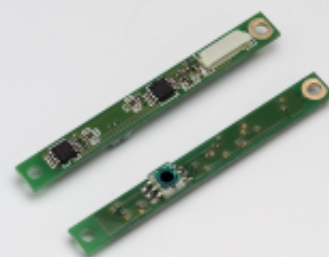


Color sensor module

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)

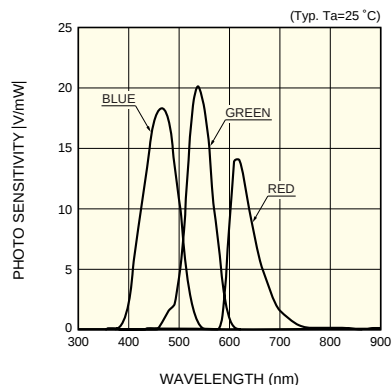
Parameter	Symbol	Value	Unit
Supply voltage	Vcc	+5.5	V
Reference voltage	VREF	Vcc - 0.4	V
Operating temperature	Topr	-20 to +85	°C
Storage temperature	Tstg	-20 to +85	°C

■ 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 Ω
	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	-	μ 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

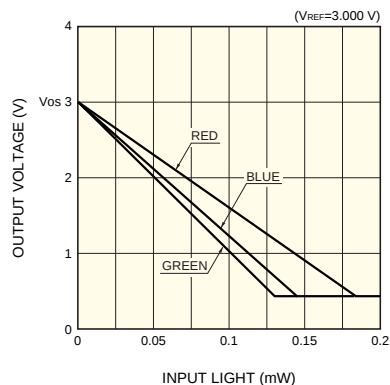
* See next page graph ■ Output voltage vs. input light

Spectral response



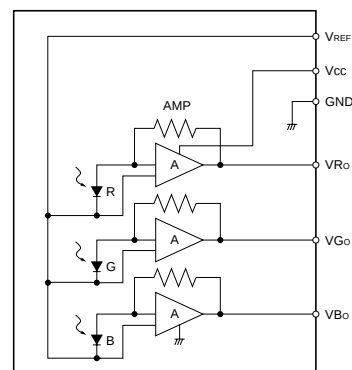
KACCB0058EB

Output voltage vs. input light



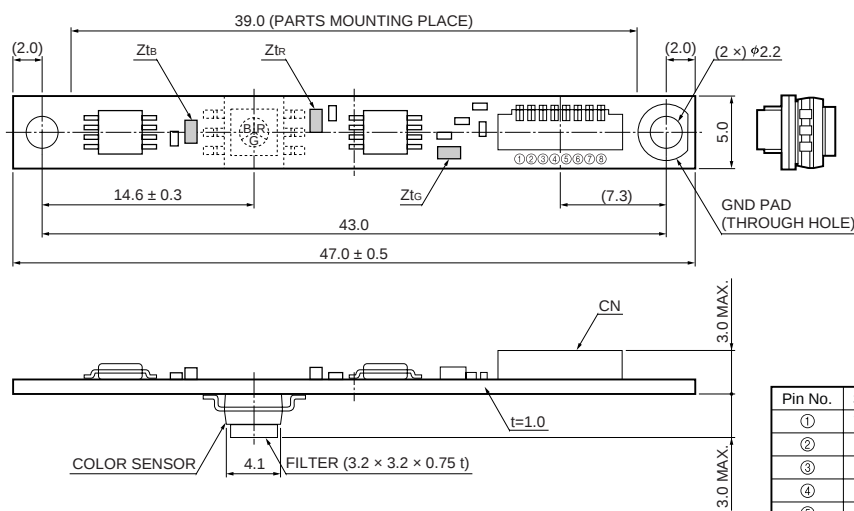
KACCB0057EB

Block diagram



KACCC0199EA

Dimensional outline (unit: mm)



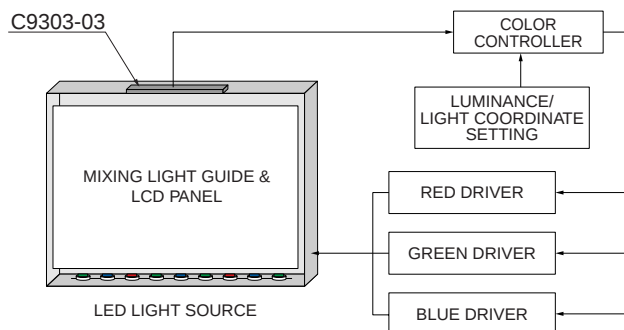
Connector: CN SM08B-SURS-TF (JST)
Mating cable: AWG#32
Tolerance unless otherwise noted: ±0.2

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/>

KACCC0212EC

Accessory

Dedicated cable with connector

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Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2006 Hamamatsu Photonics K.K.

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