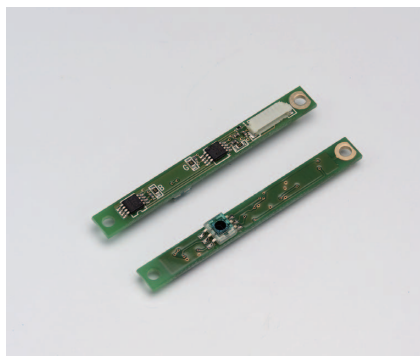


Color sensor module



C9303-03

RGB-LED backlight monitor for TFT-LCD (liquid crystal display)

The C9303-03 is a color sensor module that has a RGB color sensor and current-to-voltage conversion amplifier mounted on a small circuit board.

Features

- **Built-in RGB color sensor**
Sensitivity matches wavelengths of RGB-LED backlight for TFT-LCD.
- **3 ch current-to-voltage conversion 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 unless otherwise noted)

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

*1: No dew condensation

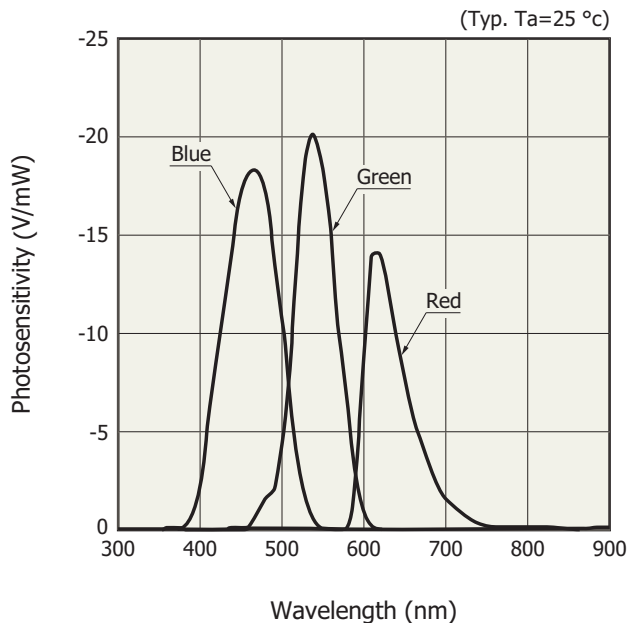
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
Note: Exceeding the absolute maximum ratings even 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, Vs=5.0 V, Vref=3.000 V, per 1 ch unless otherwise noted)

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	-		
Photosensitivity	SR	$\lambda_p=620$ nm	-10	-14	-	V/mW	
	SG	$\lambda_p=540$ nm	-16	-20	-		
	SB	$\lambda_p=460$ nm	-13	-18	-		
Conversion impedance	ZtR	Red	-	91×10^3	-	V/A	
	ZtG	Green	-	91×10^3	-		
	ZtB	Blue	-	100×10^3	-		
Output offset voltage	Vos	Dark state	Vref - 5	-	Vref + 5	mV	
Maximum output amplitude voltage	VfsR	-	0.4	-	Vos	V	
	VfSG						
	VfsB						
Output signal polarity*2	R			Negative		-	
	G						
	B						
Output noise voltage	Vn	Dark state, within frequency bandwidth	-	5	-	mVp-p	
Cutoff frequency	fc	-3 dB	Lower	-	DC	-	kHz
			Upper	-	16	-	
Current consumption	Is	Dark state	-	0.4	1.5	mA	
Operating supply voltage	Vs		+2.7	+5	+5.5	V	

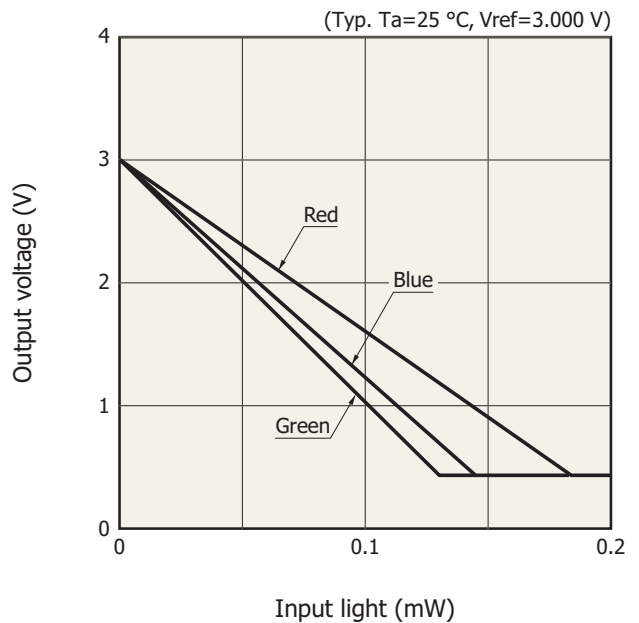
*2: See the following graph (output voltage vs. input light).

Spectral response



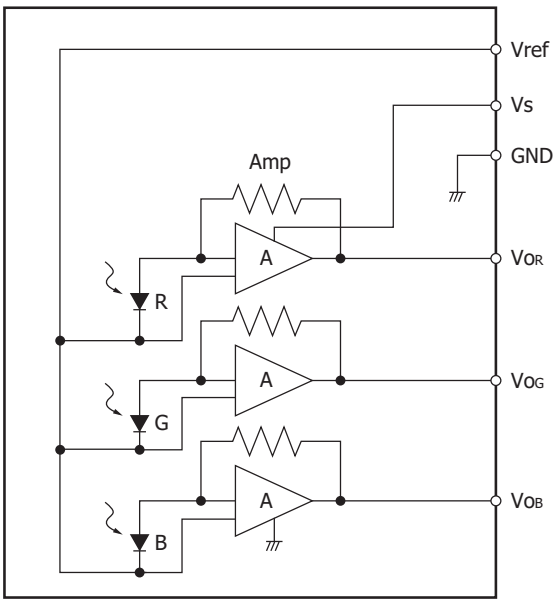
KACCB0058EC

Output voltage vs. input light



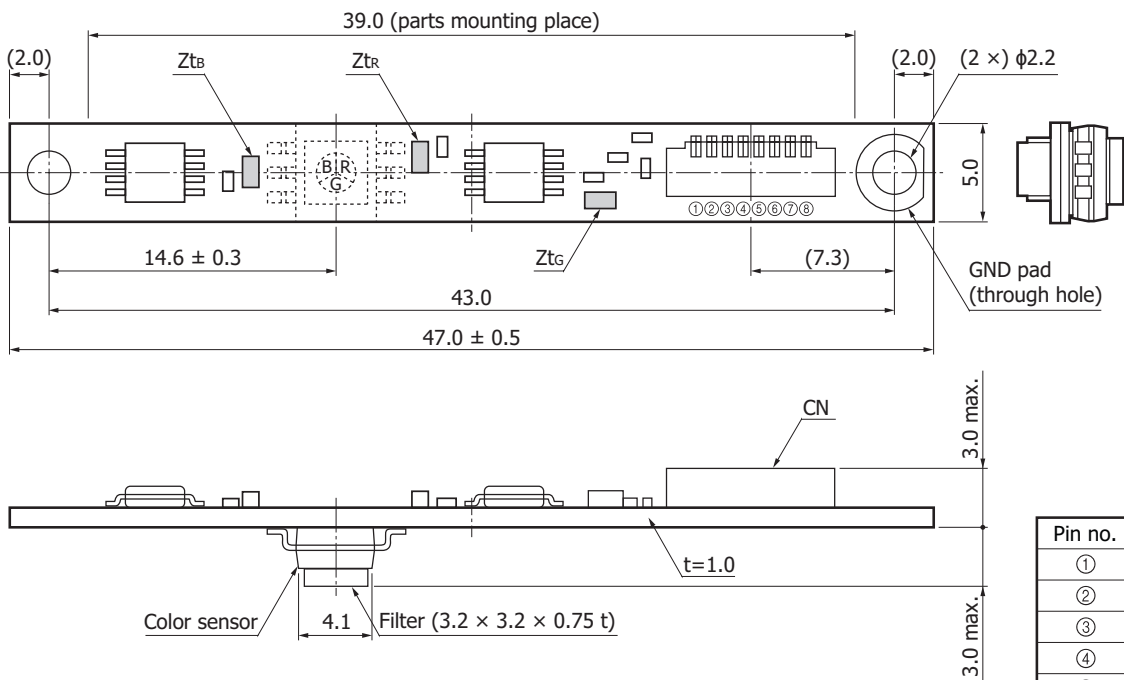
KACCB0057EC

Block diagram



KACCC0199EB

Dimensional outline (unit: mm)



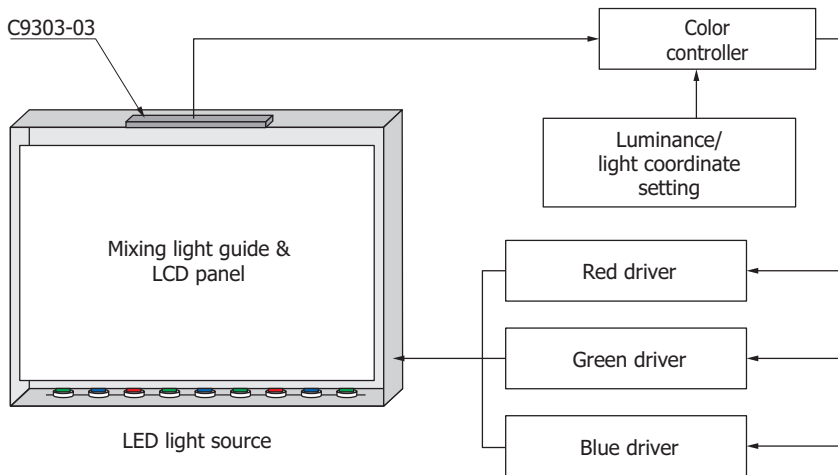
Connector: CN SM08B-SURS-TF (JST)
 Mating cable: AWG#32
 Tolerance unless otherwise noted: ±0.2

Pin no.	Signal
①	Vref
②	Vs
③	GND
④	NC
⑤	VOG
⑥	VOR
⑦	VOB
⑧	NC

KACCA0160EB

Application example

Optical feedback of backlight for TFT-LCD



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

KACCC0212EC

Accessories

- Instruction manual
- Dedicated cable with connector (500 ± 50 mm)

Related information

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

- Precautions
- Disclaimer

Information described in this material is current as of August 2019.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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