663-V4.0
基板 (Substrate)		PCB
模组尺寸 (Module size)		48*27.5*21.87mm
芯片型号 (Sensor Type)		GC4663-C41Y0
有效像素阵列 (Array Element)		2560H*1440V
像素尺寸 (Pixel Size)		2.0um x 2.0um
电源需求 (Power Supply)	模拟电源 (AVDD)	2.7V~2.9V
	数字电源 (DVDD)	1.15~1.25V
	输入输出 (I/O)	1.7V~1.9V
温度范围 (Temperature Range)	工作温度范围	-20° C~80° C
	最佳工作温度范	0° C~60° C
最大传输帧频 (Max Frame rate)		60fps@full size
输出格式 (Output Formats)		Raw Bayer 12bit/10bit
封装形式 (Encapsulation mode)		CSP

8. 摄像头镜头规格 (Camera LENS specification)

项目 (Item)	规格 (Specification)
镜头尺寸 (Lens size)	1/3'
镜片结构	2G+4P+IR
光圈数 (F/No)	2.4±5%
焦距 (EFL)	2.02mm
视场角 (Optical FOV)	D:113.4° /H:104.6° /V:70°

9. 摄像头结构图纸 (Camera Module Configuration)

RoHS	
NO.	NAME
#1	SDA
#2	SCL
#3	DGND
#4	PWDN
#5	RST
#6	DGND
#7	MCN
#8	MCP
#9	DGND
#10	MCLK
#11	DGND
#12	MDNO
#13	MDP0
#14	MDN1
#15	MDP1
#16	MDN2 NC
#17	MDP2 NC
#18	MDN3 NC
#19	MDP3 NC
#20	DGND
#21	+3.3V
#22	NC
#23	+3.3V
#24	NC

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