

TABLE OF CONTENTS

1. Electrical Specifications	4
1.1. Performance Tables	4
1.2. Typical Performance Graphs	8
2. Functional Description	9
2.1. Introduction	9
2.2. Ambient Light	9
2.3. Ultraviolet (UV) Index	11
2.4. Host Interface	13
3. Operational Modes	15
3.1. Off Mode	15
3.2. Initialization Mode	15
3.3. Standby Mode	15
3.4. Forced Conversion Mode	15
3.5. Autonomous Operation Mode	16
4. Programming Guide	17
4.1. Command and Response Structure	17
4.2. Command Protocol	18
4.3. Resource Summary	20
4.4. Signal Path Software Model	23
4.5. I ² C Registers	24
4.6. Parameter RAM	35
5. Pin Descriptions	42
6. Ordering Guide	43
7. Package Outline: 10-Pin QFN	44
8. Suggested PCB Land Pattern	46
Document Change List	48
Contact Information	49

1. Electrical Specifications

1.1. Performance Tables

Table 1. Recommended Operating Conditions

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
V _{DD} Supply Voltage	V _{DD}		1.71	—	3.6	V
V _{DD} OFF Supply Voltage	V _{DD_OFF}	OFF mode	−0.3		1.0	V
V _{DD} Supply Ripple Voltage		V _{DD} = 3.3 V 1 kHz–10 MHz	—	—	50	mVpp
Operating Temperature	T		−40	25	85	°C
SCL, SDA, Input High Logic Voltage	I ² C _{VIH}		V _{DD} ×0.7	—	V _{DD}	V
SCL, SDA Input Low Logic Voltage	I ² C _{VIL}		0	—	V _{DD} ×0.3	V
Operation under Direct Sunlight	Edc		—	—	128	klx
Start-Up Time		V _{DD} above 1.71 V	25	—	—	ms

Table 2. Performance Characteristics¹

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
I _{DD} OFF Mode	I _{off}	V _{DD} < V _{DD_OFF} (leakage from SCL, SDA, and INT not included)	—	240	1000	nA
I _{DD} Standby Mode	I _{sb}	No ALS Conversions No I ² C Activity V _{DD} = 1.8 V	—	150	500	nA
I _{DD} Standby Mode	I _{sb}	No ALS Conversions No I ² C Activity V _{DD} = 3.3 V	—	1.4	—	μA
I _{DD} Actively Measuring	I _{active}	V _{DD} = 3.3 V	—	4.3	5.5	mA
INT, SCL, SDA Leakage Current		V _{DD} = 3.3 V	−1	—	1	μA
Actively Measuring Time ²		UV or ALS VIS + ALS IR	—	285	—	μs

Notes:

1. Unless specifically stated in "Conditions", electrical data assumes ambient light levels < 1 klx.
2. Represents the time during which the device is drawing a current equal to I_{active} for power estimation purposes. Assumes default settings.