

Photo IC for optical link

L12422-01SR

Transmitter photo IC for DC to 10 Mbps optical link

The L12422-01SR transmitter photo IC combines a 650 nm red LED, which is suitable for plastic optical fiber (POF) communication, and a drive IC. It has a mini molded lens suitable for coupling to the POF. It supports communication speeds ranging from DC to 10 Mbps.

Features

- Transmitter photo IC
- Peak emission wavelength: 650 nm
- Supports DC to 10 Mbps communication

Applications

- Data transmission in harsh, noisy environments, such as in FA, OA, and digital audio
- High-speed, short-distance data transmission

Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Supply voltage	V _{cc}		-0.5 to +4.0	V
Input voltage	V _{in}		-0.5 to V _{cc} + 0.5	V
Power dissipation*1	P _{max}		250	mW
Operating temperature	T _{opr}	No dew condensation*2	-20 to +85	°C
Storage temperature	T _{stg}	No dew condensation*2	-40 to +85	°C
Soldering conditions	T _{sol}		230 °C, within 5 s, at least 1.5 mm away from lead roots	-

*1: Power dissipation decreases at a rate of 1.75 mW/°C above T_a=25 °C.

*2: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Recommended operating conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V _{cc}	3.135	3.3	3.465	V
High level input voltage	V _{ih}	2	-	V _{cc} + 0.3	V
Low level input voltage	V _{il}	-0.3	-	0.8	

Electrical and optical characteristics (Ta=25 °C, Vcc=3.135 to 3.465 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Current consumption	I _{cc}	V _{in} =2.0 V	-	-	40	mA
Data transmission rate	f _D	Biphase signal (NRZ conversion)	DC	-	10	Mbps
Peak emission wavelength	λ _p		630	650	670	nm
Temperature coefficient of peak emission wavelength	T _c λ		-	0.13	-	nm/°C
Spectral half width (FWHM)	Δλ		-	20	30	nm
Fiber coupling optical output	P _o	Peak value*3	-10.0	-	0	dBm
Rise time	t _r	20 to 80%*3 *4 *5	-	-	20	ns
Fall time	t _f	80 to 20%*3 *4 *5	-	-	20	ns
Pulse width distortion	ΔT _w	50%*3 *4 *5	-15	-	+15	ns
Jitter	Δt _j	*3 *4 *5	-	-	20	ps

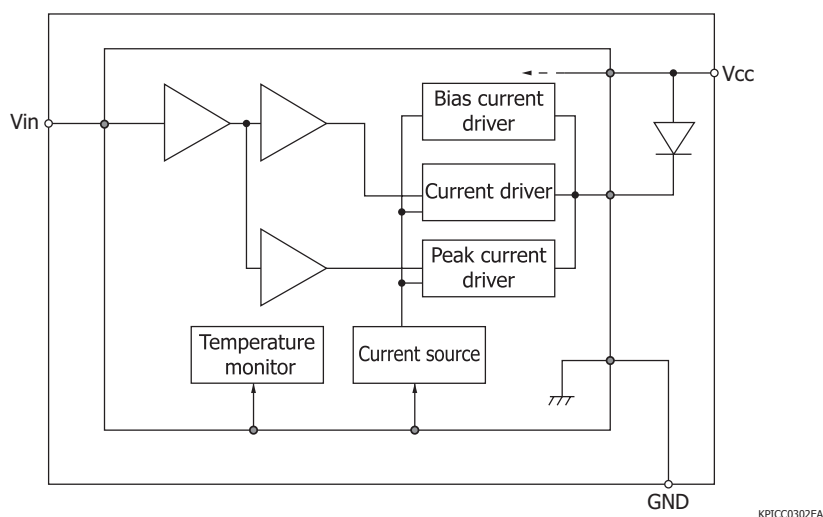
*3: For the fiber, use Mitsubishi Rayon GH4001 (φ1 mm, SI-POF, NA=0.5, 1 m).

*4: For the input signal, a 10 Mbps pseudo-random biphase signal is assumed.

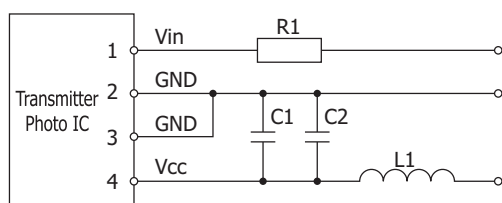
*5: Defined using the average at 50% duty ratio.

Note: Connect a 0.1 μF bypass capacitor within 3 mm of this element's lead (between Vcc and GND). In addition, connect a 10 μF capacitor.
 · Align the center axes of the fiber and package lens, and make the gap between the fiber and the optical reference plane of the lens surface 0.1 mm.

Block diagram

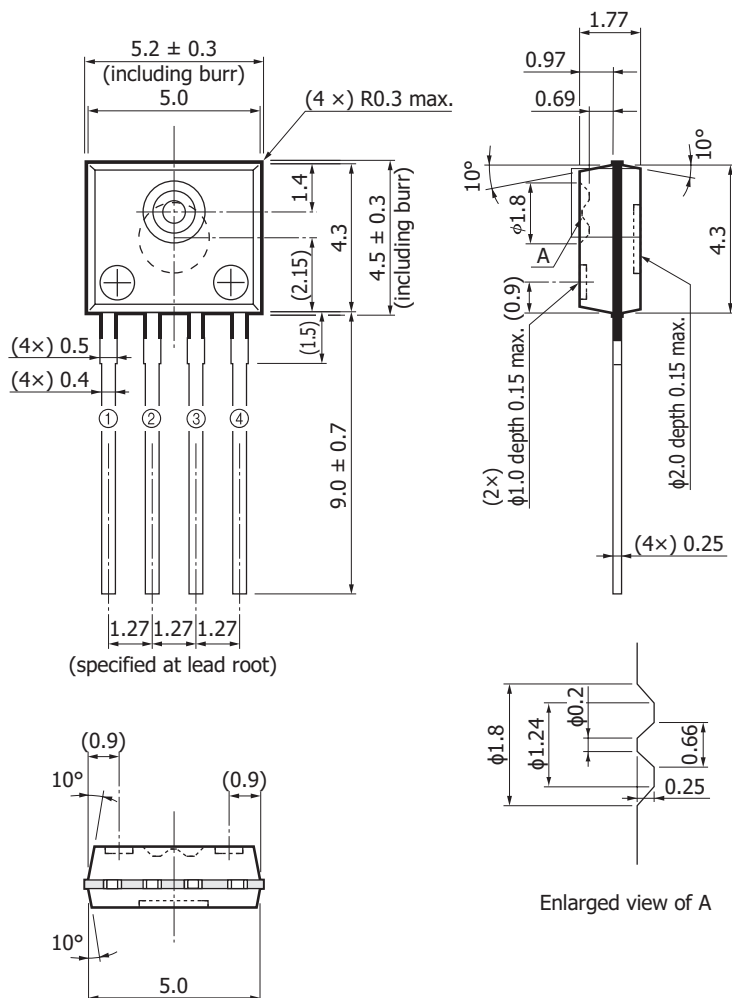


Connection example



Symbol	Component	Constant	Rating	Remarks
R1	Resistor	50 Ω to 150 Ω	60 mW or more	For overcurrent protection
L1	Inductance	0.1 μH	50 mA or more	Ferrite bead for noise suppression can be used.
C1	Capacitor	0.1 μF	10 V or more	Bypass capacitor for noise suppression Connect near the lead (3 mm or less).
C2	Capacitor	10 μF	10 V or more	Bypass capacitor for noise suppression

Dimensional outline (unit: mm)



Pin no.	L12422-01SR
①	Vin
②	GND
③	GND
④	Vcc

Tolerance unless otherwise noted: ± 0.1 , $\pm 2^\circ$
 Shaded area indicates burr.
 Values in parentheses indicate reference values.

Standard packing type
Plastic tray (100 pcs/tray)
Material: PVC (conductive)

KPICA0104EA

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer
- Metal, ceramic, plastic products

Information described in this material is current as of May 2018.

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