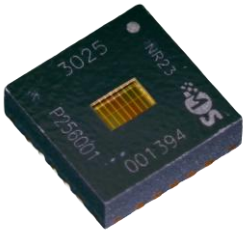
Preliminary Product Datasheet

ChipSense™ 2.0-16
Hyperspectral Sensor Chip



MantiSpectra
Making Sense

Characteristics

Parameter	Unit	Specifications
Wavelength Range	nm	550-1680
# Distinct Channels	#	16
Channels configuration Options		1 (see Page 1)
# Peaks per Channel	#	4
Tolerance peaks position shift from Nominal Reference per each channel	nm	± 15
Highest Peak Responsivity	A/W	0.1
Tolerance peaks responsivity wrt Nominal Reference per channel	A/W	± 0.05
Minimum distance channel peak from adjacent channel peaks (per each channel)	nm	10
FWHM (Full Widht Half Maximum) per peak per channel	nm	60
Responsivity Offset (= Ratio minimum responsivity/highest peak) per channel	%	0-13
Operating Temperature	°C	5 to 75
Thermal tuning	nm/°C	0.16
Channel physical dimensions	µm	130x605
Chip die dimensions (w x h x d)	mm	1.55 x 1.55 x
Chip Carrier		QFN
Chip carrier dimensions	mm	4.0 x 4.0 x 1.4
Chip Pins Number	#	20
Weight	g	0.5
Chip Shipping Packaging Type		Reel

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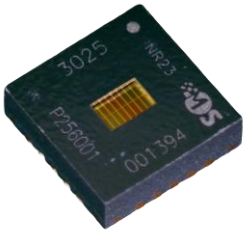
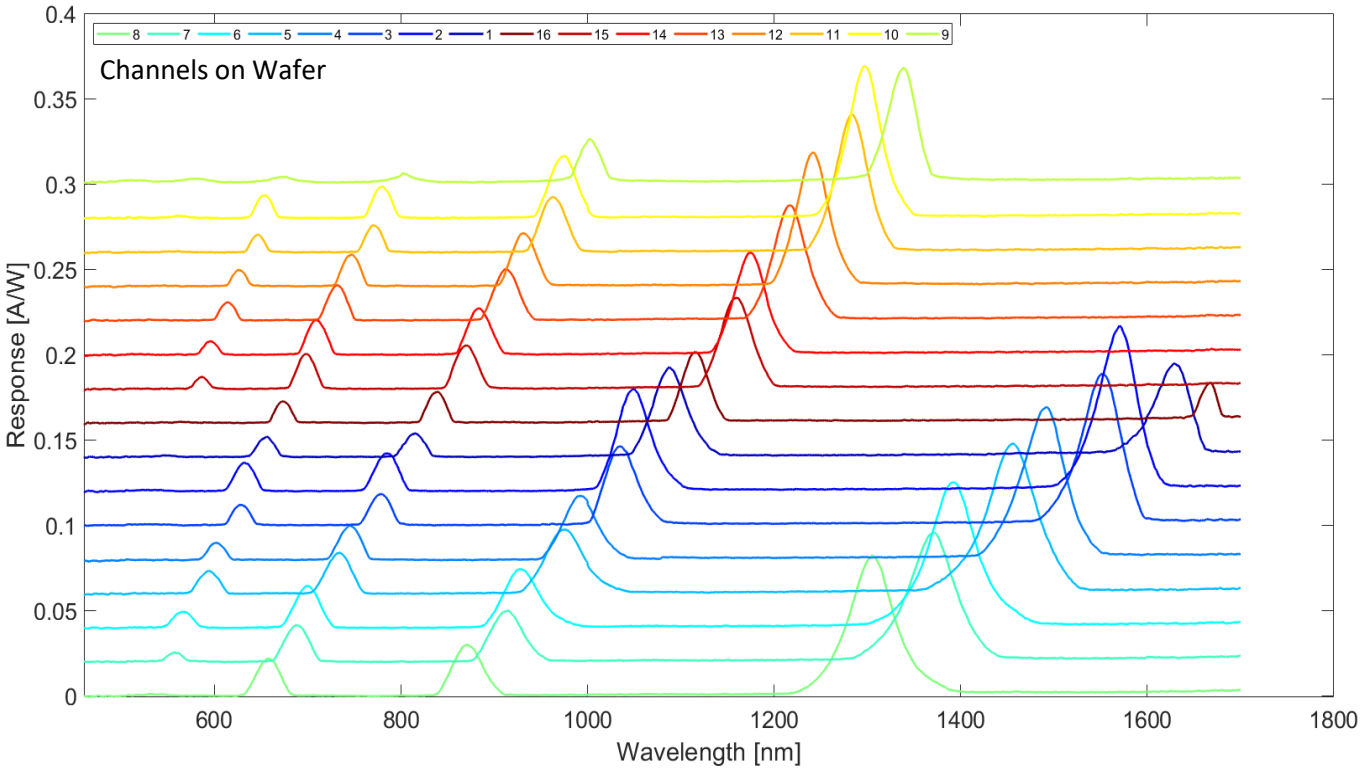


Photodetectors Responsivity

Artificial Y-axis offset for visualization purpose



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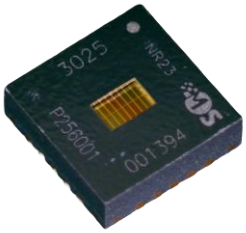
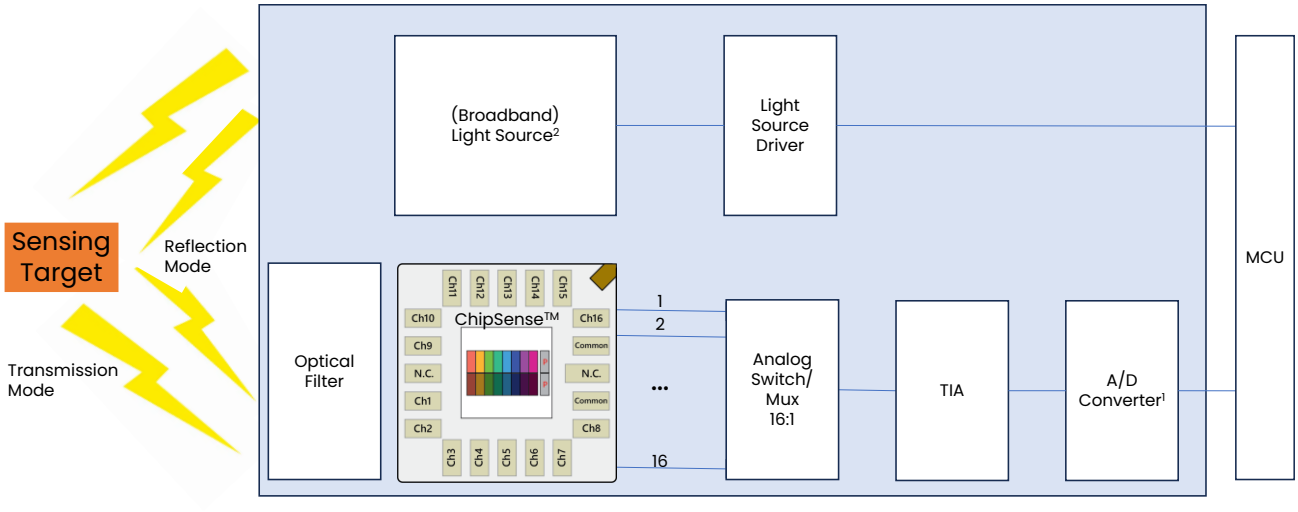


Sensing Unit Block Diagram Reference Design



[1] Bits # depending on use case/system dynamic range
Sampling Frequency depending on use case (max limited by PD time response estimated at 1MHz)
[2] Recommended for NIR broadband (Vacuum or Halogen), for narrower ranges dedicated (array of) LEDs

Sensing Unit Block Diagram Reference Design

	Component Function/Type	Type	Manufacturer Part Number	Manufacturer
Optical Front-End	Light Source	Mini-halogen lamp	PN 41150-100-1 (= 1150-00 with additional 2 hours pre-bake conditioning)	MGG lamps
	High-pass Optical Filter	850-1700+ nm	30050555 (5mmx7mmx0.5mm)	Hitronics
	Low-Pass Optical Filter	500-950nm	30050584 (5mmx7mmx0.5mm)	Hitronics
Discrete Analog Front-End	ADC	Sigma-Delta 22 bits	MCP3551-E/SN	Microchip
	TIA	Low Noise / 5MΩ Gain	OPA325	Texas Instruments
	Multiplexer	Analog switch	ADG706BRUZ	Analog Devices
Integrated Analog Front-End	Mux + TIA + ADC	8:1 Mux + TIA + ADC	Short-list options under evaluation	

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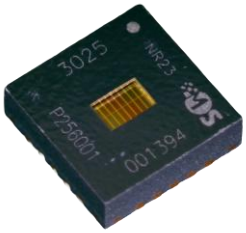
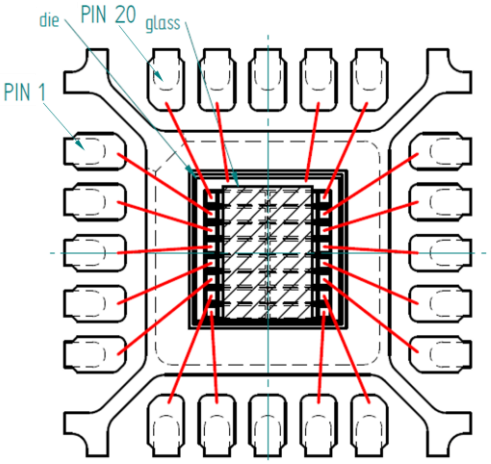


Pin Diagram

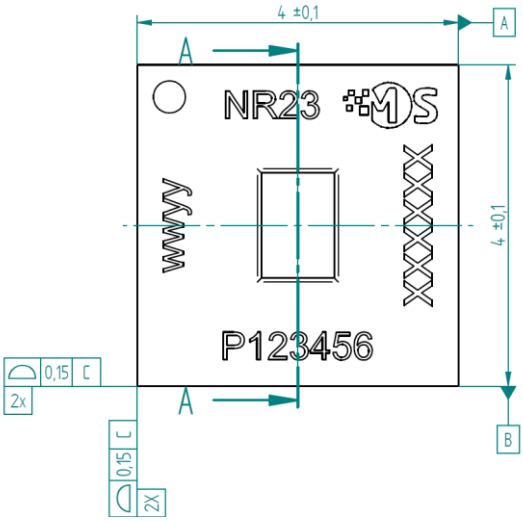


Pin #	Signal
1	PD 10
2	PD 11
3	PD 12
4	PD 13
5	PD 14
6	PD 15
7	PD 16
8	Not used
9	PD 8
10	PD 7
11	PD 6
12	PD 5
13	PD 4
14	PD 3
15	PD 2
16	PD 1
17	GND
18	Not used
19	GND
20	PD 9

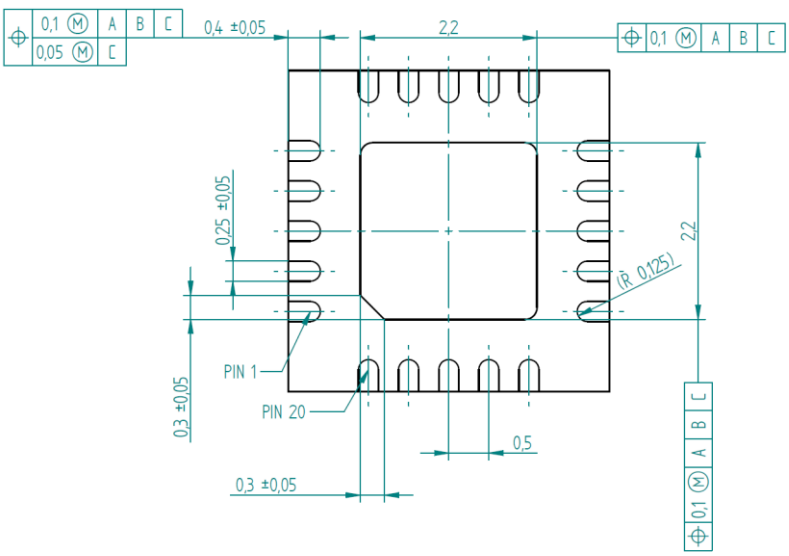
Dimensional Drawing

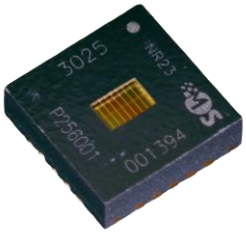
Dimension	Value [mm]	Tolerance [mm]
Chip width	4.0	± 0.1
Chip height	4.0	± 0.1
Chip thickness	1.1	± 0.1
SMD contact width	0.250	± 0.05
SMD contact pitch	0.500	N.A.
SMD contact length	0.400	± 0.05

Top View



Bottom View





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