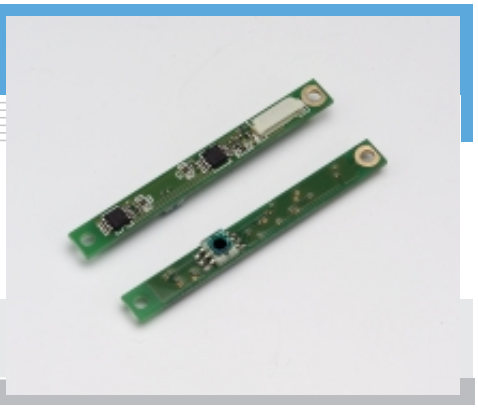
Color sensor module
C9303-04



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	V_{REF}	Vcc - 0.4	V
Operating temperature *1	Topr	-20 to +85	°C
Storage temperature *1	Tstg	-20 to +85	°C

*1: No condensation

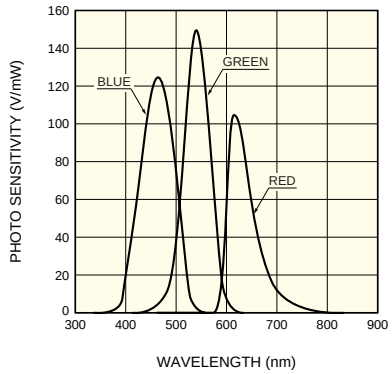
■ Electrical and optical characteristics (Ta=25 °C, Vcc=5.0 V, V_{REF}=3.000 V, unless otherwise noted: 1 ch)

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	λp	Red	-	620	-	nm
		Green	-	540	-	
		Blue	-	460	-	
Photo sensitivity	S_R	λp=620 nm	-74	-108	-	V/mW
	S_G	λp=540 nm	-122	-156	-	
	S_B	λp=460 nm	-88	-122	-	
Trans-impedance	Z_{tR}	Red	-	680	-	kΩ
	Z_{tG}	Green	-	680	-	
	Z_{tB}	Blue	-	680	-	
Output offset voltage	Vos	Dark state	V_{REF}-5	-	V_{REF}+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	-	μs
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).

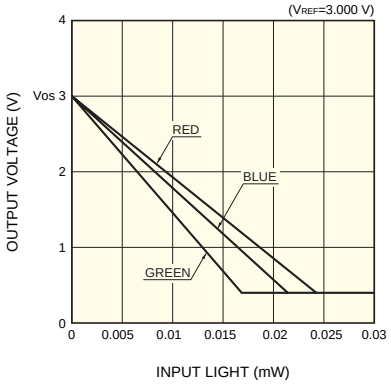
SOLID STATE DIVISION

■ Spectral response



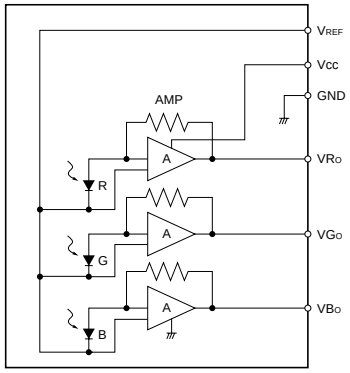
KACCB0123EA

■ Output voltage vs. input light



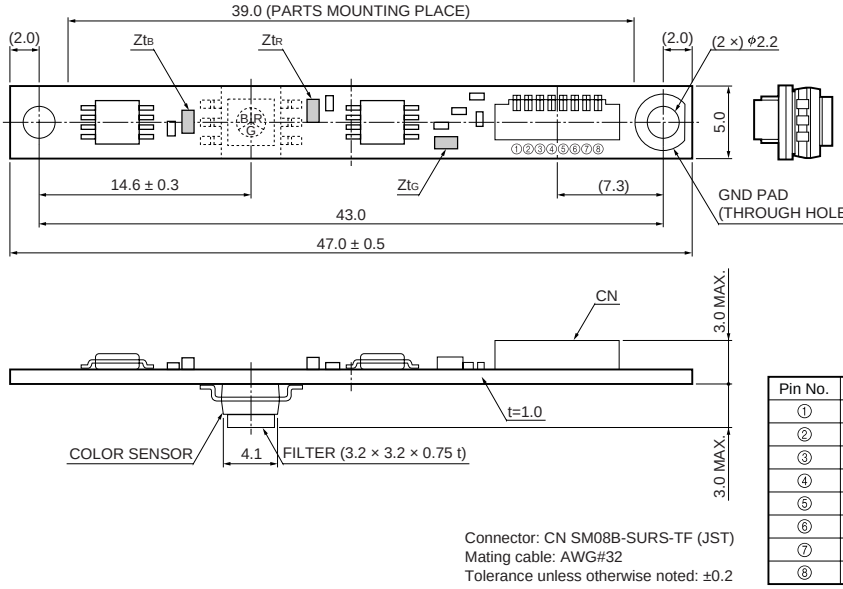
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■ Block diagram



KACCC0199EA

■ Dimensional outline (unit: mm)



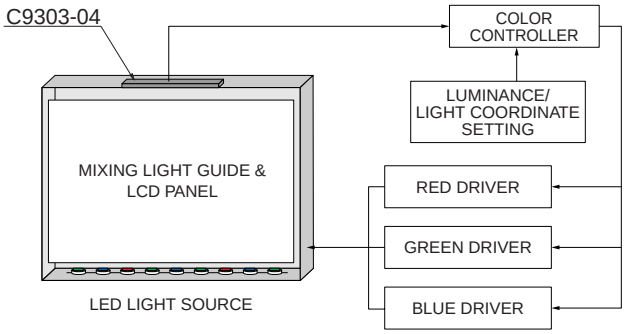
Pin No.	Signal
①	VREF
②	Vcc
③	GND
④	NC
⑤	VGo
⑥	VRo
⑦	VBo
⑧	NC

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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