



LEOPARD IMAGING INC

# LI-IMX172-MIPI

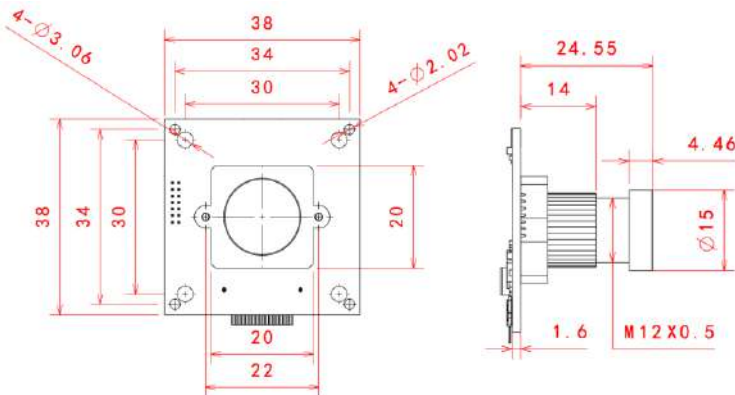
## Data Sheet

### Key Features

- Sony Diagonal 7.81mm (Type 1/2.3) CMOS Image Sensor IMX172
- Optical format: 1/2.3"
- Active pixels: 4168H x 3062V
- Pixel size: 1.55 um x 1.55 um
- Color camera
- Interface: MIPI output
- Support M12 lens
- Module Size: 38mm x 38mm
- Weight: 12g
- Part#: **LI-IMX172-MIPI**



### Dimensions

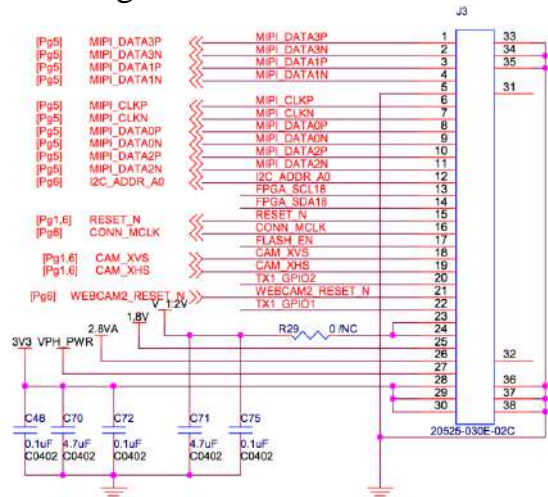


### Lens Spec

- Model: YC-155N
- Focal length: 2.8 mm
- Aperture, F/#: 2.0
- Built in 650nm IR cut filter
- FOV (D/H/V): 120 °/ 107 °/64 °
- TV Distortion: < 12%
- Mount: M12 x P0.5

### Interfaces

- Part#: 20525-030E-02C
- Number of Positions: 30
- Mating cable: LI-FAW-1233-T1



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## DC Characteristics

### Current Consumption and Gain Variable Range

( $V_{ADD} = 2.9\text{ V}$ ,  $V_{DDD1} = 1.3\text{ V}$ ,  $V_{DDD2} = 1.9\text{ V}$ ,  $T_j = 60\text{ }^\circ\text{C}$ , Reference Gain (0 dB), approximately 12.40 M pixels readout (MODE0), 34.97 frame/s)

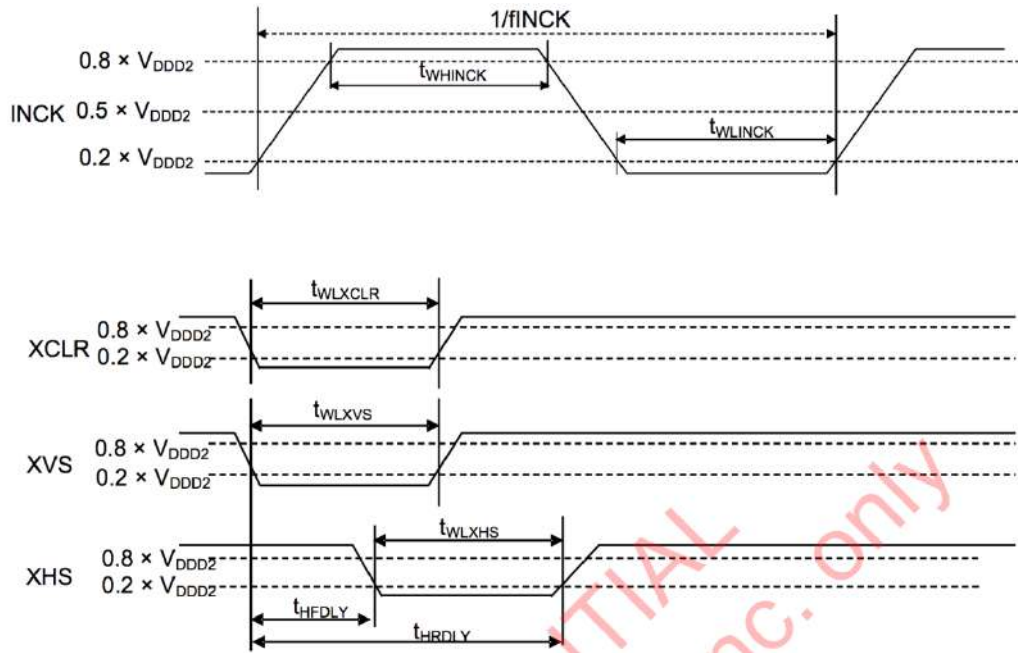
Item	Symbol	Min.	Typ.	Max.	Unit	Remarks
Current consumption (Analog)	$I_{ADD}$	—	—	101	mA	
Current consumption (Digital)	$I_{DDD1}$	—	—	187	mA	
Current consumption (I/O)	$I_{DDD2}$	—	—	24	mA	
Standby current (Analog)	$I_{ADDSTB}$	—	—	150	$\mu\text{A}$	In the dark
Standby current (Digital)	$I_{DDD1STB}$	—	—	4800	$\mu\text{A}$	In the dark
Standby current (I/O)	$I_{DDD2STB}$	—	—	50	$\mu\text{A}$	In the dark
PGA gain variable range	PGAG	0	—	27	dB	

### Supply Voltage and I/O Voltage

Item	Pins	Symbol	Min.	Typ.	Max.	Unit	Remarks	
Supply voltage	Analog	$V_{DDSUB}$ , $V_{DDHCM}$ , $V_{DDHVS}$ , $V_{DDHPX}$ , $V_{DDHDA}$ , $V_{DDHCP}$	$V_{ADD}$	2.70	2.80	2.90	V	
	Digital	$V_{DDL CN1}$ and $V_{DDL CN2}$ , $V_{DDL SC1}$ and $V_{DDL SC2}$ , $V_{DDL PL}$	$V_{DDD1}$	1.10	1.20	1.30	V	
	I/O	$V_{DDMIO}$ , $V_{DDMLV1}$ and $V_{DDMLV2}$	$V_{DDD2}$	1.70	1.80	1.90	V	
Digital input voltage	XCLR, INCK, SCK, SDI, XCE, XHS, XVS	$V_{IH}$	$0.8 \times V_{DDD2}$	—	$V_{DDD2} + 0.1$	V		
		$V_{IL}$	-0.1	—	$0.2 \times V_{DDD2}$	V		
Digital input leakage current		$I_{LI}$	-1.0	—	1.0	$\mu\text{A}$	( $V_1 = -0.1$ to $V_{DDD2} + 0.1\text{ V}$ )	



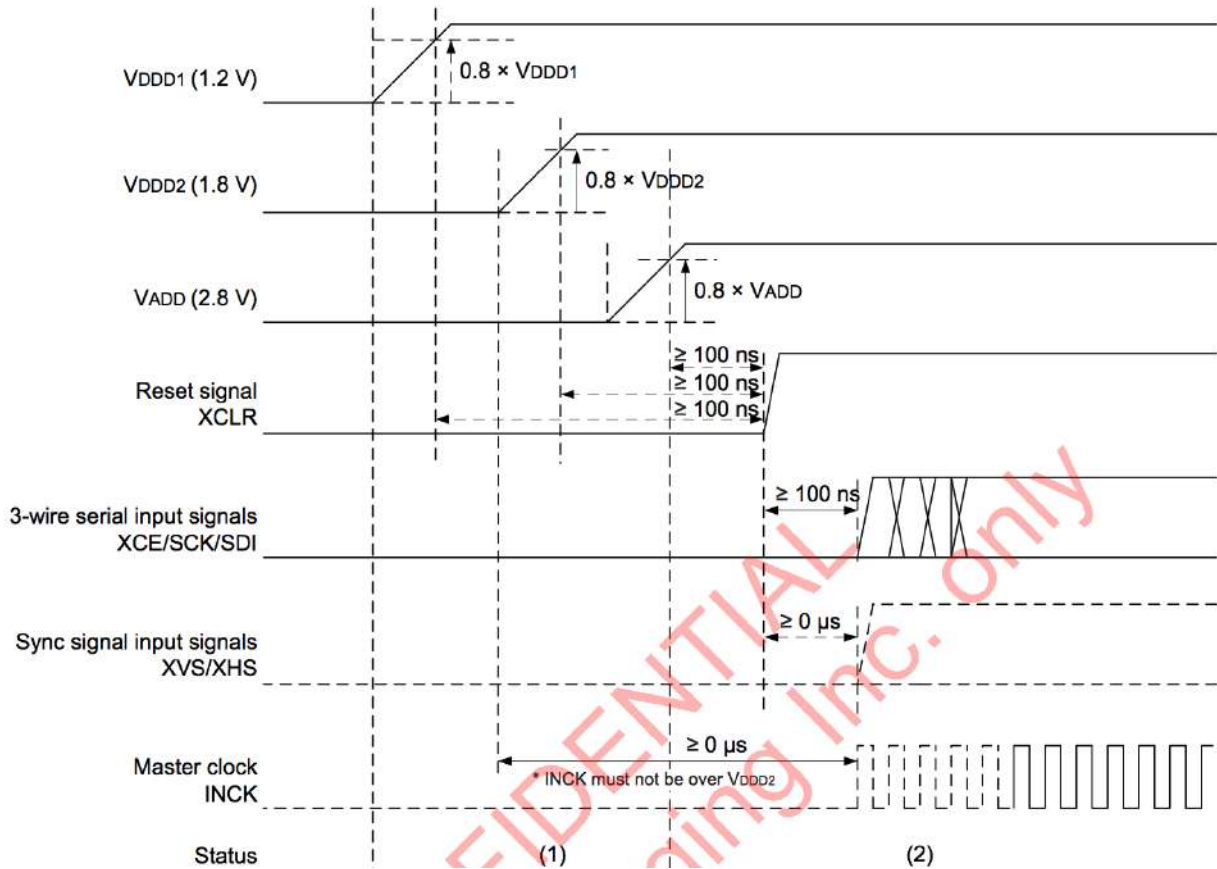
## AC Characteristics



Item	Symbol	Min.	Typ.	Max.	Unit
INCK clock frequency	$f_{INCK}$	71.0	72.0	73.0	MHz
INCK Low level pulse width	$t_{WLINCK}$	5	—	—	ns
INCK High level pulse width	$t_{WHOMCK}$	5	—	—	ns
Clock duty	—	40	50	60	%
XVS Low level pulse width	$t_{WLXVS}$	$4/f_{INCK}$	—	$12/f_{INCK}$	$\mu s$
XHS Low level pulse width	$t_{WLXHS}$	$4/f_{INCK}$	—	$12/f_{INCK}$	$\mu s$
XVS fall – XHS fall width	$t_{HFDLY}$	0	—	—	$\mu s$
XVS fall – XHS rise width	$t_{HRDLY}$	$4/f_{INCK}$	—	$12/f_{INCK}$	$\mu s$
XCLR Low level pulse width	$t_{WLXCLR}$	100	—	—	ns



# Power-on Sequence

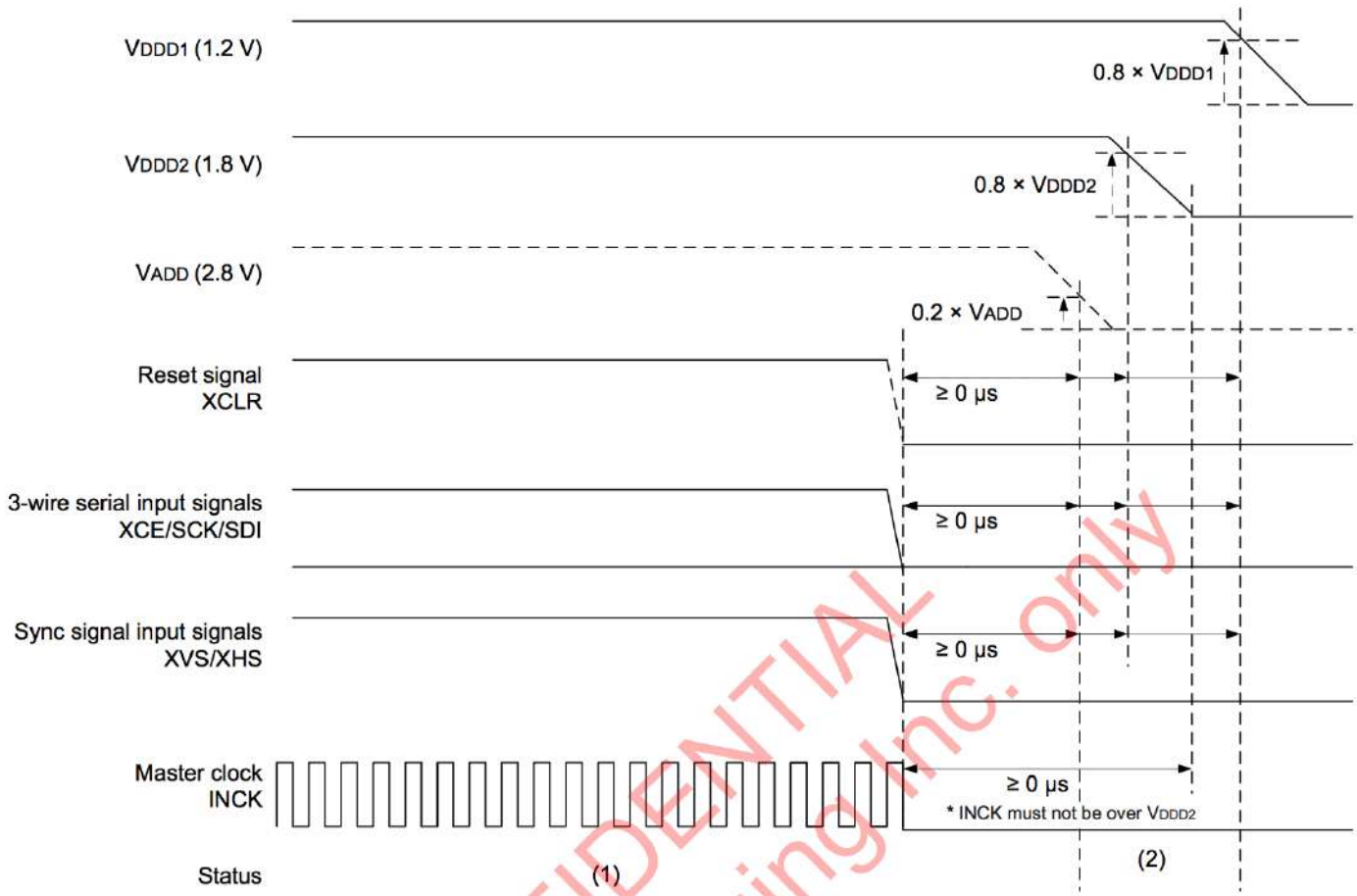


Period name	Remarks
(1) Power stabilization time	All input signals are at Low level. There are no constraints of the power-on sequence with V <sub>ADD</sub> , V <sub>DDD1</sub> , V <sub>DDD2</sub> .
(2) Standby cancel register communication	Start the standby cancel sequence after the last power supply in V <sub>ADD</sub> , V <sub>DDD1</sub> , V <sub>DDD2</sub> .





# Power-off Sequence



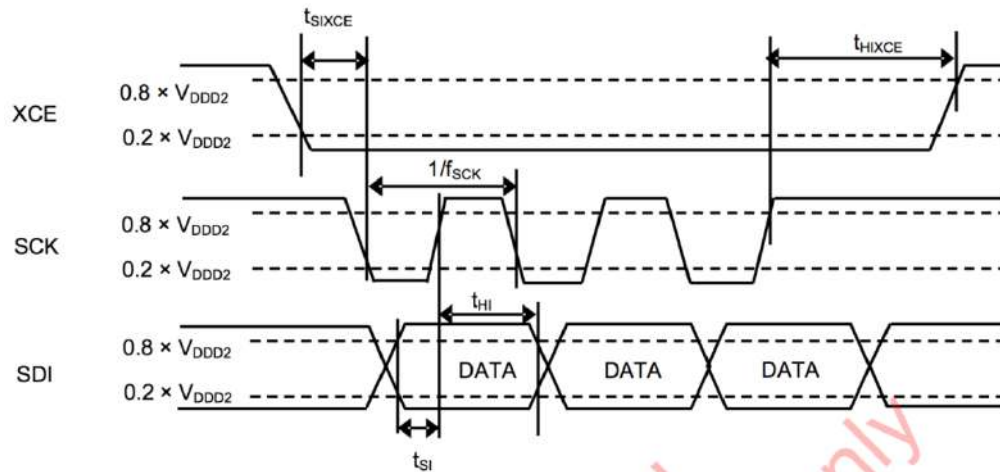
Period name	Remarks
(1) Pixel output period	Pixel signal output period
(2) Power-off time	Turn the power supplies off after "L" level is set to all input signals. There are no constraints of the power-off sequence with $V_{ADD}$ , $V_{DD1}$ , $V_{DD2}$ .



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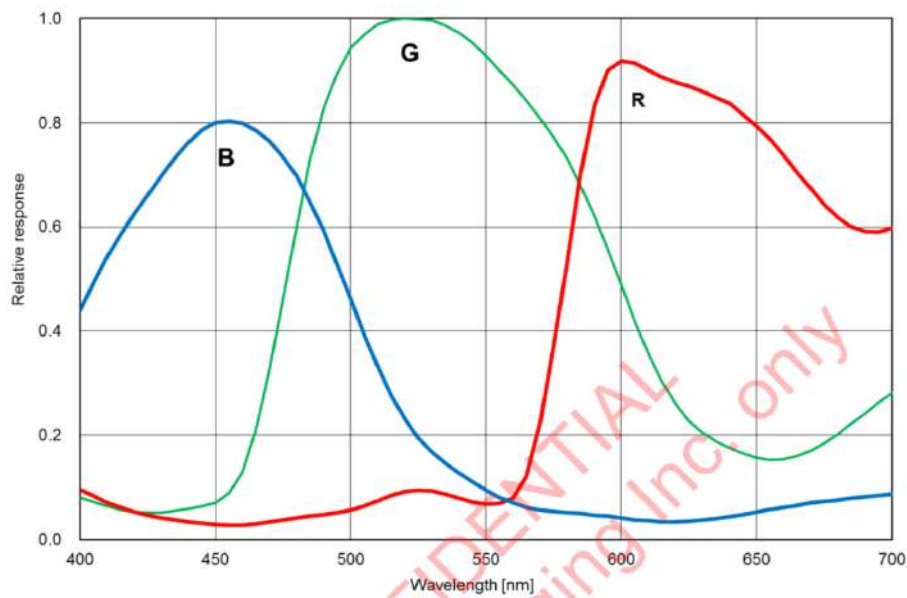
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## Serial Control Interface Timing



Item	Symbol	Min.	Typ.	Max.	Unit
SCK clock frequency	$f_{SCK}$	—	—	36	MHz
SDI input setup time	$t_{SI}$	7	—	—	ns
SDI input hold time	$t_{HI}$	7	—	—	ns
XCE input setup time	$t_{SIXCE}$	10	—	—	ns
XCE input hold time	$t_{HIXCE}$	10	—	—	ns

## Spectral Sensitivity Characteristics



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## YC-155N 2M Fixed Focal Lens

**RAY'S Optics (YOUNG Optics Group)**—is a professional designer and manufacturer of various lenses for different applications. We provide the best industrial grade Lens, either for consumer or professional surveillance solution market, such as IP Camera and CCTV Camera.

### Product Features

- ✓ Mega Board Fixed Lens
- ✓ 1/2.7" 2M CCD/CMOS sensor
- ✓ 2.8 mm Focal Length
- ✓ F/#2.0
- ✓ M12 Mount type

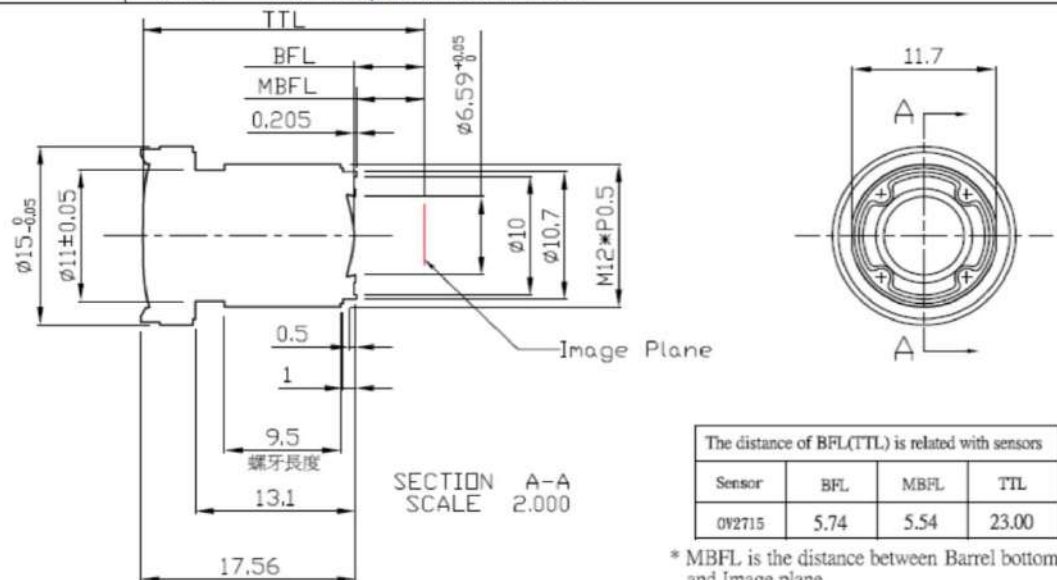


### Product Specification

#### General Specification

<b>Image Diameter</b>	Max Image Circle 6.71 mm
<b>Sensor</b>	1/2.7", 1/3"
<b>Mount Type</b>	M12
<b>Optical Specification</b>	
<b>Focal Length</b>	2.8mm
<b>Max. Aperture Ratio</b>	F/# 2.0
<b>Field Of View</b>	1/2.7" D:~120°; H:107°; V:64° (for image area: 5.856mm*3.276mm) 1/3" D:~109°; H:88°; V:72° (for image area: 4.766mm*3.779mm)
<b>Maximum Chief Ray Angle</b>	<10°
<b>Optical Overall Length</b>	22.85 mm (in air)
<b>TV Distortion</b>	<12%
<b>Back Focal Length (BFL)</b>	5.587mm (in air)
<b>IR Corrective (Day &amp; Night)</b>	Yes
<b>ROHS (Green Product)</b>	Comply
<b>Resolution</b>	Center 200 line pairs/mm or more Ø4.5 125 line pairs/mm or more

YC-155N: Without IR-Filter



The distance of BFL(TTL) is related with sensors			
Sensor	BFL	MBFL	TTL
0V2715	5.74	5.54	23.00

\* MBFL is the distance between Barrel bottom and Image plane



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