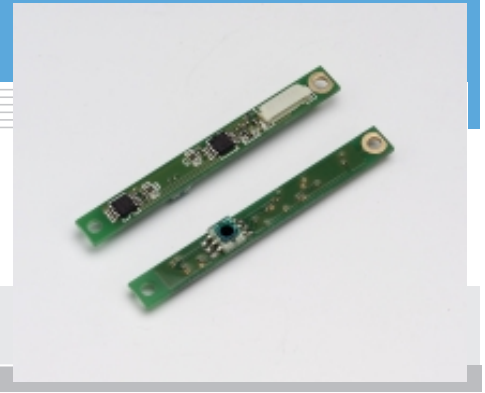


Color sensor module

C9303-04

RGB-LED backlight monitor for TFT-LCD (Liquid Crystal Display)



Recently, RGB-LEDs have been in the focus of attention as the backlight for TFT-LCD (liquid crystal display) since LEDs are mercury-free unlike conventional cold cathode fluorescent lamps. Hamamatsu C9303-04 color sensor module has been specifically developed for the power monitor of RGB-LEDs. We welcome requests for custom shapes and RGB gain. Feel free to contact our sales office.

Features

- Built-in RGB color sensor
Sensitivity matches wavelengths of RGB-LED backlight for TFT-LCD.
- 3 ch current-to-voltage amplifiers
Simultaneous output of 3 ch RGB photocurrent
- Configuration and size suitable for side mounting to TFT-LCD
- Suitable for lead-free solder
- Pin compatible with previous device
- Low current consumption

Applications

- RGB-LED backlight monitor for TFT-LCD

■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	+5.5	V
Reference voltage	VREF	Vcc - 0.4	V
Operating temperature *1	Topr	-20 to +85	°C
Storage temperature *1	Tstg	-20 to +85	°C

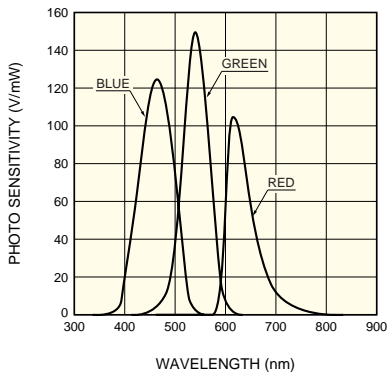
*1: No condensation

■ Electrical and optical characteristics (Ta=25 °C, Vcc=5.0 V, VREF=3.000 V, unless otherwise noted: 1 ch)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ	Red	-	590 to 720	-	nm
		Green	-	480 to 600	-	
		Blue	-	400 to 540	-	
Peak sensitivity wavelength	λ_p	Red	-	620	-	nm
		Green	-	540	-	
		Blue	-	460	-	
Photo sensitivity	SR	$\lambda_p=620$ nm	-74	-108	-	V/mW
	SG	$\lambda_p=540$ nm	-122	-156	-	
	SB	$\lambda_p=460$ nm	-88	-122	-	
Trans-impedance	ZtR	Red	-	680	-	k Ω
	ZtG	Green	-	680	-	
	ZtB	Blue	-	680	-	
Output offset voltage	Vos	Dark state	VREF-5	-	VREF+5	mV
Output voltage range	Vout		0.4	-	Vos	V
Output signal polarity *2	Vout		Negative			-
Output noise voltage swing	Vn	Dark state, within frequency bandwidth	-	5	-	mVp-p
Rise time	tr	10 to 90 %	-	150	-	μ s
Cut-off frequency	fc	-3 dB	-	2.4	-	kHz
Current consumption	Icc	Dark state	-	0.4	1.5	mA
Operating supply voltage range	Vcc		+2.7	+5	+5.5	V

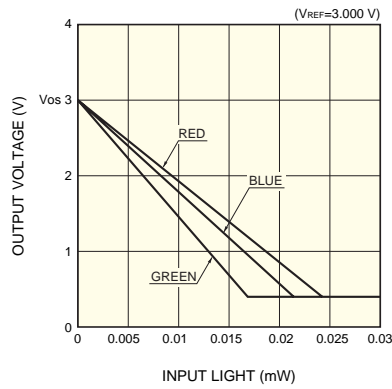
*2: See next page graph (■ Output voltage vs. input light).

■ Spectral response



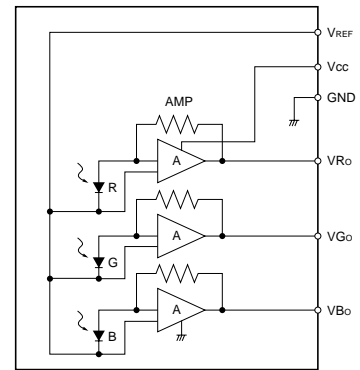
KACCB0123EA

■ Output voltage vs. input light



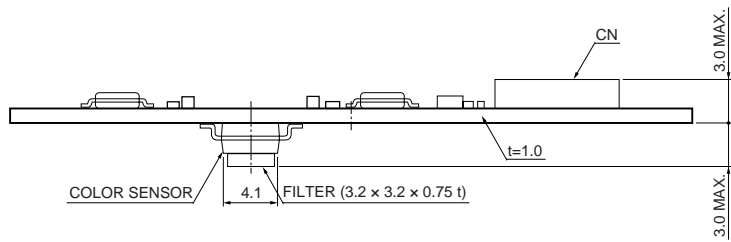
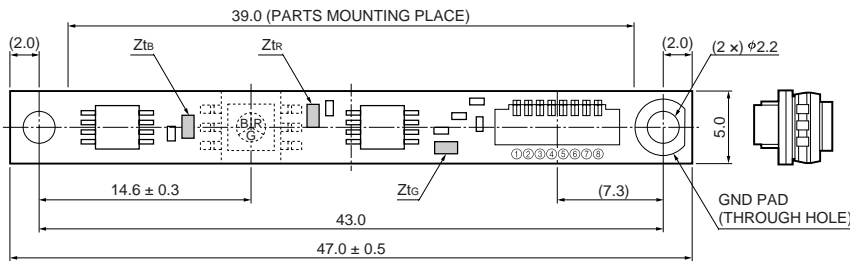
KACCB0124EA

■ Block diagram



KACCC0199EA

■ Dimensional outline (unit: mm)



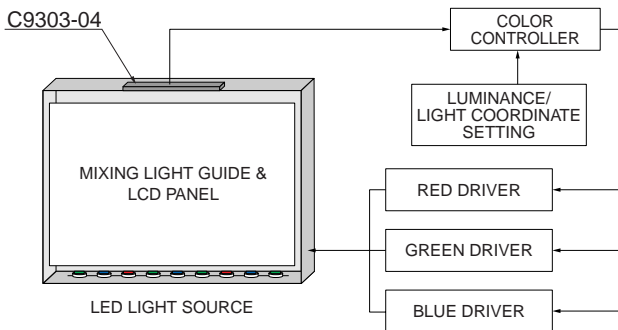
Pin No.	Signal
①	VREF
②	Vcc
③	GND
④	NC
⑤	VGo
⑥	VRo
⑦	VBo
⑧	NC

Connector: CN SM08B-SURS-TF (JST)
Mating cable: AWG#32
Tolerance unless otherwise noted: ±0.2

KACCA0160EA

■ Application example

Optical feedback of backlight for TFT-LCD



LED: Made by Lumileds (LUXEON), <http://www.lumileds.com/>

KACCC0289EA

■ Accessory

Dedicated cable with connector

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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, www.hamamatsu.com

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658

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

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

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741