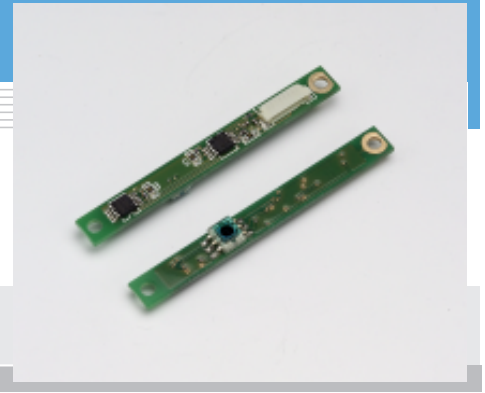


# Color sensor module

## C9303-03

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 C9303-03 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
- Same gain and pin assignment to the conventional type C9303
- Low current consumption: 1/3 than the conventional type

### Applications

- RGB-LED backlight monitor for TFT-LCD

#### ■ Absolute maximum ratings (Ta=25 °C)

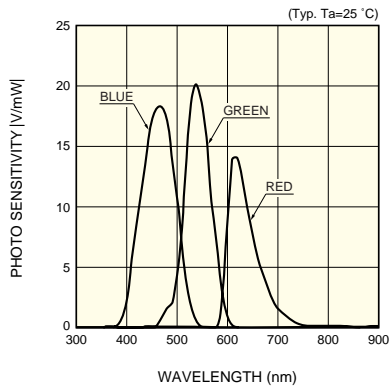
Parameter	Symbol	Value	Unit
Supply voltage	Vcc	+5.5	V
Reference voltage	VREF	Vcc - 0.4	V
Operating temperature	Topr	-20 to +85	°C
Storage temperature	Tstg	-20 to +85	°C

#### ■ Electrical and optical characteristics (Ta=25 °C, Vcc=5.0 V, VREF=3.000 V)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Photo sensitivity	SR	$\lambda_p=620$ nm	-10	-14	-	V/mW
	SG	$\lambda_p=540$ nm	-16	-20	-	
	SB	$\lambda_p=460$ nm	-13	-18	-	
Trans-impedance	ZtR	Red	-	91	-	k $\Omega$
	ZtG	Green	-	91	-	
	ZtB	Blue	-	100	-	
Output offset voltage	Vos	Dark state	VREF-5	-	VREF+5	mV
Output voltage range	Vout		0.4	-	Vos	V
Output signal polarity *	Vout		Negative			
Output noise voltage swing	Vn	Dark state, within frequency bandwidth	-	5	-	mVp-p
Rise time	tr	10 to 90 %	-	22	-	$\mu$ s
Cut-off frequency	fc	-3 dB	-	16	-	kHz
Current consumption	Icc	Dark state	-	0.4	1.5	mA
Operating supply voltage range	Vcc		+2.7	+5	+5.5	V

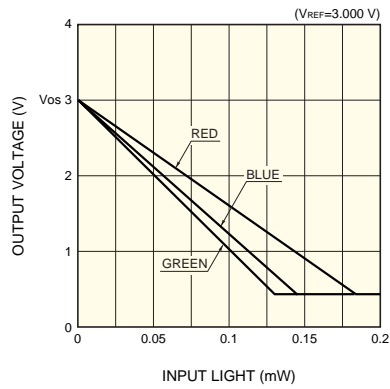
\* See next page graph ■ Output voltage vs. input light

## ■ Spectral response



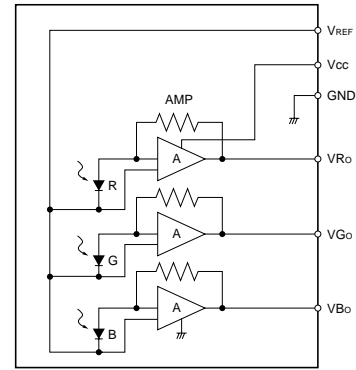
KACCB0058EB

## ■ Output voltage vs. input light



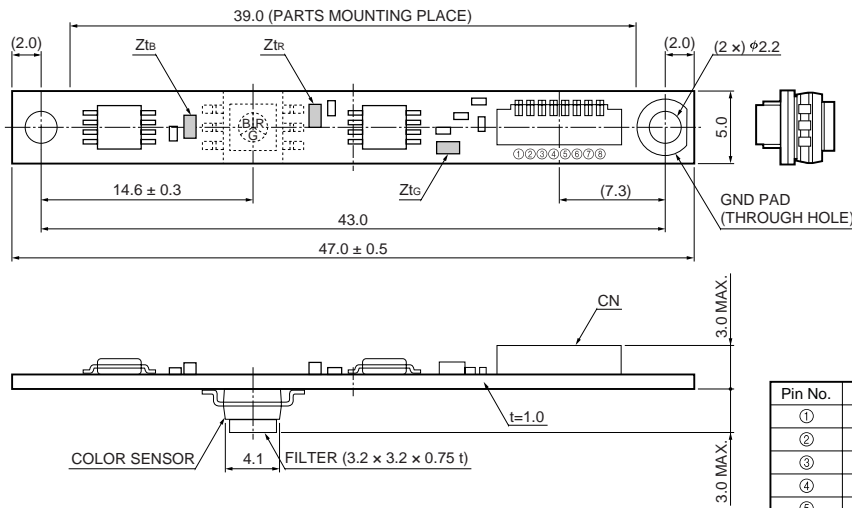
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## ■ Block diagram



KACCC0199EA

## ■ Dimensional outline (unit: mm)

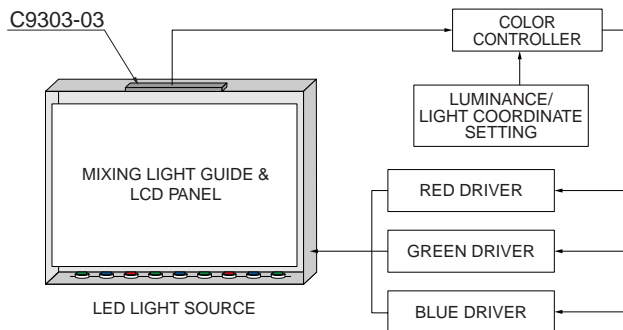


Connector: CN SM08B-SURS-TF (JST)  
Mating cable: AWG#32  
Tolerance unless otherwise noted: ±0.2

KACCA0160EA

## ■ Application example

### Optical feedback of backlight for TFT-LCD



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

KACCC0212EC

## ■ Accessory

Dedicated cable with connector

# HAMAMATSU

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