Property of Lite-On Only

1. Description

This is a transmissive optical encoder sensor for closed-loop position detection system. It consists of a collimated Red LED and a multiple sets of photo detectors OEIC enclosed in a C-shape plastic housing.

The photo detectors IC is designed by CMOS process which with the features of low consumption current and wide operating voltage.

The collimated light source consists of a 650nm AlInGaP LED and a collimated lens. By the design of this highly collimated light source to cooperate with the photo detectors IC, this optical encoder is extremely tolerant to mounting misalignment.

1.1 Features

- 150 LPI (169μm) resolutions
- For linear and rotary applications
- Insensitive to radial and axial play
- TTL 3.3V or 5V CMOS compatible
- Two channels quadrature digital output, no signal adjustment required
- RoHS Compliance

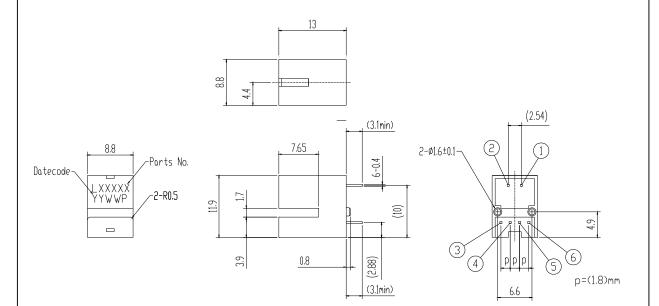
1.2 Applications

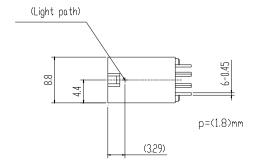
- Facsimile
- Printer
- Plotter
- Scanner
- Copier

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2. Outline Dimensions





- 1. Anode
- 2. Cathode
- 3. GND
- 4. V□B
- 5. VOA
- 6. Vcc

- 1. Unspecified tolerances shall be ±0.3
- 2. Dimensions in parenthesis are shown for reference.
- 3. Date code was expressed 4 digits at second row:

First 2 digits: Last 2 digits of production year.

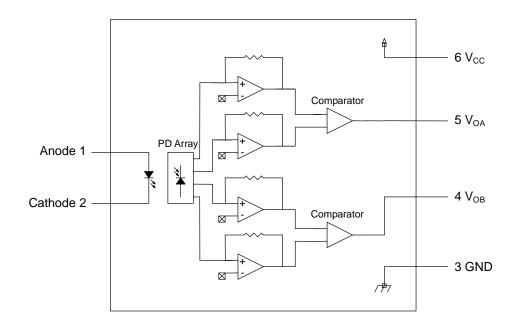
Last 2 digits: Production week.

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3. Rating and Characteristics

3.1 Block diagram



3.2 Absolute maximum ratings At Ta = 25℃

Parameter		Symbol	Rating	Unit	
Input	Forward current*	I _F	30	mA	
	Reverse voltage	V_R	5	V	
Output	Supply voltage	V _{CC}	7	V	
	Low level output current	I _{OL}	4	mA	
	Power dissipation*	Po	150	mW	
Operating temperature		T _{opr}	-10 to +70	S.	
Storage temperature		T _{stg}	-40 to +80	°C	
Soldering temperature**		T _{sol}	260	°C	

^{*} The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig 1,2.

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^{**} For 5 seconds.

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3.3 Electro-optical characteristics at Ta = 25℃

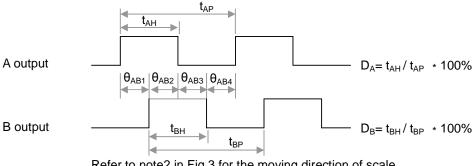
Parameter		Symbol	MIN.	TYP.	MAX.	Test Condition	Unit
Input	Forward voltage	V _F	-	1.8	2.4	I _F = 20mA	V
	Reverse current	I _R	ı	-	100	V _R = 5V	μA
	Driving current	I _D	10	16	25	$V_{cc} = 5V$	mA
Output	Operating supply voltage	V _{cc}	2.7	5.0	5.5	-	V
	Low level output voltage	V _{OL}	-	0.1	0.4	$V_{CC} = 5V$, $I_F = 10mA$ $I_{OL} = 4mA$	V
	High level output voltage	V _{OH}	2.4	4.9	-	$V_{CC} = 5V, I_F = 10mA$ $I_{OH} = 400uA$	V
	Current consumption	I _{CC}	-	1	3	$V_{CC} = 5V$, $I_F = 10mA$ All CH. at logic low	mA
Transfer characteristics *	Duty cycle	D _{A, B}	40	50	60		%
	Phase difference	θ _{AB1 to 4}	60	90	120	$V_{CC} = 5V$ $I_F = 10mA$	ō
	Response -	t _r	ı	0.1	1.0	f =10kHZ Z = 0.1 to 1.7mm	μs
		t _f	-	0.1	1.0		
	Response frequency	f _{MAX}	-	20	50	$V_{CC} = 5V$, $I_F = 10mA$	kHz

^{*} The test condition is according to Fig.3.

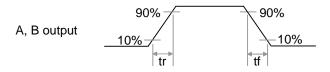
Transfer characteristics value does not include any error of linear scale.

Z stands for distance between scale surface (patterned surface) and detector holder surface.

3.4 Output waveform



Refer to note2 in Fig.3 for the moving direction of scale.



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Fig. 1 LED forward current vs. ambient temperature

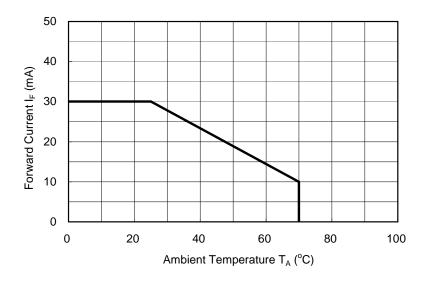
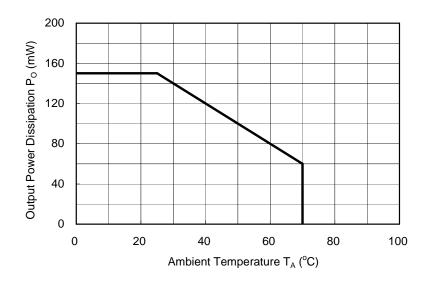


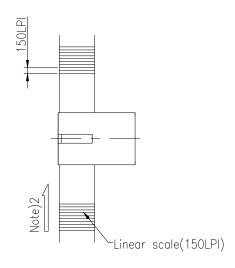
Fig. 2 LED Output power dissipation vs. ambient temperature

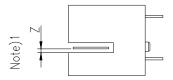


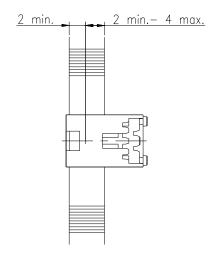
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Fig. 3 Test Conditions







Note:

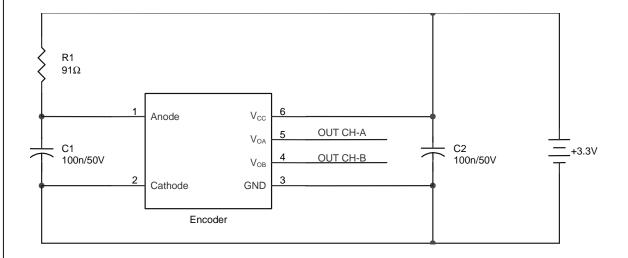
- 1. Distance between scale surface (patterned surface) and detector holder surface
- 2. The moving direction of scale against output waveform (Refer to 3.4)

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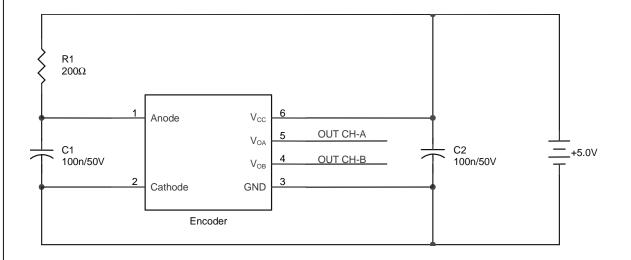
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4. Recommend application circuit

4.1 Apply 3.3 Volts



4.2 Apply 5.0 Volts



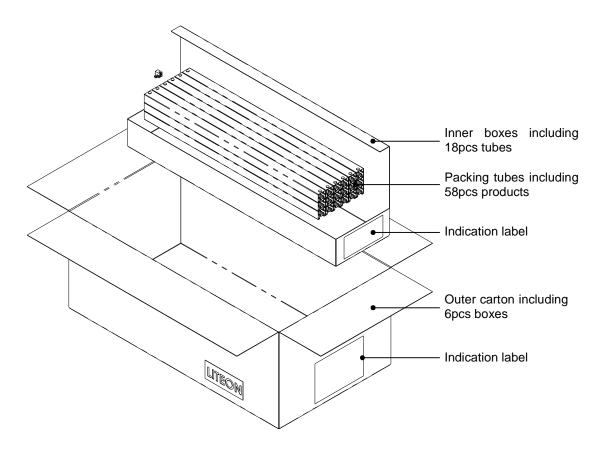
Note: Recommended no pull-up on Channel A & Channel B.

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5. Packing

5.1 Packing Format



5.2 Packing dimension

Outer Carton: 66.5 x 35.5 x 26.5 cm

Inner Box: 66 x 17 x 7.5 cm

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