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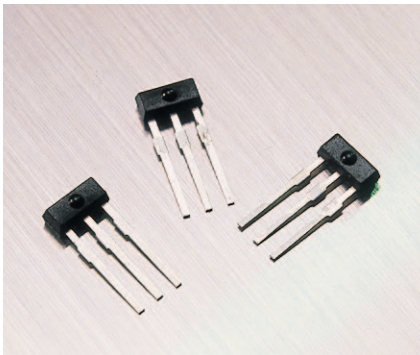
Low-voltage operation photo IC

S4810, S6289



Operation at low voltage from 2.2 V

The S4810 and S6289 are digital output photo ICs consisting of a photodiode, schmitt trigger circuit and output transistor, all integrated on a single chip and molded into a visible-cut, subminiature plastic package.

Features

- **Low-voltage operation: 2.2 to 7 V**
- **Subminiature plastic package with lens**
- **Low current consumption**
- **Open collector output**
- **S4810: "H" level output at light input**
  S6289: "L" level output at light input

Applications

- **Cameras**
- **Tape start/end mark sensor for VTRs, cassette tape recorders, etc.**
- **Optical switches**
- **Encoders**

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5 to +7	V
Output voltage	Vo	-0.5 to +7	V
Output current	Io	8	mA
Power dissipation	P	150	mW
Operating temperature	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +100	°C
Soldering	-	260 °C, 3 s, at least 2.5 mm away from package surface	-

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.

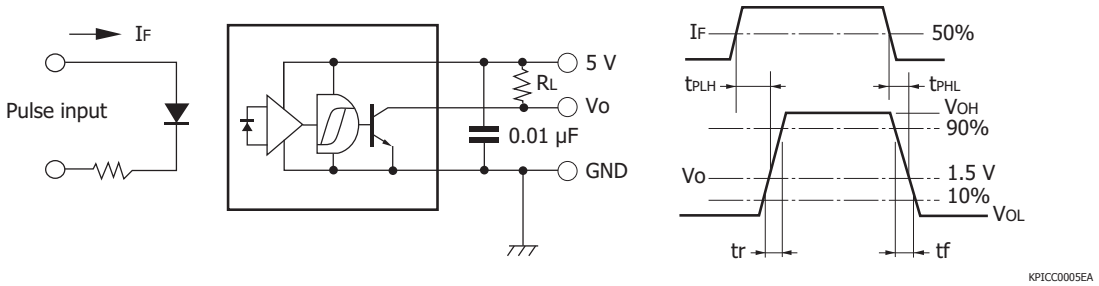
Electrical and optical characteristics (Ta=25 °C, Vcc=5 V, light source: λp=890 nm LED, unless otherwise noted)

Parameter	Symbol	Condition	S4810			S6289			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Supply voltage	Vcc		2.2	-	7.0	2.2	-	7.0	V
Low level output voltage	VOL	IOL=4 mA*1	-	-	0.4	-	-	0.4	V
High level output current	IOH	VO=5 V*2	-	-	10	-	-	10	μA
Current consumption	ICC		-	1.3	3	-	1.3	3	mA
L→H Threshold illuminance	ELH	RL=1.2 kΩ	-	-	1.5	-	-	-	μW/mm²
H→L Threshold illuminance	EHL	RL=1.2 kΩ	-	-	-	-	-	1.5	μW/mm²
Hysterisis	-	*3	-	0.9	-	-	0.85	-	-
L→H Propagation delay time	tPLH	2 μW/mm², RL=1.2 kΩ	-	-	10	-	-	15	μs
H→L Propagation delay time	tPHL		-	-	15	-	-	10	μs
Rise time	tr		-	0.07	-	-	0.07	-	μs
Fall time	tf		-	0.03	-	-	0.03	-	μs
Peak sensitivity wavelength	λp		-	850	-	-	850	-	nm

*1: S4810: E (illuminance) =0 μW/mm², S6289: E=2 μW/mm²
*2: S4810: E=2 μW/mm², S6289: E=0 μW/mm²
*3: S4810: EHL/ELH, S6289: ELH/EHL
Note: Connect a 0.01 μF capacitor or larger between Vcc and GND.

Response time measurement circuit

S4810



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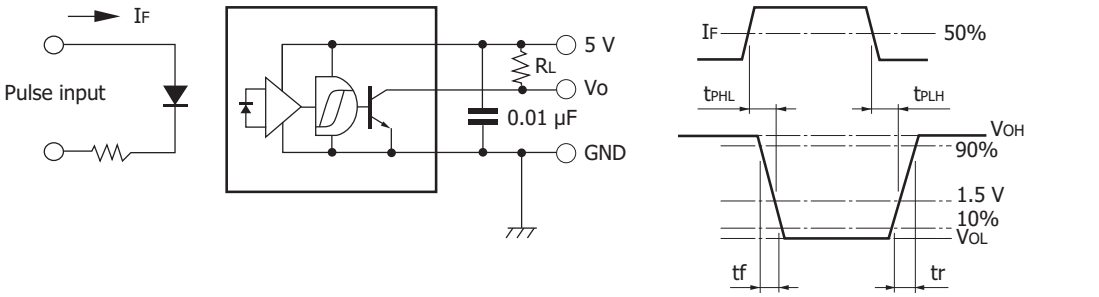
S6289



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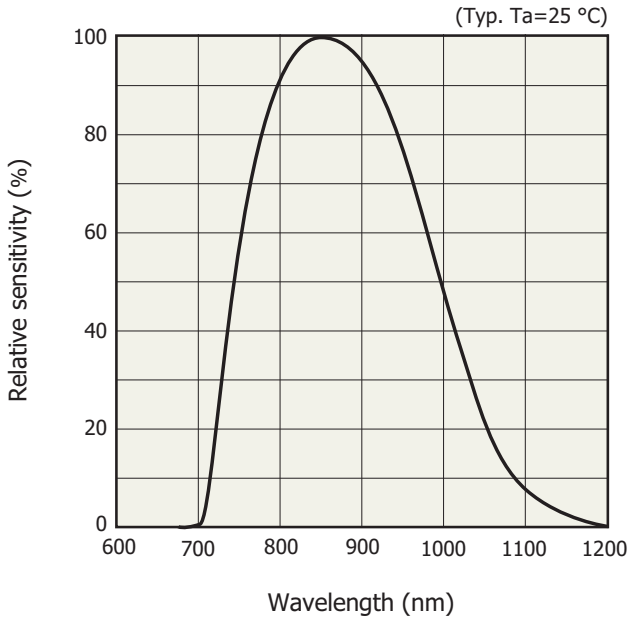
Spectral response



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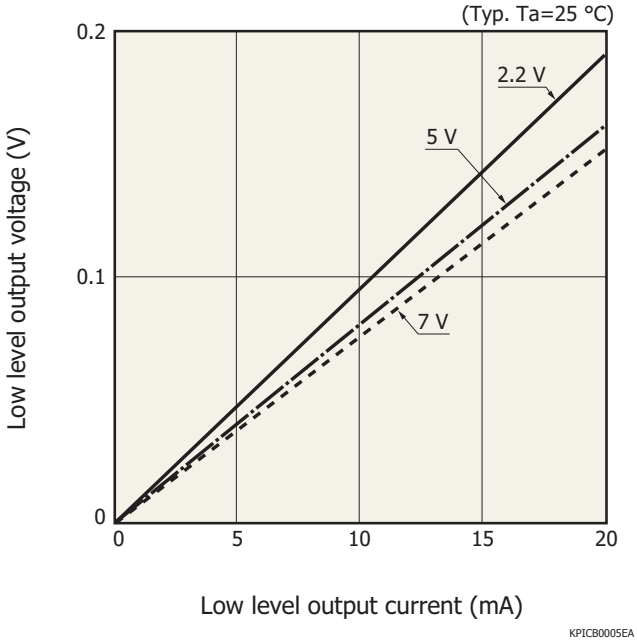
Low level output voltage vs. low level output current



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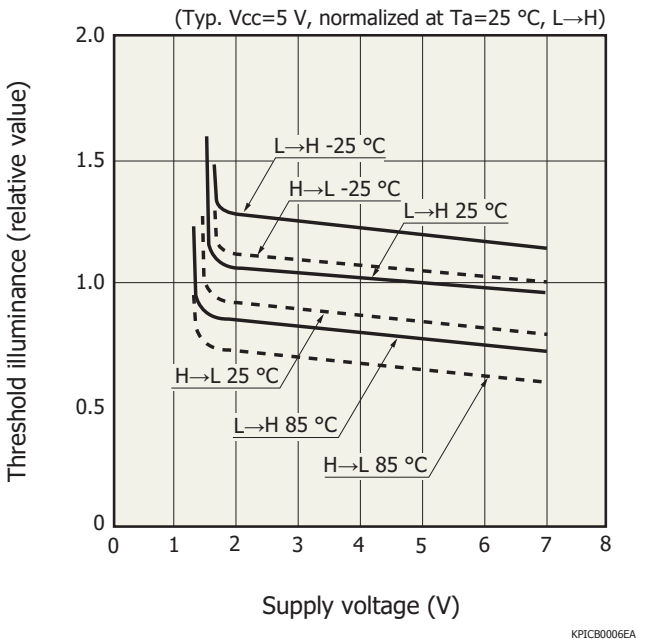
Threshold illuminance vs. supply voltage

S4810



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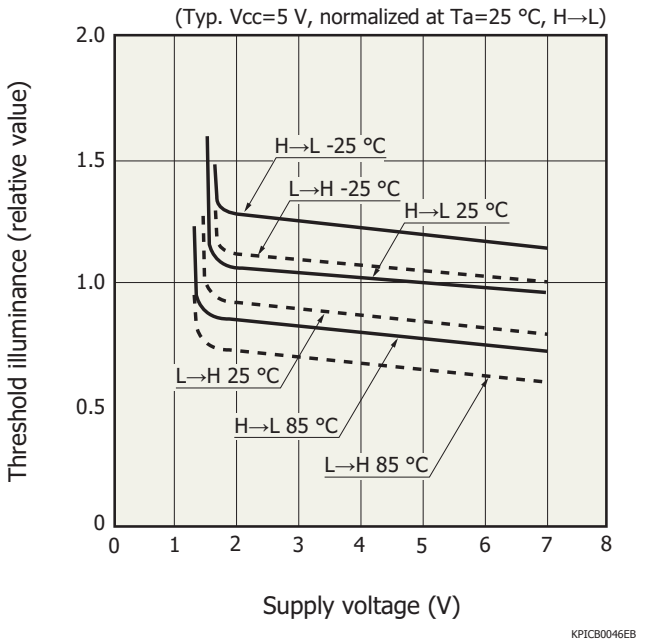
S6289



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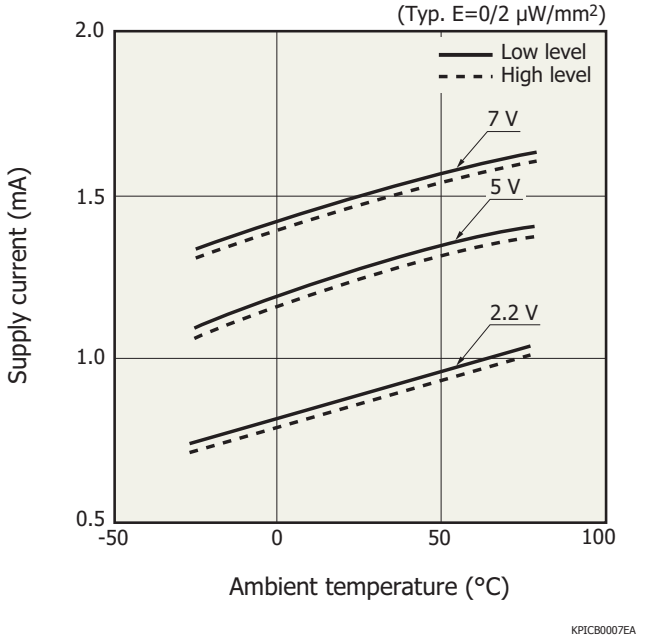
Supply current vs. ambient temperature



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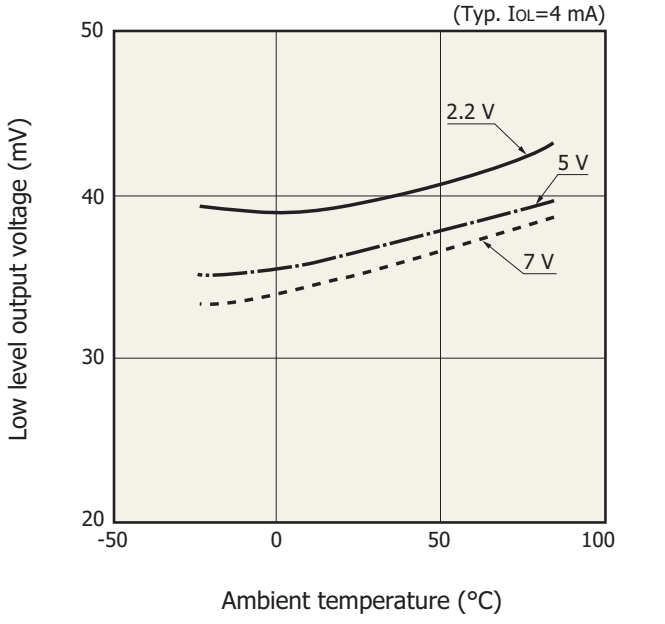
Low level output voltage vs. ambient temperature



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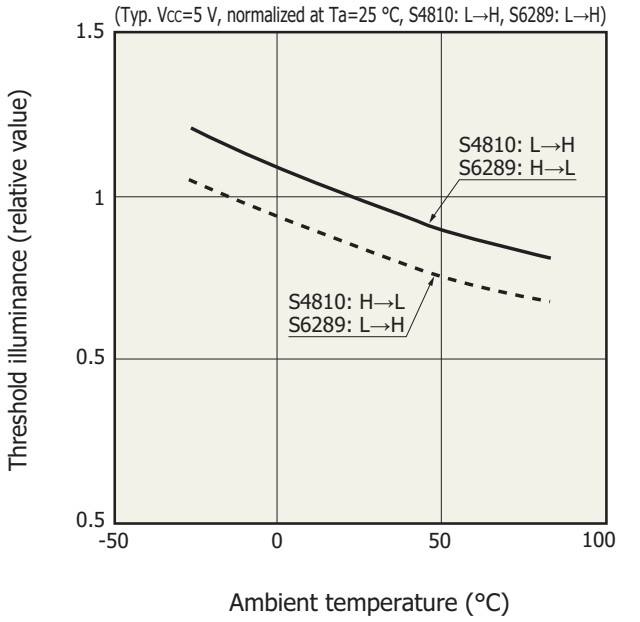
Threshold illuminance vs. ambient temperature



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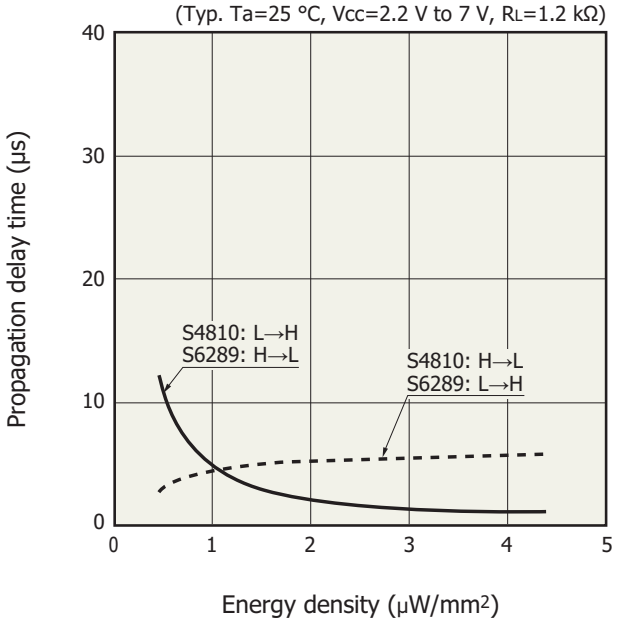
Propagation delay time vs. input light strength



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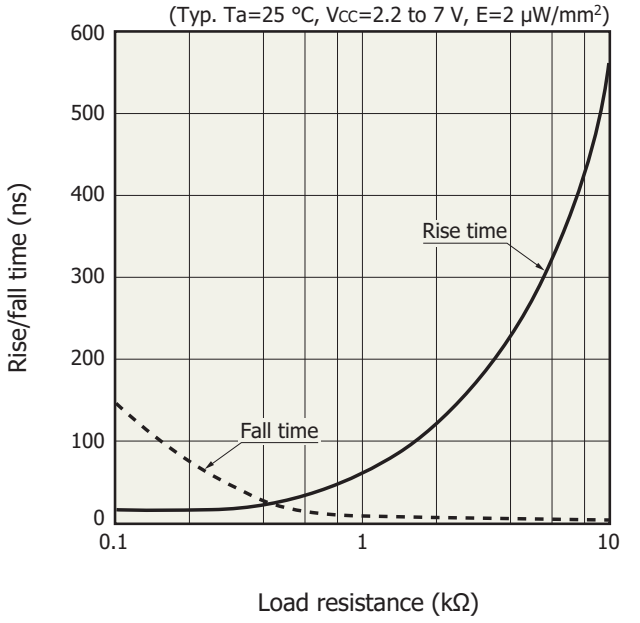
Rise/fall time vs. load resistance



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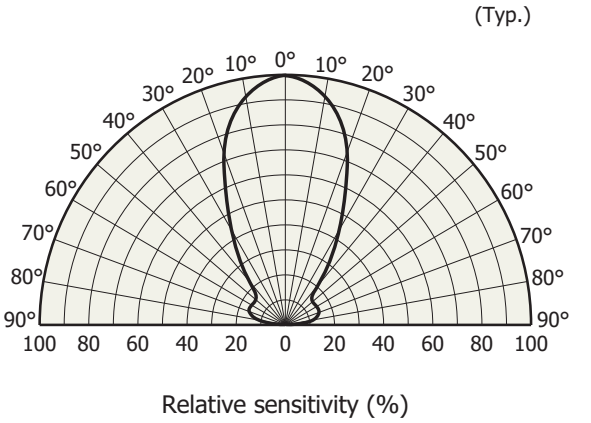
Directivity



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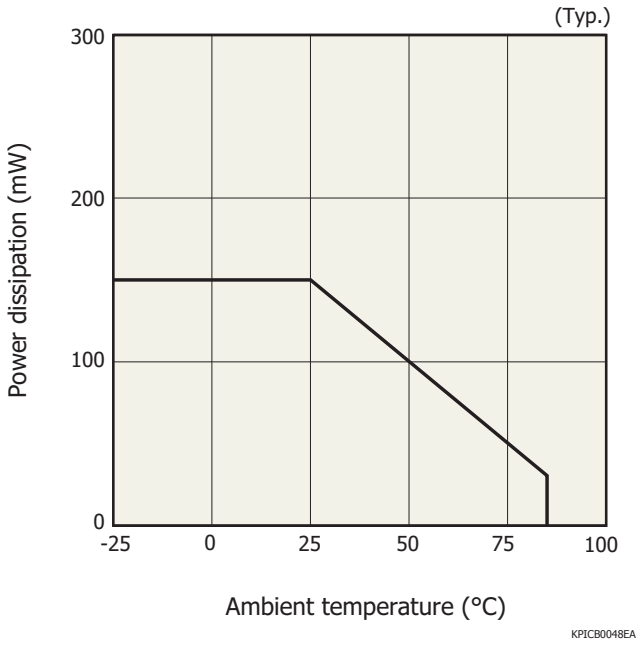
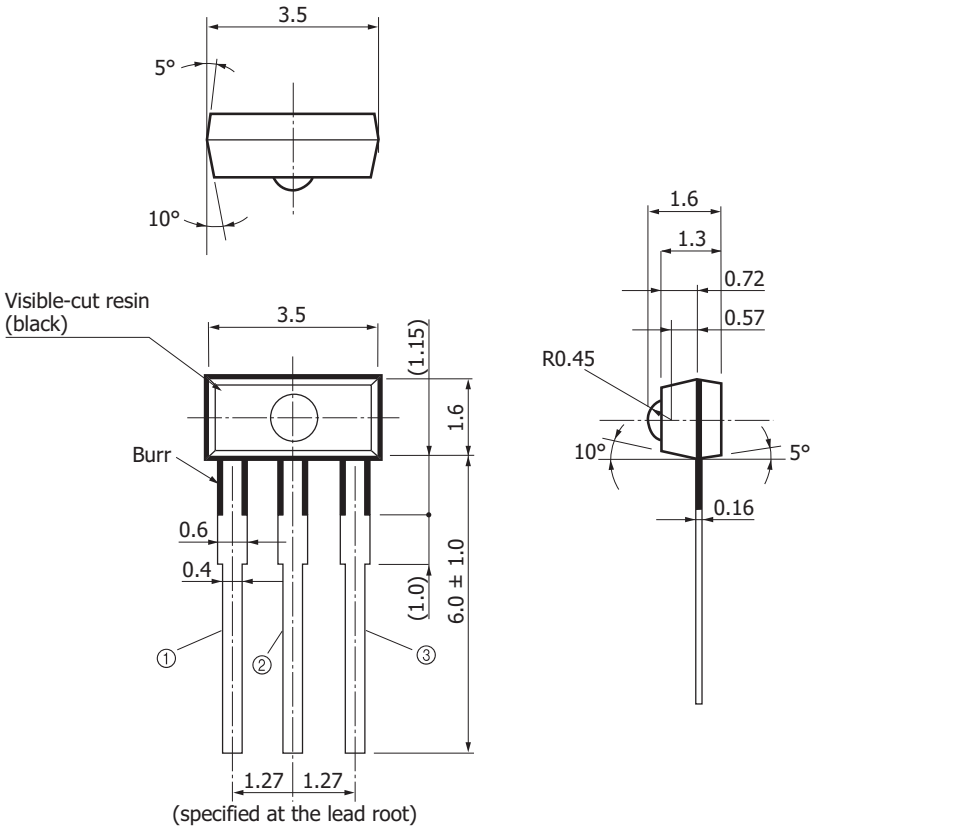
Power dissipation vs. ambient temperature



Dimensional outline (unit: mm)



① Vo
② GND
③ Vcc

Tolerance unless otherwise noted: ±0.2, ±2°
Shaded area indicates burr.
Values in parentheses are not guaranteed, but for reference.

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Related information

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

■ Precautions
· Disclaimer
· Metal, ceramic, plastic products

HAMAMATSU www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division
1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218, E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8, E-mail: info@hamamatsu.de
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10, E-mail: infos@hamamatsu.fr
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777, E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866, E-mail: hpc@hamamatsu.com.cn
Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081, E-mail: info@tw.hpk.co.jp

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