

☒ New ☐ Rev



SPECIFICATIONS

CUSTOMER :

DESCRIPTION : IR SENSOR MODULE

MODEL NO. : OS1200MW-A1

ISSUED DATE :

ISSUED DEPT.	ISSUE	REVIEW	REVIEW	APPR'D



Company Name : SHENZHEN OS-OPTO TECHNOLOGY CO;LTD

ADDRESS : world peak 5 floor building ,Qiaotao,
Fu Yong Town, Bao'an District, Shenzhen ,Guangdogn,China.

◆ Description

The OS1200MW.. is a miniaturized sensor for receiving various kinds of modulated IR signals.

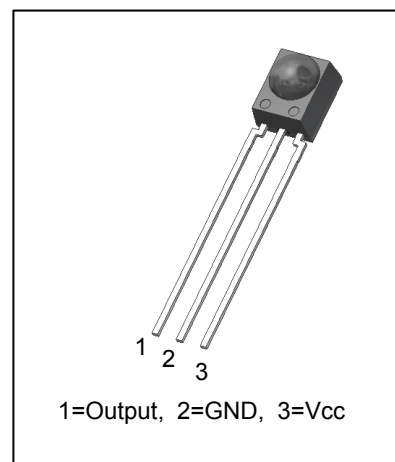
A PIN Photodiode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.

The module has excellent performance even in disturbed ambient light application and provides protection against uncontrolled output pulses.

This component has not been qualified according to automotive specifications.

◆ Features

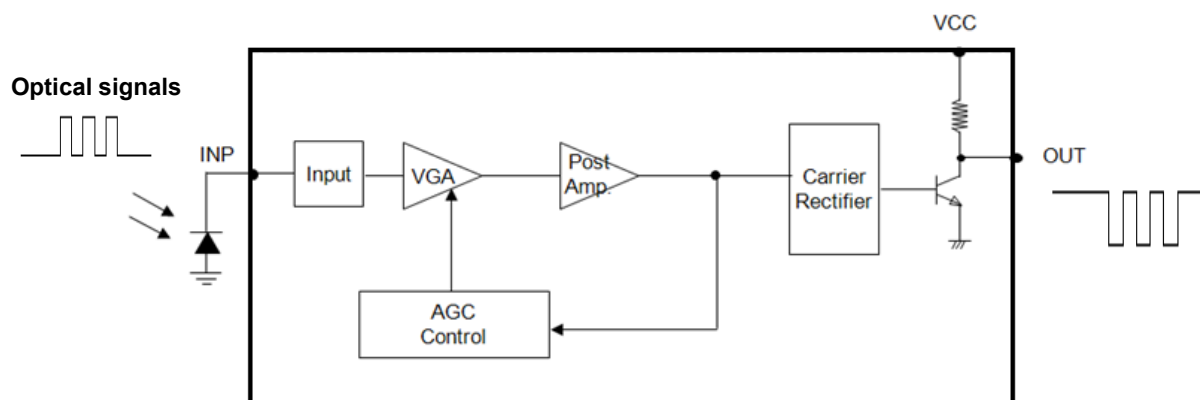
- Photo detector and preamplifier in one package
- IR Emitters wavelength : 940nm
- Wide operating voltage : 2.7V ~ 5.5 V
- AC coupled response from 20kHz to 60kHz
- Insensitive to supply voltage ripple and noise
- Improved shielding against EMI (Built-in Shield Case)
- Improved immunity against ambient light (AGC Circuit)
- Open collector output (Built-in inter pull-up resistor – typ. 52 k Ω)



◆ Applications

- 3D Goggle
- Remote Control Equipment

◆ Block Diagram



◆ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	VCC	0	6.0	V
Supply Current	ICC	0	3.0	mA
Output Voltage	Vout	0	6.0	V
Output Current	Iout	0	2.5	mA
Storage Temperature	Tstg	-30	85	°C
Soldering Temperature	Tsd	260°C ±5°C, Max 10 sec		°C

* Stress above those listed under “Absolute Maximum Ratings” may cause permanent damage of device. This is stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for longer periods may affect device reliability.

◆ Recommended operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Voltage	VCC	2.7	-	5.5	V
Input Frequency	fin	20	-	60	kHz
Operating temperature	Tamb	-20	25	80	°C

◆ Electro-optical Characteristics

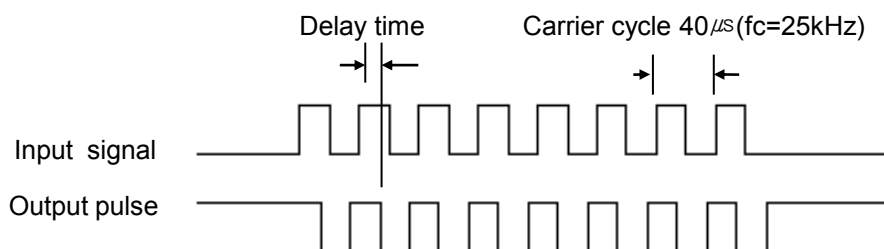
(Ta = 25°C)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Operating Voltage	V _{CC}	-		2.7	-	5.5	V
Supply Current	I _{CC}	No input signal	V _{CC} =5V	0.5	0.6	1.5	mA
			V _{CC} =3V		0.5		
Peak Wave Length (※1)	λ _P			-	940	-	nm
Output Low Voltage (※1)	V _{OL}	30 _{CM} over the ray axis		-	-	0.3	V
Output accuracy (※1)	Carrier pulse “N”	Carrier pulses N = 8		N-1	Input burst N	N+1	Counts
Arrival Distance (※1)	L	Fig. 1,2,3	±0°	-	10	-	m
			±30°	-	6	-	
Output Form	Active Low						

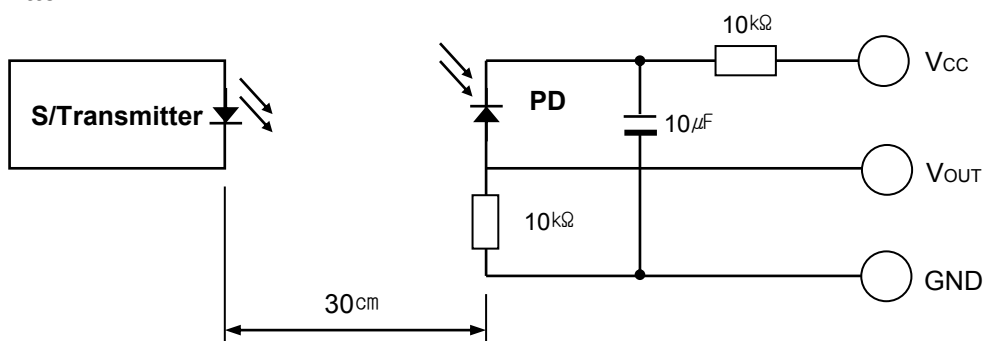
※ 1. 200μs(8 pcs) Carrier pulses is transmitted by standard(Fig.2, Fig.3) transmitter. However, it measured after the initial transmission pulse is 10(60ms) pulse.

◆ Measurement Conditions ($T_a=25^\circ$)

[Fig.1] Output Waveform (at freq.=25KHz)

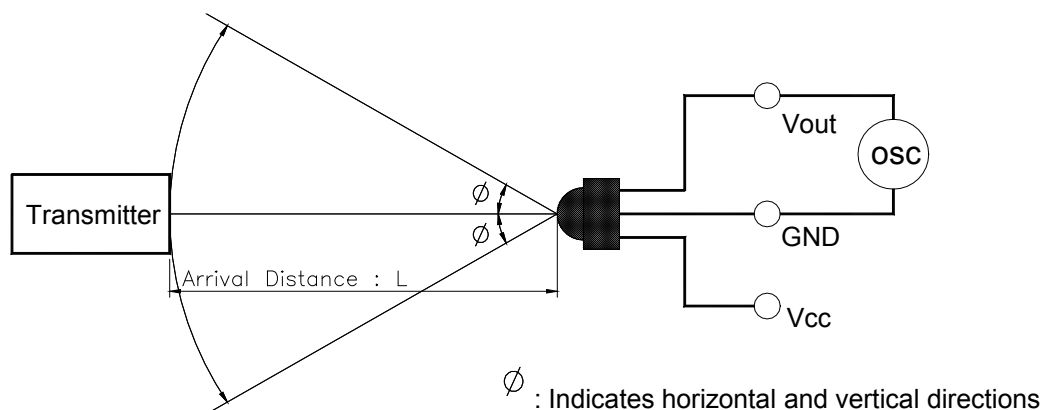


[Fig.2] Transmitter



※ The specifications shall be satisfied under the following conditions. The standard transmitter shall be specified of the burst wave form adjusted to V_{OUT} 200mVp-p upon P_o measuring circuit Standard Transmitter

[Fig.3] Test condition of arrival distance

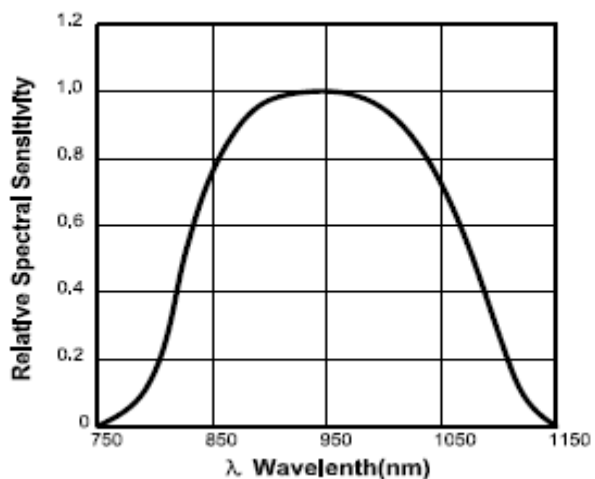


[Measurement condition for arrival distance]

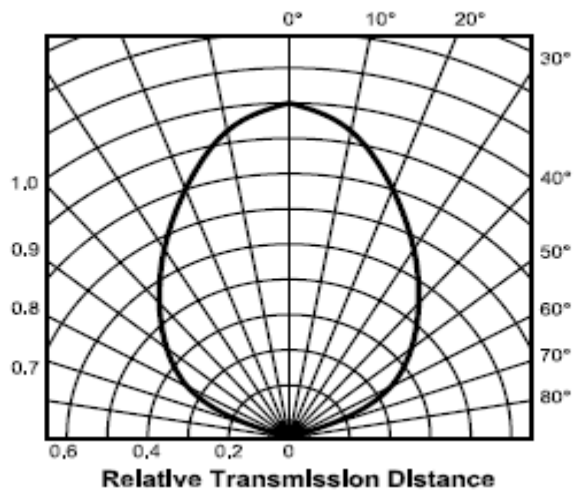
☞ Ambient light source : Detecting surface illumination shall be irradiate 200 ± 50 Lux under ordinary white fluorescence lamp without high frequency lighting

◆ Electrical / Optical Characteristics (Ta=25°)

[Fig.4] Relative Spectral Sensitivity



[Fig.5] Directivity



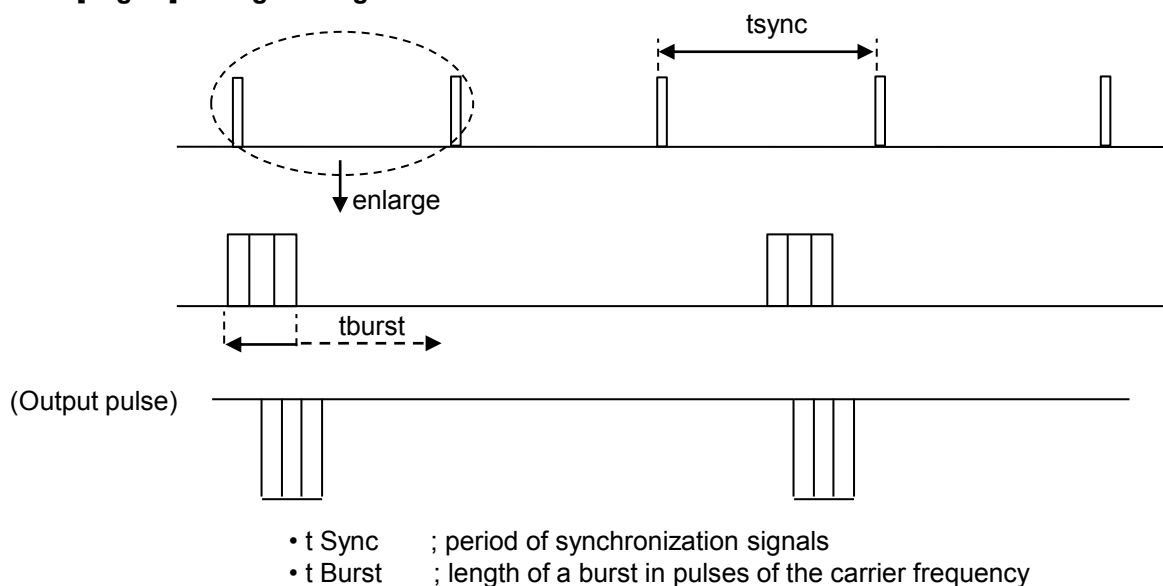
ESD Test Results

Parameter	Specification	Results
Machine Model	Min $\pm 200V$	$> \pm 400V$
Human Body Model	Min $\pm 2000V$	$> \pm 4000V$
Charged Device Model	Min $\pm 400V$	$> \pm 600V$

◆ Suitable Data format for NS1200MW Series ;

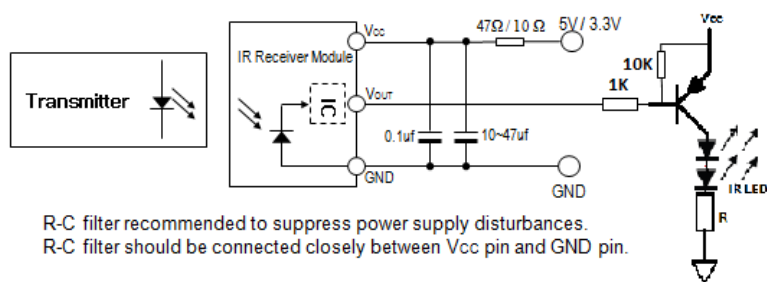
Item	Symbol	Time
Burst length	tburst	640 μ s max.
Sync period	t _{Sync}	≥ 2 ms

[Fig. 6] 3D Signal diagram

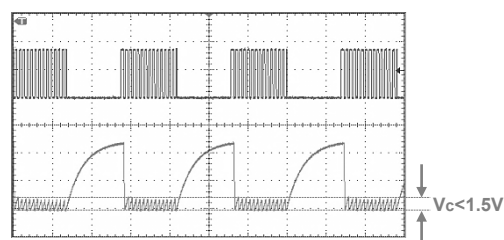


◆ Examples of application circuits

► Case : Demodulation application (with integrating circuit)



[Fig.7] Application circuit



[Fig. 8] Output wave form (Out-2)

* Note : Capacitance of the Case (C2 - Integration Capacitor)

Formula	$C2 = \frac{+Vs * \text{Carrier off Time}}{50k} , \quad \text{Carrier off Time} = \frac{(1 - \text{Carrier Duty})}{\text{Carrier Freq.}}$
Example	<p>Carrier Freq. = 25KHz , Carrier duty ratio = 50% , +Vs = 5.0V</p> <p>\Rightarrow Carrier off Time = $\frac{(1-0.5)}{25KHz} = 20\mu\text{sec}$ / $C2 = \frac{5V * 20\mu\text{sec}}{50k} = 2nF$</p>

◆ Reliability Test Items

Parameter	Test conditions		Remark
High Temperature	Ta=+70, Vcc=5.0V	t=240h	※1, ※2
Low Temperature	Ta=-20, Vcc=5.0V	t=240h	※1, ※2
High Temp./ High Humidity	Ta=+60℃ 90%RH, Vcc=5.0V	t=240h	※1, ※2
Heat Cycle	Ta=-30℃ (0.5h) to +80℃ (0.5h)	20 cycle	※2, ※3
Fall Test	Height=75cm, 3 times		※4

※ 1. Supply voltage of load test is 5V.

※ 2. Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal condition.

※ 3. Heat cycle test shall repeat above condition 20 times under no load.

※ 4. The test devices shall be dropped three time on the hard wooden board from a height of 75cm.

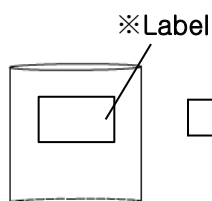
◆ Material Configuration

Parameter	Configuration	Remark
IC	Silicon(99%)	
Photo diode	Silicon(99%)	
Lead frame	Iron(99.5%), Silver(0.5%)	
Epoxy resin	Resin(55.5%), Hardener(45.5%)	
Silver epoxy	Silver(80%), Resin(10%), Hardener(10%)	
Bond wire	Gold(99.99%)	
Shield Case	Iron(99%), Tin(1%)	Inside

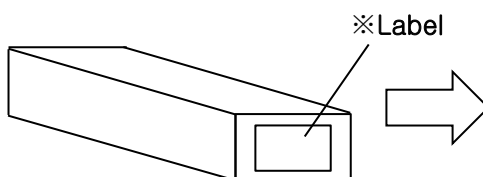
◆ Packing Method

	Size	Count
① Shielding Bag	170W x 150L (mm)	250 (pcs)
② Inner Box	160W x 390L x 90H (mm)	2,000 (pcs)
③ Out Box	330W x 500L x 400H (mm)	20,000 (pcs)

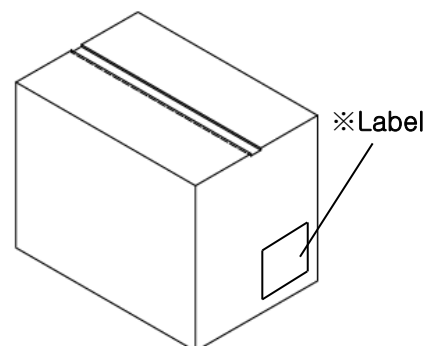
① Shielding Bag



② Inner Box



③ Out Box

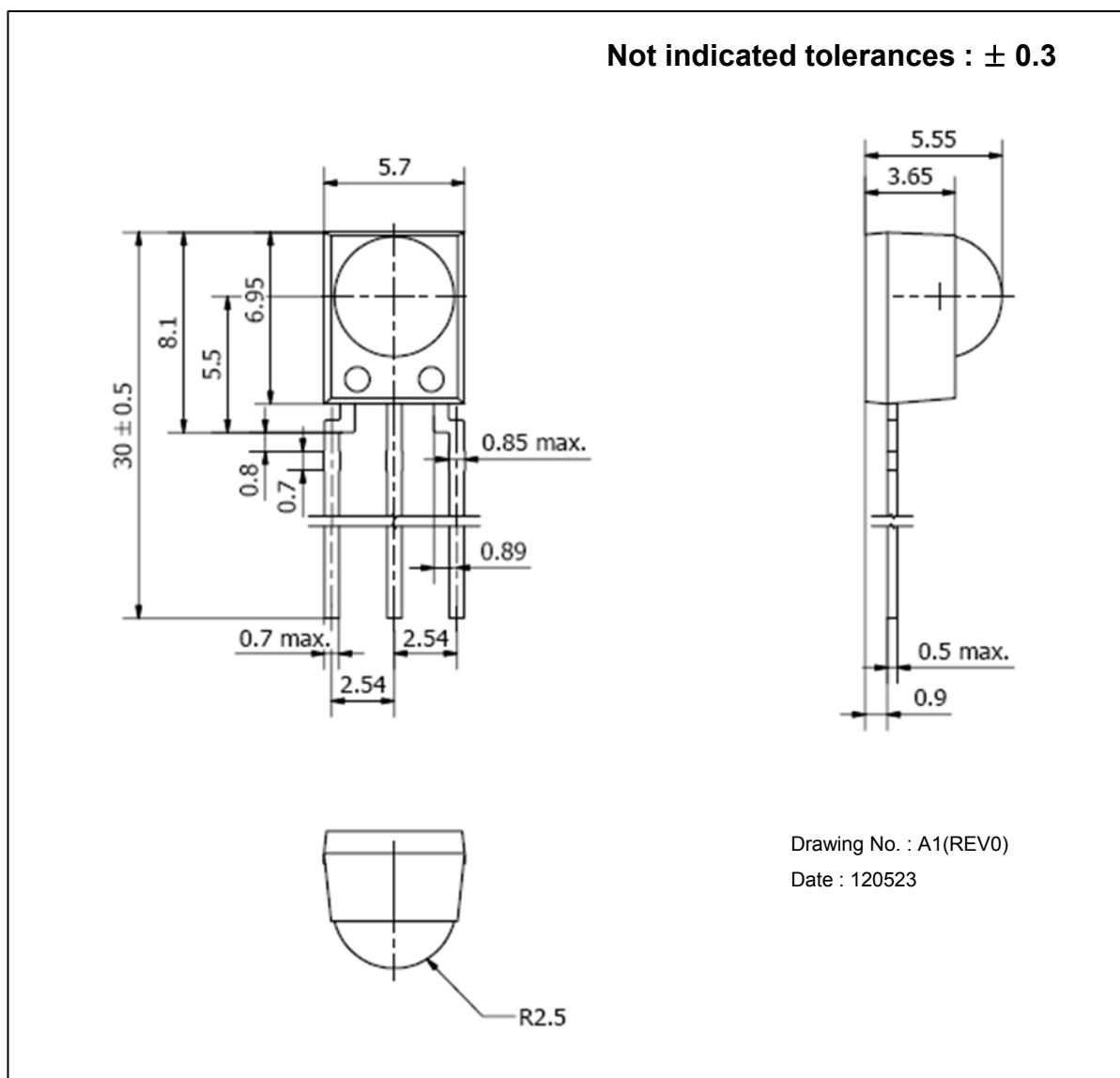


※Standard Label



◆ Appearance & Dimensions

1) Package Dimension(Unit : mm)



Drawing No. : A1(REV0)

Date : 120523