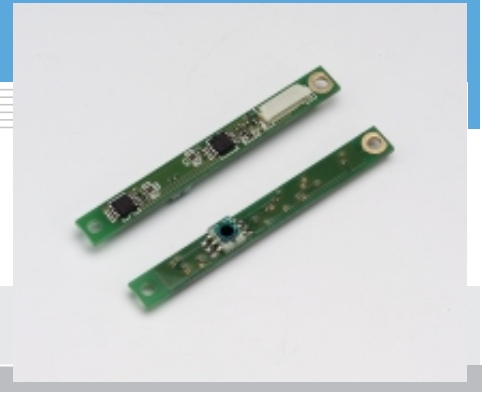


Color sensor module

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

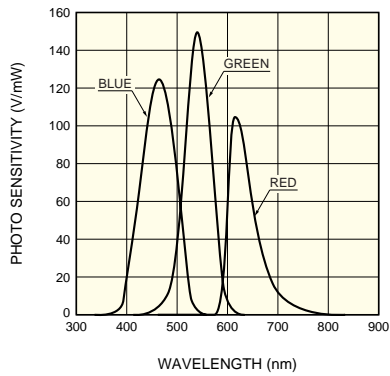
*1: No condensation

■ 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

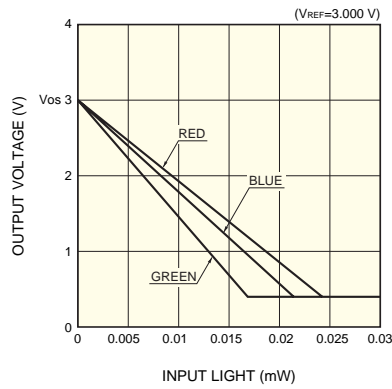
*2: See next page graph (■ Output voltage vs. input light).

Spectral response



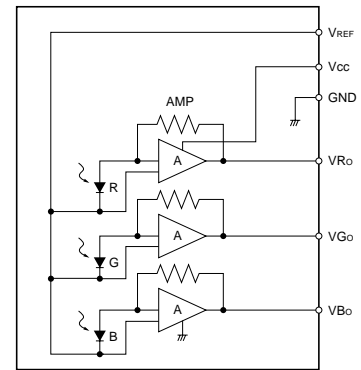
KACCB0123EA

Output voltage vs. input light



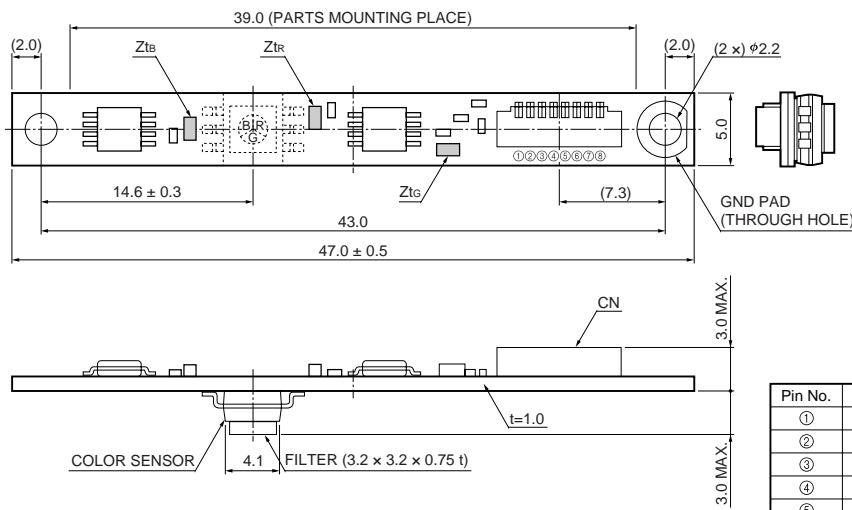
KACCB0124EA

Block diagram



KACCC0199EA

Dimensional outline (unit: mm)



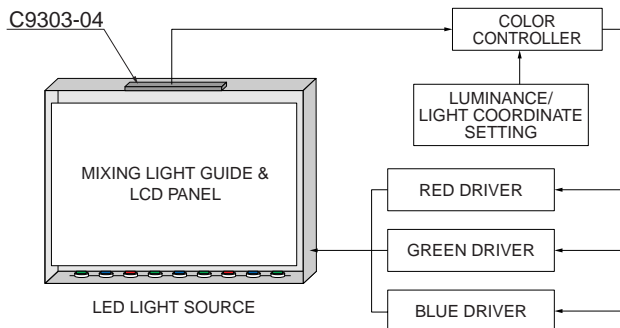
Connector: CN SM08B-SURS-TF (JST)
Mating cable: AWG#32
Tolerance unless otherwise noted: ±0.2

Pin No.	Signal
①	VREF
②	VCC
③	GND
④	NC
⑤	VGO
⑥	VRO
⑦	VBO
⑧	NC

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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