

Ambient Light Sensor IC Series

Digital 16bit Serial Output Type Ambient Light Sensor IC



BH1721FVC

No.11046EBT10

●Descriptions

BH1721FVC is an digital Ambient Light Sensor IC for I²C bus interface. This IC is the most suitable to obtain the ambient light data for adjusting LCD and Keypad backlight power of Mobile phone. It is possible to detect wide range at High resolution. (1 - 65528 lx).

●Features

- 1) I²C bus Interface (f / s Mode Support, Slave Address : "0100011")
- 2) Spectral responsibility is approximately human eye response
- 3) Illuminance to Digital Converter
- 4) Wide range and High resolution. (1 – 65528 lx)
- 5) Low Current by power down function
- 6) 50Hz / 60Hz Light noise reject-function
- 7) 1.8V Logic input interface
- 8) No need any external parts
- 9) Light source dependency is little. (ex. Incandescent Lamp. Fluorescent Lamp. Halogen Lamp. White LED. Sun Light)
- 10) Small measurement variation (+/- 15%)
- 11) Compact surface mount package 1.6 x 1.6 x 0.55 mm

●Applications

Mobile phone, LCD TV, NOTE PC, Portable game machine, Digital camera, Digital video camera, PDA, LCD display

●Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Supply Voltage	Vmax	4.5	V
Operating Temperature	Topr	-40~85	°C
Storage Temperature	Tstg	-40~100	°C
SDA Sink Current	I _{max}	7	mA
Power Dissipation	Pd	165 [※]	mW

※70mm × 70mm × 1.6mm glass epoxy board. Derating in done at 2.2mW/°C for operating above Ta=25°C.

●Operating Conditions

Parameter	Symbol	Ratings			Units
		Min.	Typ.	Max.	
VCC Voltage	Vcc	2.4	3.0	3.6	V
I ² C Reference Voltage	VDVI	1.65	-	Vcc	V

●Electrical Characteristics (VCC = 3.0V, DVI = 3.0V, Ta = 25°C, unless otherwise noted)

Parameter	Symbol	Limits			Units	Conditions
		Min.	Typ.	Max.		
Supply Current	Icc1	—	140	199	μA	Ev = 100 lx ※ ¹
Powerdown Current	Icc2	—	0.01	1.0	μA	No input Light
Peak Wave Length	λp	—	560	—	nm	
Measurement Accuracy	S/A	1.02	1.2	1.38	times	Sensor out / Actual lx EV = 1000 lx ※ ¹ , ※ ²
Dark (0 lx) Sensor out	S0	0	0	2	count	H-Resolution Mode ※ ³
H-Resolution Mode Resolution	rHR	—	1	—	lx	
L-Resolution Mode Resolution	rLR	—	8	—	lx	
H-Resolution Mode Measurement Time	tHR	—	120	180	ms	
L-Resolution Mode Measurement Time	tLR	—	16	24	ms	
Incandescent / Fluorescent Sensor out ratio	rIF	—	1	—	times	EV = 1000 lx
DVI Input 'L' Voltage	VDVL	—	—	0.4	V	
SCL, SDA Input 'H' Voltage 1	VIH1	0.7 * DVI	—	—	V	DVI ≥ 1.8V
SCL, SDA Input 'H' Voltage 2	VIH2	1.26	—	—	V	1.65V ≤ DVI < 1.8V
SCL, SDA Input 'L' Voltage 1	VIL1	—	—	0.3 * DVI	V	DVI ≥ 1.8V
SCL, SDA Input 'L' Voltage 2	VIL2	—	—	DVI - 1.26	V	1.65V ≤ DVI < 1.8V
SCL, SDA, Input 'H' Current	I _{IH}	—	—	10	μA	
SCL, SDA, Input 'L' Current	I _{IL}	—	—	10	μA	
I ² C SCL Clock Frequency	fSCL	—	—	400	kHz	
I ² C Bus Free Time	t _{BUF}	1.3	—	—	μs	
I ² C Hold Time (repeated) START Condition	t _{HDSTA}	0.6	—	—	μs	
I ² C Set up time for a Repeated START Condition	t _{SUSTA}	0.6	—	—	μs	
I ² C Set up time for a Repeated STOP Condition	t _{SUSTO}	0.6	—	—	μs	
I ² C Data Hold Time	t _{HDDAT}	0	—	—	μs	
I ² C Data Valid Time	t _{VDDAT}	—	—	0.9	μs	
I ² C Data Valid Acknowledge Time	t _{VDACK}	—	—	0.9	μs	
I ² C Data Setup Time	t _{SUDAT}	100	—	—	ns	
I ² C 'L' Period of the SCL Clock	t _{LOW}	1.3	—	—	μs	
I ² C 'H' Period of the SCL Clock	t _{HIGH}	0.6	—	—	μs	
I ² C SDA Output 'L' Voltage	VOL	0	—	0.4	V	IOL = 3 mA

※¹ White LED is used as optical source.

※² Measurement Accuracy typical value is possible to change '1' by "Measurement result adjustment function".

※³ Use H-Resolution Mode if dark data (less than 20 lx) is need.