

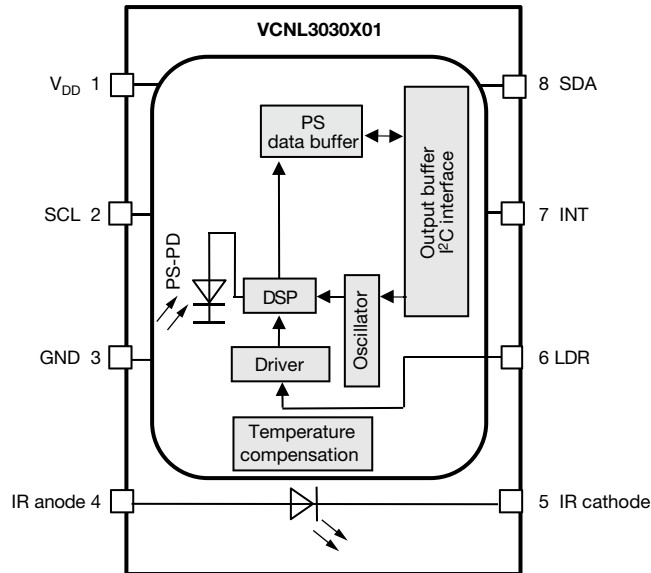
BLOCK DIAGRAM


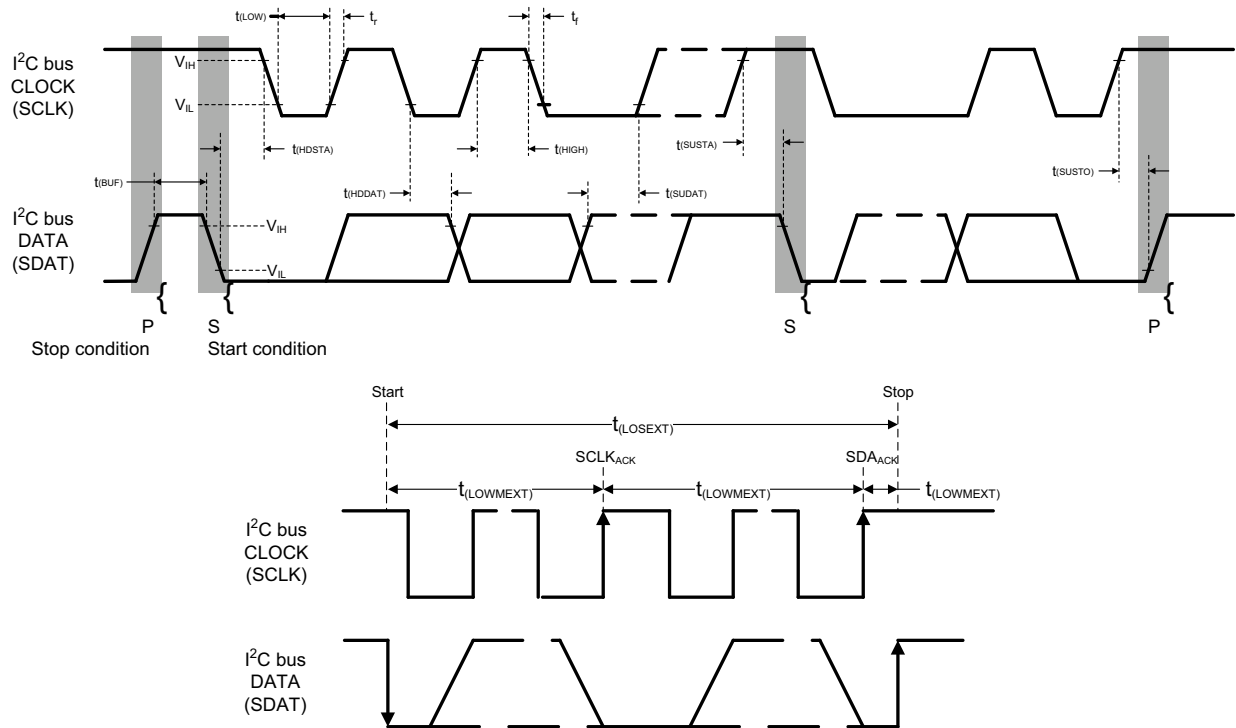
Fig. 1 - Detailed Block Diagram

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply voltage		V_{DD}	2.5	-	3.6	V
Supply current	Excluded LED driving	I_{DD}	-	200	-	μA
	Light condition = dark, $V_{DD} = 3.3\text{ V}$	$I_{DD}(\text{SD})$	-	0.2	-	μA
I ² C supply voltage		$V_{PULL\ UP}$	1.8	-	5.5	V
I ² C signal input	Logic high	$V_{DD} = 3.3\text{ V}$	V_{IH}	-	-	V
	Logic low		V_{IL}	-	0.4	
	Logic high	$V_{DD} = 2.6\text{ V}$	V_{IH}	1.4	-	V
	Logic low		V_{IL}	-	0.4	
Peak sensitivity wavelength of PS		λ_p	-	720	-	nm
Full PS counts	12-bit / 16-bit resolution		-	-	4096 / 65 535	steps
PS detection range	Kodak gray card ⁽¹⁾		0	-	300	mm
Operating temperature range		T_{amb}	-40	-	+105	$^{\circ}\text{C}$
LED_Anode voltage			-	-	5.5	V
IRED driving current	⁽²⁾		-	200	-	mA

Notes

- Test condition: $V_{DD} = 3.3\text{ V}$, temperature: $25\text{ }^{\circ}\text{C}$
- ⁽¹⁾ Part should be operated in dark condition (not in direct sunlight)
- ⁽²⁾ Programmable between 50 mA and 200 mA; based on IRED on / off duty ratio = 1/40, 1/80, 1/160, and 1/320

I²C BUS TIMING CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	SYMBOL	STANDARD MODE		FAST MODE		UNIT
		MIN.	MAX.	MIN.	MAX.	
Clock frequency	$f_{(I2CCLK)}$	10	100	10	400	kHz
Bus free time between start and stop condition	$t_{(BUF)}$	4.7	-	1.3	-	μs
Hold time after (repeated) start condition; after this period, the first clock is generated	$t_{(HDSTA)}$	4.0	-	0.6	-	μs
Repeated start condition setup time	$t_{(SUSTA)}$	4.7	-	0.6	-	μs
Stop condition setup time	$t_{(SUSTO)}$	4.0	-	0.6	-	μs
Data hold time	$t_{(HDDAT)}$	-	3450	-	900	ns
Data setup time	$t_{(SUDAT)}$	250	-	100	-	ns
I ² C clock (SCK) low period	$t_{(LOW)}$	4.7	-	1.3	-	μs
I ² C clock (SCK) high period	$t_{(HIGH)}$	4.0	-	0.6	-	μs
Clock / data fall time	t_f	-	300	-	300	ns
Clock / data rise time	t_r	-	1000	-	300	ns


 Fig. 2 - I²C Bus Timing Diagram