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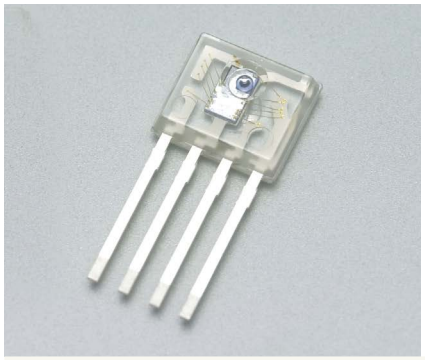
Photo IC for optical link



S8046

Receiver with sleeping mode suitable for 50 Mbps optical link

The S8046 is optical communication devices designed for POF (plastic optical fiber) data links. S8046 is a high sensitivity, high-speed photo IC that receives signals at 50 Mbps and covers a wide dynamic range of 21.5 dB. The output is TTL compatible. S8046 also features a sleeping mode in which operation automatically switches to low power dissipation mode when no light is input and switches back to normal operation mode when light is input from the optical fiber. The internal IC checks which mode is currently selected and this check signal is available from the mode output terminal. Current consumption in sleeping mode is approximately 1/400th that of normal operation mode.

Features

- **Sleeping mode (low power dissipation)**
- **4 M to 50 Mbps**
- **Monolithic photo IC**
- **High reliability**
- **TTL output**
- **Wide dynamic range**

Applications

- **High-speed data transmission even under poor environmental conditions with high noise**

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5 to +7.0	V
Output voltage	Vo	-0.5 to Vcc+0.5	V
Output current	Io	10	mA
Power dissipation	P	250*1	mW
Operating temperature	Topr	-40 to +85	°C
Storage temperature	Tstg	-40 to +85	°C

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

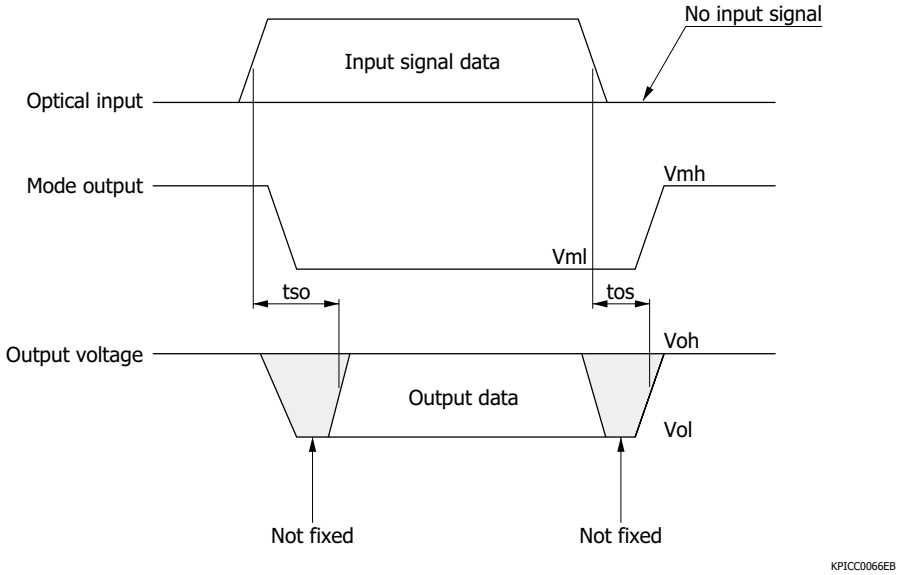
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C, Vcc=4.5 to 5.5 V)

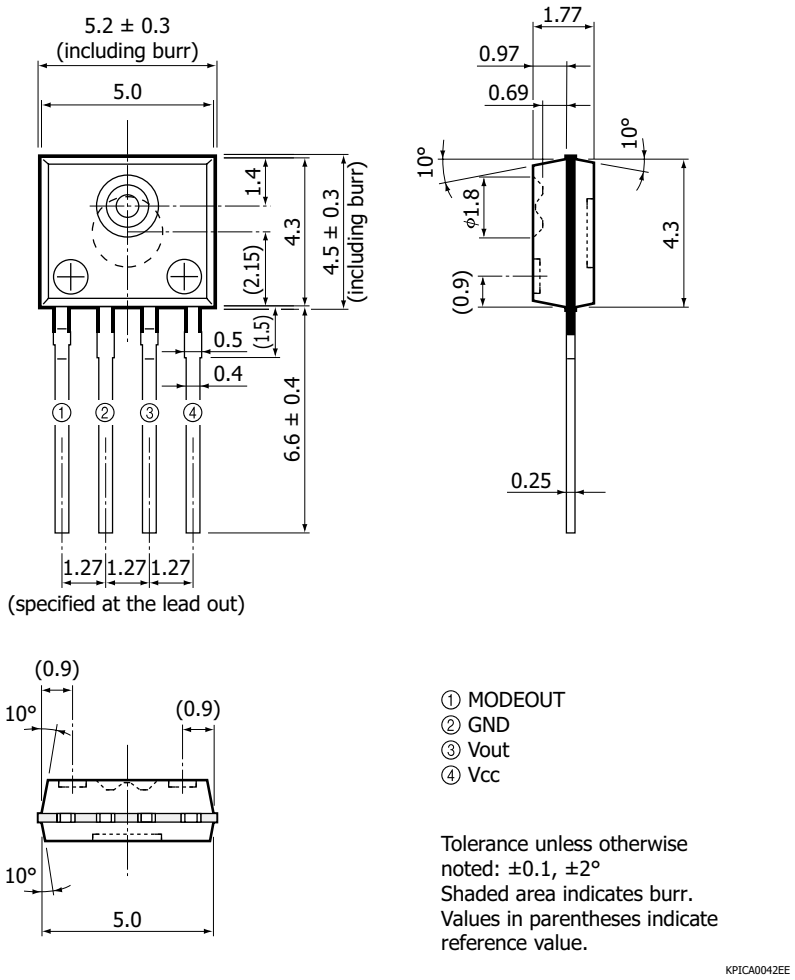
Parameter		Symbol	Condition	Min.	Typ	Max.	Unit
Data rate		fD	bi-phase signal	4	-	50	Mbps
Current consumption (in operation mode)		Icco	*2 *3	-	-	40	mA
Current consumption (in sleeping mode)		Iccs	Pin= -∞	-	-	100	μA
Minimum overload		Pimax	*2 *3 *5 *6	-8	-	-	dBm
Minimum receiver input power		Pimin	*2 *3 *5 *6	-	-	-28.0	dBm
Output voltage	H level output voltage	Voh	*2 *3 Ioh=-150 μA	2.7	-	-	V
	L level output voltage	Vol	*2 *3 Iol=1.6 mA	-	-	0.4	V
	Rise time	tr	*2 *3 20 to 80%	-	-	5	ns
	Fall time	tf		-	-	5	ns
Pulse width distortion		Δt	*2 *3	-4	-	+8	ns
Jitter		Δtj	*2 *3	-	-	5	ns
Operation mode to sleeping mode switching input power		Psl	*2 *3 *5	-	-	-33	dBm
Sleeping mode to operation mode switching input power		Pop	*2 *3 *5	-	-	-30	dBm
Sleeping mode to operation mode switching time		tso	*2	-	-	200	μs
Operation mode to sleeping mode switching time		tos	*2	-	-	500	μs
Mode output	H level voltage	Vmh	*7	3.0	-	-	V
	L level voltage	Vml	*7	-	-	0.5	V

*2: Input is a pseudo-random bi-phase signal at 50 Mbps.
*3: CL=5 pF (including parasitic capacitance of probes, connectors and PC board)
*4: Optical input signal is generated by our standard signal generator.
*5: Average value (at 50% duty ratio)
*6: Pe=10^{-9}
*7: "H" in sleeping mode, "L" in operation mode
Note:
· A bypass capacitor (0.1 μF) and another capacitor (4.7 μF) are connected between Vcc and GND at a position within 3 mm from the lead.
· The center of the optical fiber is aligned with the center of the lens on the package. The distance between the fiber end and the lens is 0.1 mm.
· Output becomes undefined at a baud rate less than 4 Mbps.

Mode switching chart



Dimensional outline (unit: mm)



Recommended soldering conditions

Parameter	Specification	Remarks
Solder temperature	230 ℃ max. (less than 5 s)	at least 1.8 mm away from lead roots

Note: When setting the soldering conditions, check for any problems by testing out the soldering methods in advance.

Related information

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

■ Precautions
· Disclaimer
· Metal, ceramic, plastic products

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