Visibility Correction Light Sensor
Monolithic IC MM1616

Outline

This IC is a visibility correction light sensor integrating a photodiode with a current amplifying circuit into one chip. It realizes output characteristics that is close to human visibility by including an optical filter.

Features

1. Internal visibility correction filter
2. Integrates a photodiode with a current amplifying circuit into one chip
3. High sensitivity (200μA at 1000lx)

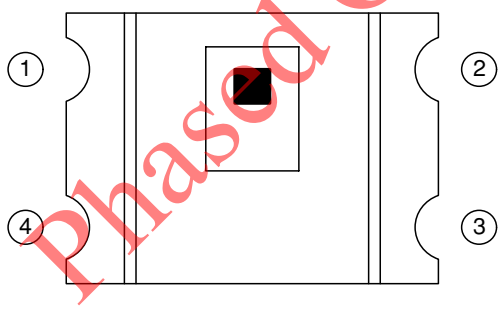
Package

CMP-4A

Applications

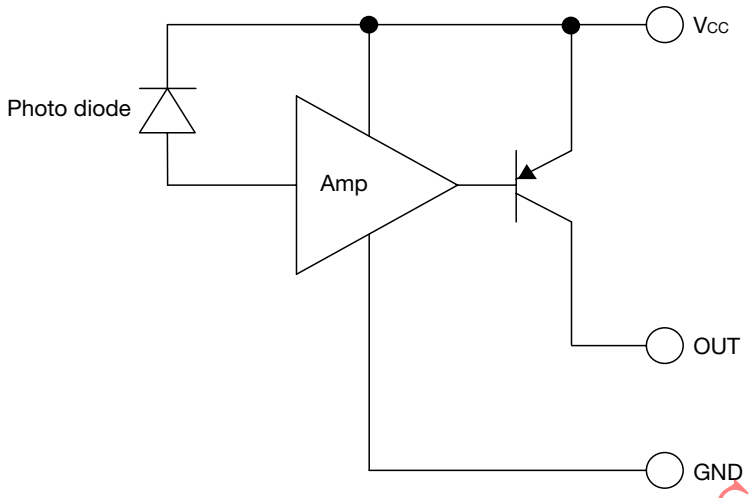
1. LCD TVS, PDP TVs
2. Laptop PCs
3. Toys

Pin Assignment

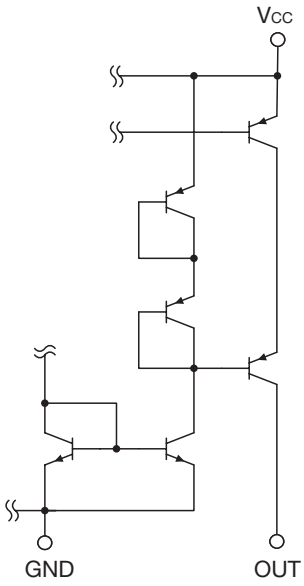


1	GND
2	GND
3	Vcc
4	OUT

Block Diagram



Pin Assignment

Pin No.	Pin name	Functions	Internal equivalent circuit diagram
1	GND	Ground pin	
2			
3	Vcc	Power supply pin	
4	OUT	Output pin	

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Units
Storage temperature	T_{STG}	–40~+100	°C
Operating temperature	T_{OPR}	–30~+85	V
Supply voltage	V_{CCmax}	–0.30~+10	V
Allowable loss	Pd	70	W

Recommended Operating Conditions

Item	Symbol	Ratings	Units
Operating temperature	T_{OPR}	–30~+85	°C
Operating voltage	V_{CCOP}	2.7~7.0	V

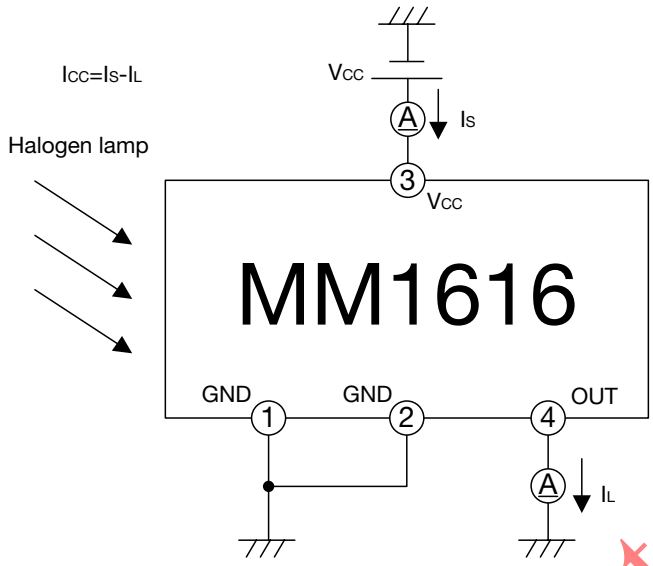
Electrical Characteristics (Except where noted otherwise Ta=25°C, Vcc=3V)

Item		Symbol	Measurement conditions	Min.	Typ.	Max.	Units
Supply current		I_{CC}	EV=1000 [lx] (*1) RL=250Ω $I_{CC}=I_S-I_L$		0.5	0.8	mA
Light current 1		I_{L1}	EV=10 [lx] (*1)	12	20	28	μA
Light current 2		I_{L2}	EV=100 [lx] (*1)	120	200	280	μA
Light current 3		I_{L3}	EV=100 [lx] (*2)		130		μA
Light current ratio		I_{L2}/I_{L3}			1.5	2.0	
Dark current		I_{LEAK}	EV=0 [lx]			0.5	μA
Switching time	Rise time	tr	RL=5kΩ		0.4		ms
	Fall time	tf	λ_P=570 [nm] (*3)		0.5		ms

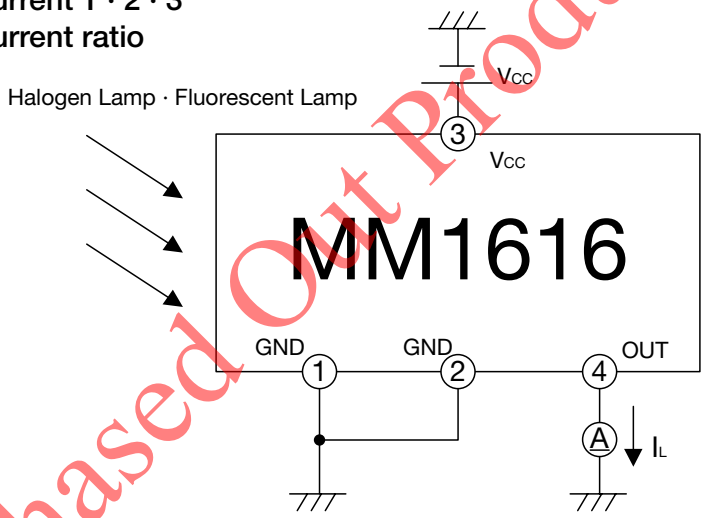
Note1: *1 Source of light is halogen lamp. (CIE standard A light source.)
Note2: *2 Source of light is fluorescent lamp.
However, white LED is substituted in a mass-production process.
Note3: *3 Source of light is LED lamp. (λ_P=570nm)

Measuring Circuit

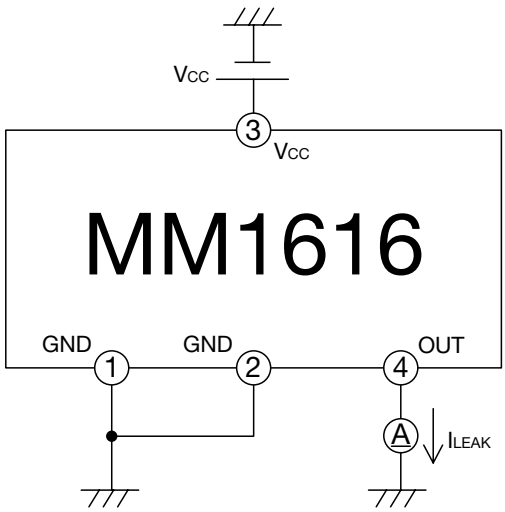
Supply



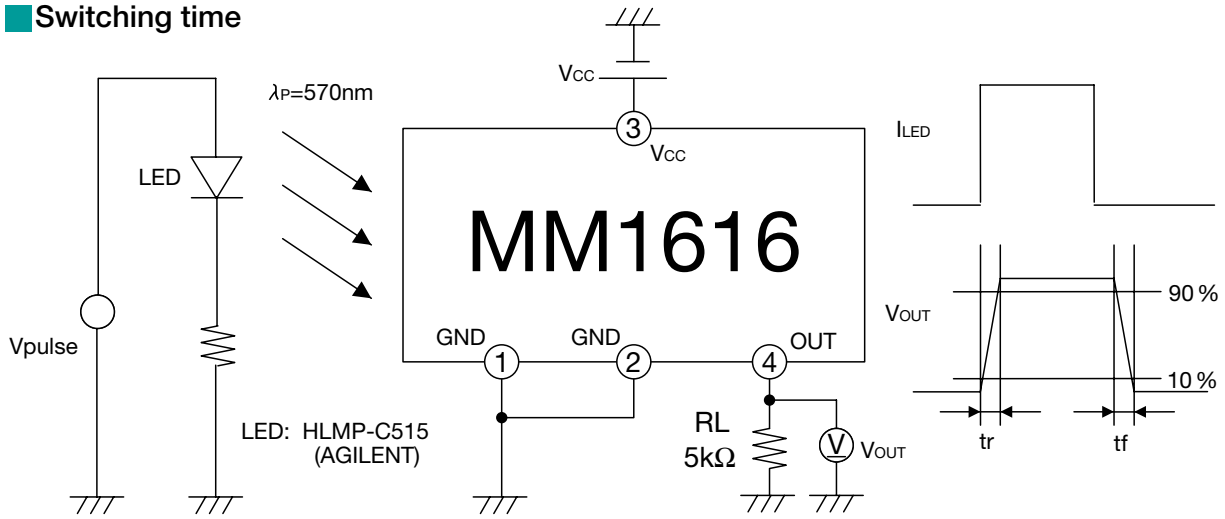
Light current 1 · 2 · 3 Light current ratio



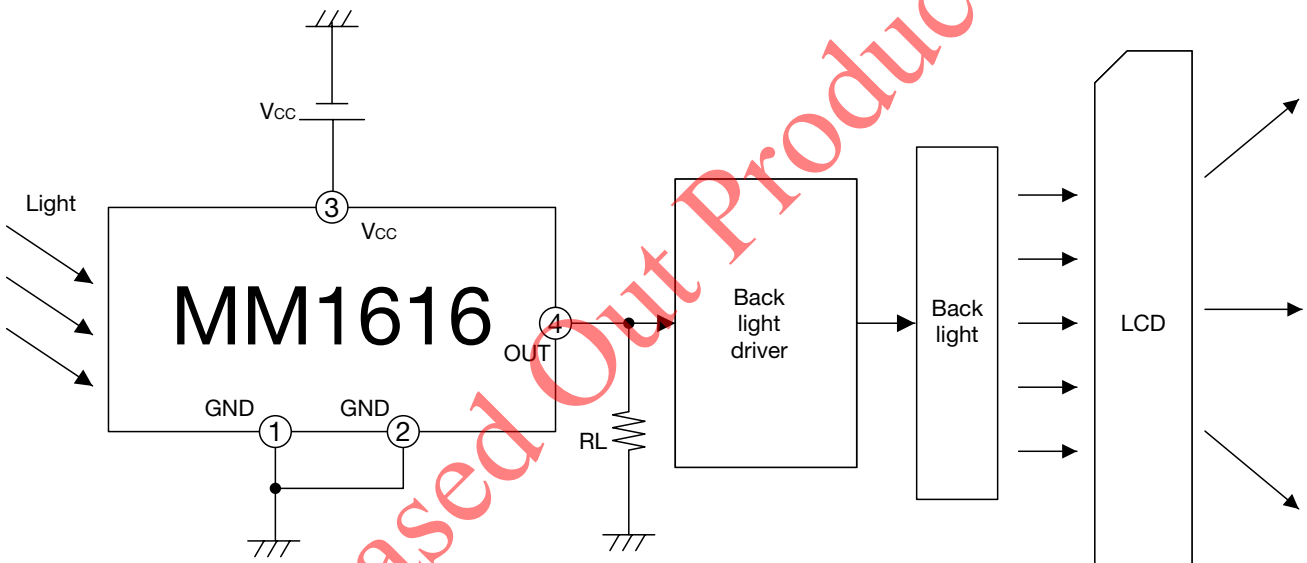
Dark current



Switching time

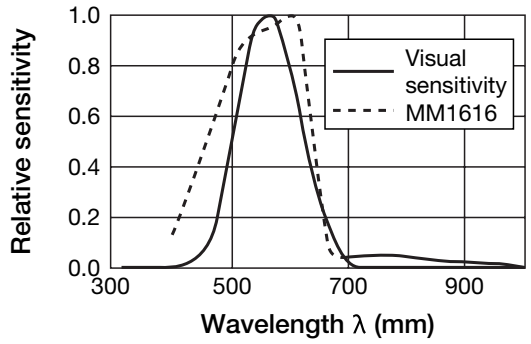


Application Circuit

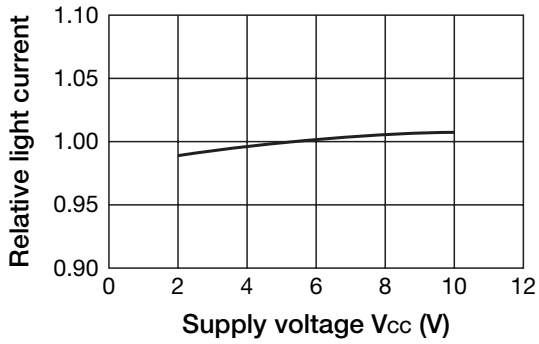


Characteristics

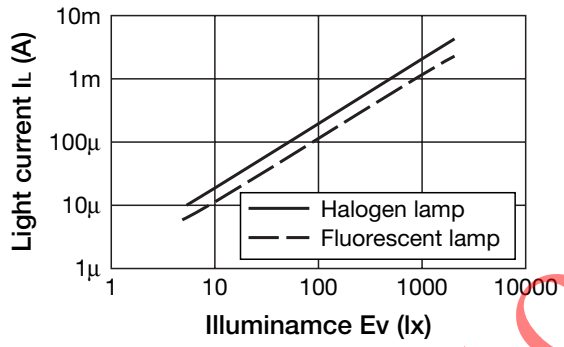
Spectral response



Relative light current – Vcc



Light current – Illuminance



Dark current – Ambient temperature