

**Absolute Maximum Ratings** (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>CCMAX</sub>	4.5	V
INT, SDA, DVI, SCL Terminal Voltage	V <sub>INTMAX</sub> , V <sub>SDAMAX</sub> , V <sub>DVIMAX</sub> , V <sub>SCLMAX</sub>	-0.3 to +7	V
Operating Temperature	T <sub>opr</sub>	-40 to +85	°C
Storage Temperature	T <sub>stg</sub>	-40 to +100	°C
SDA, INT Sink Current	I <sub>MAX</sub>	7	mA
Power Dissipation	P <sub>d</sub>	0.26 <sup>(Note 1)</sup>	W

(Note 1) 70mm x 70mm x 1.6mm glass epoxy board. Derating is at 3.47mW/°C for operating above Ta=25°C.

**Caution:** Operating the IC over the absolute maximum ratings may damage the IC. The damage can either be a short circuit between pins or an open circuit between pins. Therefore, it is important to consider circuit protection measures, such as adding a fuse, in case the IC is operated over the absolute maximum ratings.

**Recommended Operating Conditions** (Ta=-40°C to +85°C)

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V <sub>CC</sub>	2.4	3.0	3.6	V
I <sup>2</sup> C I/O Voltage	V <sub>DVI</sub>	1.65	-	V <sub>CC</sub>	V

**Electrical Characteristics** ( $V_{CC} = 3.0V$ ,  $V_{DVI} = 3.0V$ ,  $T_a = 25^\circ C$ , unless otherwise noted)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Supply Current	$I_{CC1}$	-	150	200	$\mu A$	$E_V = 100 \text{ lx}$ (Note 1) CONTROL register(00h) = "03h" and the other registers are default.
Power Down Current	$I_{CC2}$	-	0.85	1.5	$\mu A$	No input Light All registers are default.
Peak Wave Length of Type0 (Note 2)	$\lambda_{p0}$	-	600	-	nm	
Peak Wave Length of Type1 (Note 2)	$\lambda_{p1}$	-	840	-	nm	
ADC Count Value of Type0	D1k_0	1020	1200	1380	count	$E_V = 1000 \text{ lx}$ (Note 1) TIMING register(01h) = "DAh" GAIN register(07h) = "00h"
ADC Count Value of Type1	D1k_1	153	180	207	count	$E_V = 1000 \text{ lx}$ (Note 1) TIMING register(01h) = "DAh" GAIN register(07h) = "00h"
Dark (0 lx) Sensor Out of Type0	S0_0	0	0	2	count	No input Light TIMING register(01h) = "DAh" GAIN register(07h) = "00h"
Dark (0 lx) Sensor Out of Type1	S0_1	0	0	2	count	No input Light TIMING register(01h) = "DAh" GAIN register(07h) = "00h"
Gain x1 Resolution of Type0 (Note 2)	$r_{G1}$	-	0.83	-	lx/count	TIMING register(01h) = "DAh" (Note 1)
Gain x2 Resolution of Type0 (Note 2)	$r_{G2}$	-	0.42	-	lx/count	TIMING register(01h) = "DAh" (Note 1)
Gain x64 Resolution of Type0 (Note 2)	$r_{G64}$	-	0.014	-	lx/count	TIMING register(01h) = "DAh" (Note 1)
Gain x128 Resolution of Type0 (Note 2)	$r_{G128}$	-	0.007	-	lx/count	TIMING register(01h) = "DAh" (Note 1)
Measurement Time	Tmt1	-	104.6	150	ms	TIMING register(01h) = "DAh"
Internal Clock Period	Tint	-	2.8	4.0	$\mu s$	
INT Output 'L' Voltage	$V_{INT}$	0	-	0.4	V	$I_{INT} = 3 \text{ mA}$
SCL, SDA Input 'H' Voltage 1	$V_{IH1}$	$0.7 \cdot V_{DVI}$	-	-	V	$V_{DVI} \geq 1.8V$
SCL, SDA Input 'H' Voltage 2	$V_{IH2}$	1.26	-	-	V	$1.65V \leq V_{DVI} < 1.8V$
SCL, SDA Input 'L' Voltage 1	$V_{IL1}$	-	-	$0.3 \cdot V_{DVI}$	V	$V_{DVI} \geq 1.8V$
SCL, SDA Input 'L' Voltage 2	$V_{IL2}$	-	-	$V_{DVI} - 1.26$	V	$1.65V \leq V_{DVI} < 1.8V$
SCL, SDA, INT Input 'H' Current	$I_{IH}$	-	-	10	$\mu A$	
SCL, SDA, INT Input 'L' Current	$I_{IL}$	-	-	10	$\mu A$	
I <sup>2</sup> C SCL Clock Frequency	$f_{SCL}$	-	-	400	kHz	
I <sup>2</sup> C Bus Free Time	$t_{BUF}$	1.3	-	-	$\mu s$	
I <sup>2</sup> C Hold Time (Repeated) START Condition	$t_{HDSTA}$	0.6	-	-	$\mu s$	
I <sup>2</sup> C Setup Time for a Repeated START Condition	$t_{SUSTA}$	0.6	-	-	$\mu s$	
I <sup>2</sup> C Setup Time for STOP Condition	$t_{SUSTO}$	0.6	-	-	$\mu s$	
I <sup>2</sup> C Data Hold Time	$t_{HDDAT}$	0	-	0.9	$\mu s$	
I <sup>2</sup> C Data Setup Time	$t_{SDAT}$	100	-	-	ns	
I <sup>2</sup> C 'L' Period of the SCL Clock	$t_{LOW}$	1.3	-	-	$\mu s$	
I <sup>2</sup> C 'H' Period of the SCL Clock	$t_{HIGH}$	0.6	-	-	$\mu s$	
I <sup>2</sup> C SDA Output 'L' Voltage	$V_{OL}$	0	-	0.4	V	$I_{OL} = 3 \text{ mA}$

(Note 1) White LED is used as optical source.

(Note 2) Not 100% Tested