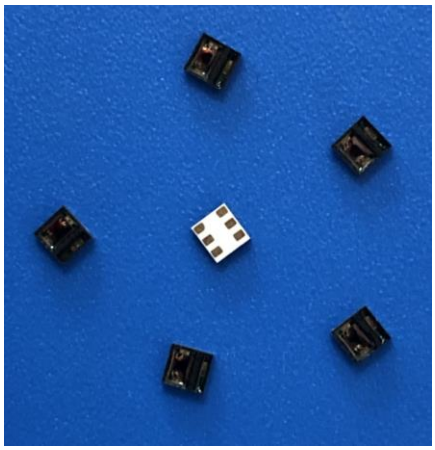
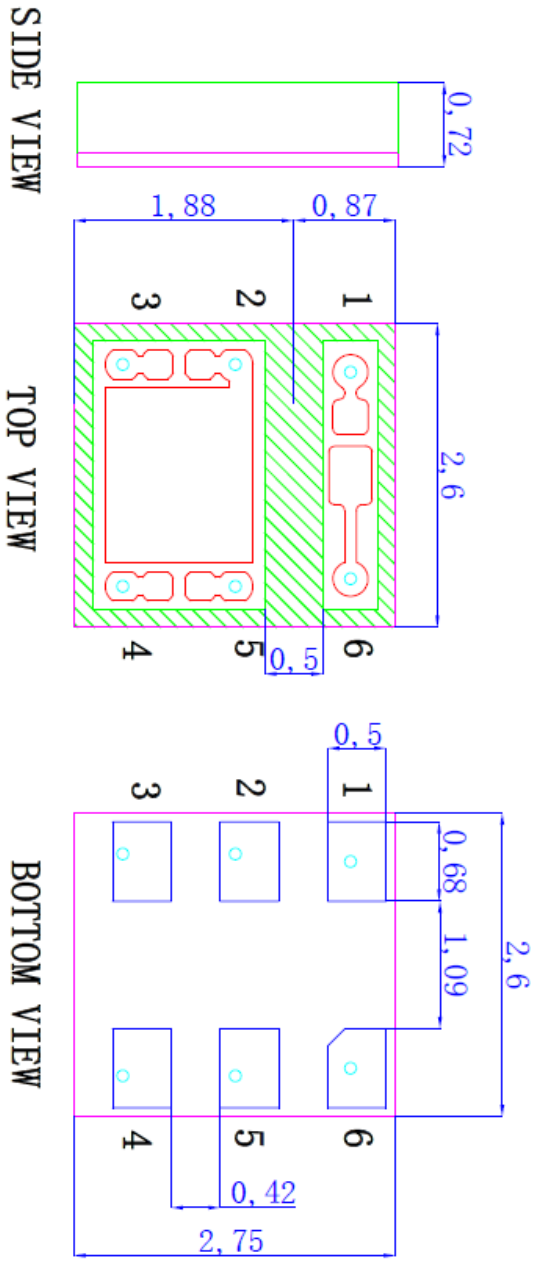
Encoder with optical reflection

OSR2980-15





1: Cathode (LED) **2: GND** **3: Vout 2**
4: Vout 1 **5: Vcc** **6: Anode (LED)**

All dimension are in millimeters.

Description

The OSR2980 series are the compact surface mount type pho
Reflector, which is built in a high brightness infrared LED and
PDIC. It can obtain two-phase (A, B) digital signals with the
Recommended striped reflector.

It is the optimum sensor for various kinds of rotation
Detection, which can contribute to low power consumption
Of the set and simplification of the design.

Features

* 2-Phase(Phases A and B) digital output
* Resolution: 150LPI, 180LPI, 300LPI, 360LPI
* Miniature, thin package:
*Pb free soldering re-flowing permitted: 255℃, 2 times
* Halogen free, Pb free, compliant with RoHS directive

Applications

*Rotation detection of the operation dial
* Optical encoder for office machine printer, scanner etc.

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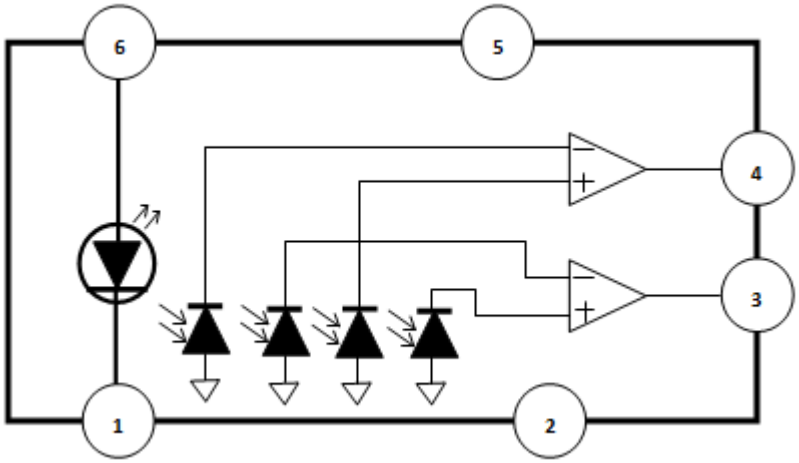
Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Emitter					
Forward Current	I_F		30		mA
Reverse Voltage	V_R		6		V
Power Dissipation	P_D		45		mW
Detector (PDIC)					
Supply Voltage	V_{cc}		7		V
Power Dissipation	P_{PDIC}		450		mW
Coupled					
Total Power Dissipation	P_D			50	mW
Operating Temperature	Topr	-30		+105	℃
Storage Temperature	Tstg	-30		+110	℃
Reflow Soldering Temperature	Tsol		255		℃

Electro-optical Characteristics (Ta=25℃)

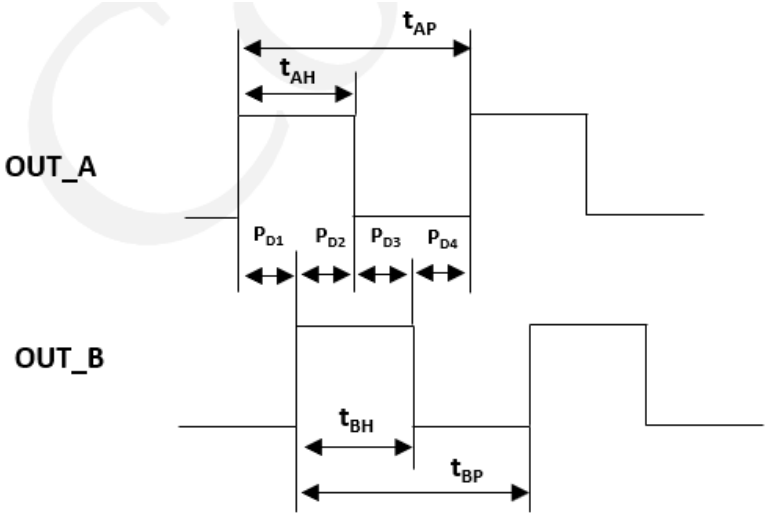
Parameter	Symbol	Min.	Typ.	Max.	Unit
Emitter					
Forward Voltage （If=5 mA）	V_F	0.9	1.4	1.8	mA
Reverse Current (Vr=6V)	I_R			10	uA
Peak Wavelength	λ_p		940		nm
Detector (PDIC)					
Supply Voltage	V_{cc}	2.7	5.0	5.5	V
Operation Current	I_{CC}		150	300	uA
Coupled					
Minimum Operation Current	Imin.		1	3	mA
High Level Output Voltage	Voh	2.4	4.9		V
Low level Output Voltage	Vol		0.1	0.4	V
Phase Difference of output Voltage	PD1-4	60	90	120	°
Duty Ratio	Duty	40	50	60	%
Rise Time	tr		0.05	0.1	us
Fall Time	tf		0.05	0.1	us
Frequency Response	Fmax		20	50	KHz

Block Diagrams:



① Cathode (LED)
② GND
③ Vout2
④ Vout1
⑤ Vcc
⑥ Anode (LED)

Test Circuit of Output Voltage:



$D_A = t_{AH} / t_{AP} * 100\%$

$D_B = t_{BH} / t_{BP} * 100\%$

Recommended Operating Conditions （scale pattern width）

LPI	Direct reflection	Non-reflection	unit
360	70	70	um
300	85	85	
180	140	140	
150	170	170	