iC212
HIGHSPEED PHOTORECEIVER

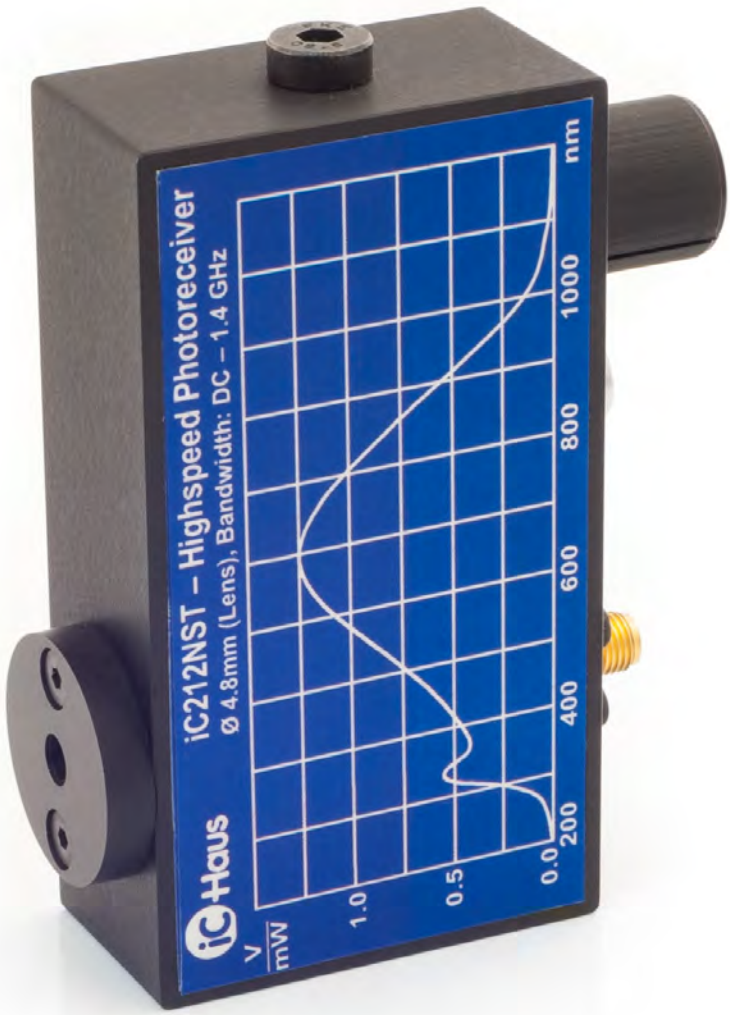
FEATURES

- Bandwidth DC to 1.4 GHz
- Si PIN photodiode, Ø 0.2 mm for "No Slow Tail" (NST) option
- InGaAs photodiode, Ø 0.1 mm for "Near Infrared" (NIR) option
- Spectral response range λ = 320 to 1000 nm (NST)
- Spectral response range λ = 800 to 1800 nm (NIR)
- Amplifier transimpedance (gain) 3.125 V/mA
- Max. conversion gain 1.25 V/mW @ 700 nm (NST)
- Max. conversion gain 3.25 V/mW @ 1500 nm (NIR)

APPLICATIONS

- Fast pulse and transient measurement
- Optical front-end for oscilloscopes

DEVICE



DESCRIPTION

The iC-Haus Highspeed Photoreceiver iC212 has been developed for optical high speed measurement. With its bandwidth ranging from DC up to 1.4 GHz it detects photo signals from constant light to high speed with rise times down to 200 ps. The iC212 Highspeed Photoreceiver also features offset adjustment to compensate DC levels of the input signal.

The photodiode used with the standard "no slow tail" (NST, blue label) version covers a spectral range from 320 to 1000 nm with an active area diameter of about Ø 0.2 mm, which is increased by a Ø 4.6 mm lens, resulting in an effective usable area of typical 12.5 mm^2. The Highspeed Photoreceiver is able to detect power levels in the sub mW range at GHz speed.

The "Near Infrared" (NIR, orange label) version covers a spectral range from ca. 800 to 1800 nm.

The iC212 Highspeed Photoreceiver comes with M6 mounting holes for integration in optical bench systems and an optional fiber-optic input adapter for optical fiber coupling.

ABSOLUTE MAXIMUM RATINGS

Beyond these values damage may occur; device operation is not guaranteed.

Item No.	Symbol	Parameter	Conditions	Min.	Max.	Unit
G001	Pmax	Optical Input Power			10	mW
G002	Vs	Power Supply Voltage			20	V

ELECTRICAL CHARACTERISTICS

Test Conditions: Vs = 18 V, Ta = 25 °C*, System Impedace 50 Ω

Item No.	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Gain							
101	A	Amplifier Transimpedance Conversion Gain	50 Ω load; NST: λ = 700 nm NIR: λ = 1500 nm		3.125 1.25 3.25		V/mA V/mW V/mW
Frequency Response							
201	fmax	Upper Cut-Off Frequency	-3 dB		1.4		Ghz
202	ΔA	Gain Flatness			±1		dB
203	tr	Rise Time	10 to 90%		280		ps
204	tpd	Propagation Delay	optical in => electrical out, 50% to 50%		750		ps
Detector							
301	d	Active Area Diameter	NST NIR		0.2 0.1		mm mm
302	Aeff	Effective Active Area	4.6 mm lens		12.5		mm^2
303	λ	Spectral Range	NST NIR	320 800		1000 1800	nm nm
304	Pmax	Max. Optical Input Power	NST: average NST: linear amplification @ 700 nm NIR: linear amplification @ 1500 nm		10 770 320		mW µW µW
305	NEP	Noise equivalent power	including amplifier noise, f = 1 GHz		115		$pW/\sqrt{Hz}$
Output							
401	Rout	Output Impedance			50		Ω
402	Vout	Output Voltage Swing	50 Ω load, for linear amplification	-0.3		1.0	V
403	Vos	Offset Voltage (adjustable)†	DC offset cancellation	-1.25		0.15	V
404	Pos	Offset (adjustable)†	equivalent optical power	-92		750	µW
405	twu	Warm-Up Time	stable offset voltage		30		min

ELECTRICAL CHARACTERISTICS

Test Conditions: Vs = 18 V, Ta = 25 °C*, System Impedace 50 Ω

Item No.	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Power Supply							
501	Vs	Supply Voltage				18	V
502	Is	Supply Current		150			mA

* Caution! Even during regular operation, the aluminum case of the photoreceiver may heat up to 40 °C max.
† The output is clipped to -0.5 V, if the offset voltage is less than 0.5 V and no DC light is present.

CONTENTS

The purchased parts package includes

- Highspeed Photoreceiver iC212
  (picture shows standard NST option)
- Power adapter (230 VAC)
- Coaxial cable with SMA plugs
- SMA to BNC adapter
- Fiber adapter

Figure 1: Box contents

DIMENSIONS

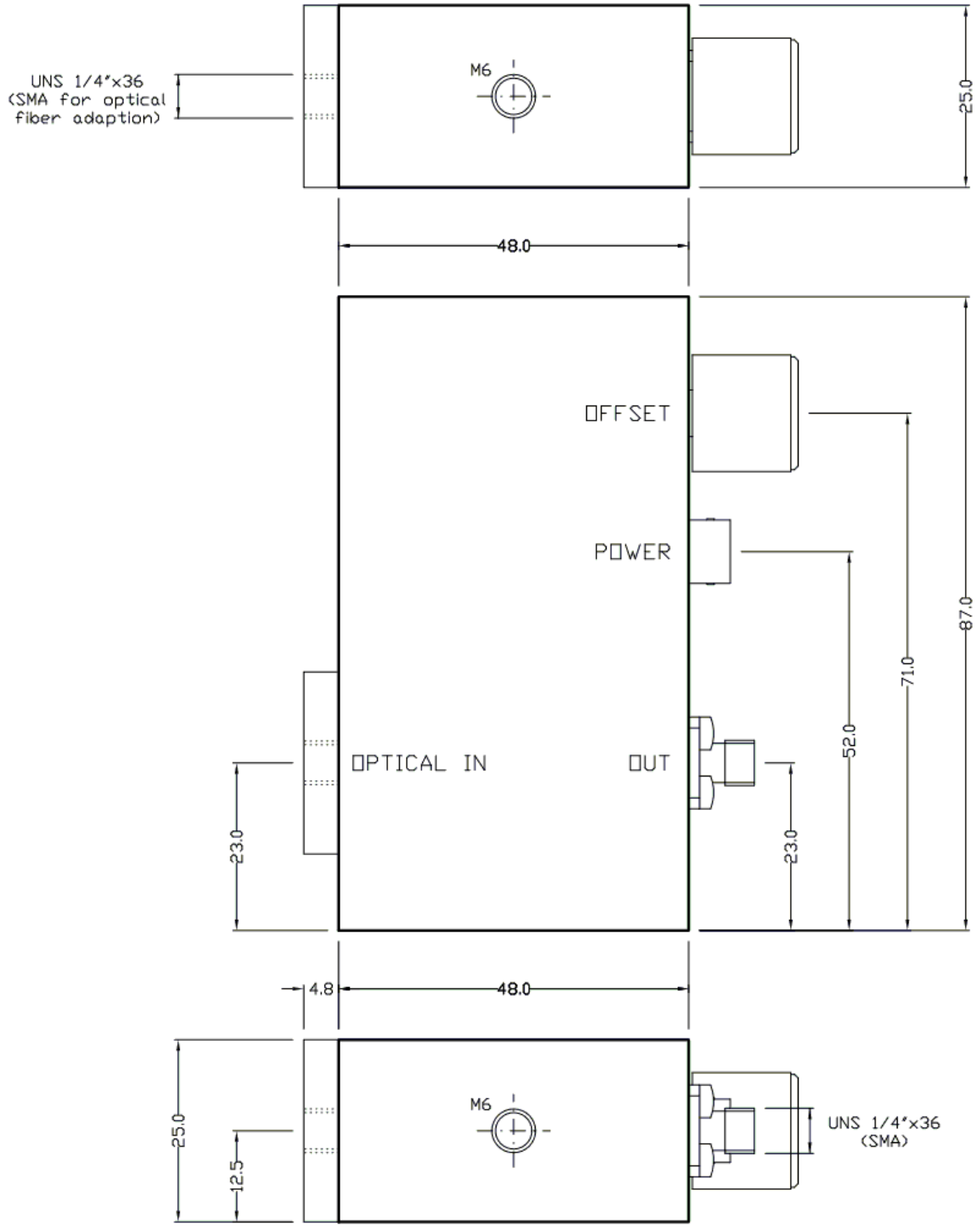


Figure 2: Case dimensions (all units in mm)

CONNECTORS

Input	
NST	Optical, micro bench adaption - Free-space measurement (default) - SMA fiber adapter (optional)
NIR	FC/PC fiber adapter with integrated photodiode - Lens cap for free-space measurement (default)
Output	SMA Connector
Power Supply	Coaxial power connector 9 mm +: Vs -: GND

Table 1: Connectors

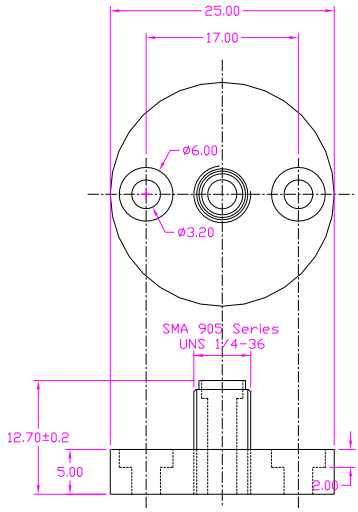


Figure 3: SMA fiber adapter (NST version only)

RESPONSE

Standard "No Slow Tail" (NST) option

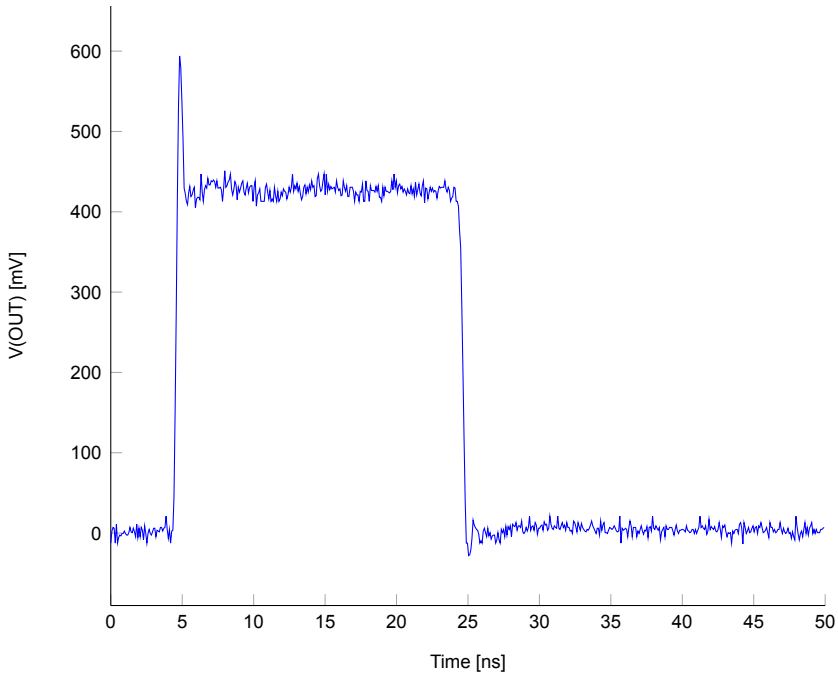


Figure 4: Pulse response (NST)

"Near Infrared" (NIR) option

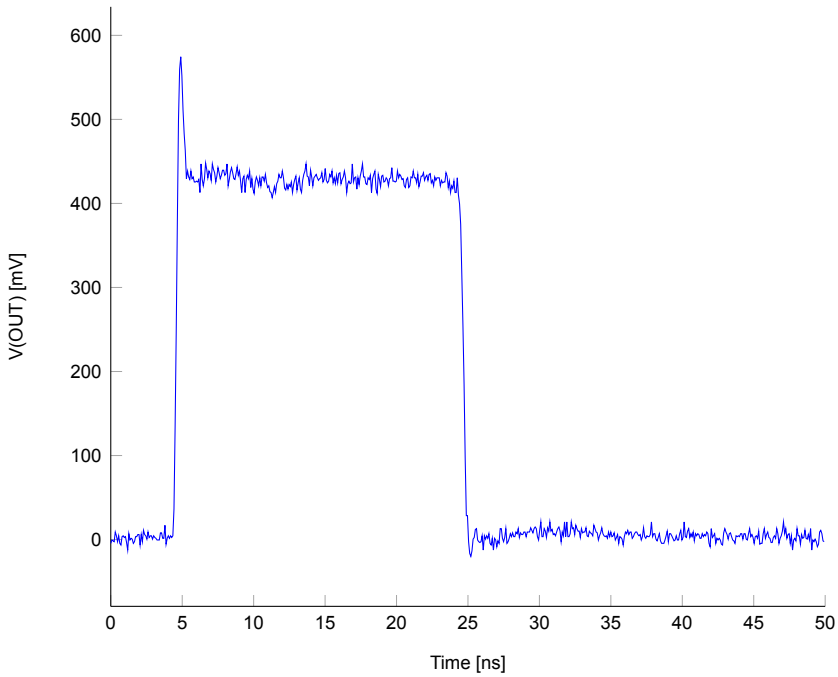


Figure 5: Pulse response (NIR)

Spectral response

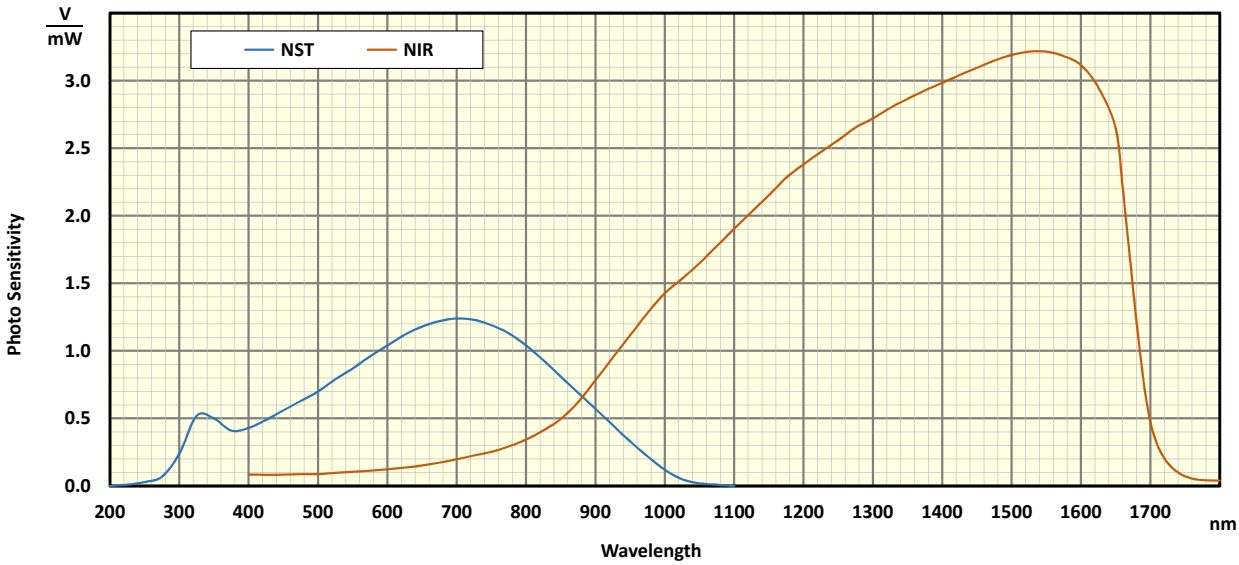


Figure 6: Spectral response

REVISION HISTORY

Rel.	Rel. Date*	Chapter	Modification	Page
B1	2015-07-30	FEATURES	NIR version added	1
		DEVICE	New standard NST version shown	1
		DESCRIPTION	NIR version added	2
		ELECTRICAL CHARACTERISTICS	NIR version added	2
		CONTENTS	New standard NST version shwon	4
		DIMENSIONS	Fiber adapter added	5
		CONNECTORS	Lens dropped	6
		RESPONSE	NIR version added	8
		APPLICATION NOTES	Equipment used: iC227, HV1M, HG2D added	15
		ORDERING INFORMATION	NIR version added	16

Rel.	Rel. Date*	Chapter	Modification	Page
C1	2019-03-15	DEVICE	New product photo	1
		ELECTRICAL CHARACTERISTICS	Single 18 V supply	3
		CONNECTORS	Pin configuration	6
		RESPONSE	Pulse response NIR added	8

Rel.	Rel. Date*	Chapter	Modification	Page
C2	2020-03-17	CONTENTS	New picture box contents	4
		CONNECTORS	Input NST/NIR updated	6
		RESPONSE	Pulse response x-achsis scale corrected	7
		RESPONSE	New diagram spectral response	8
		APPLICATION NOTES	Application notes moved to seperate document	

* Release Date format: *YYYY-MM-DD*

ORDERING INFORMATION

Type	Options	Order Designation
iC212	Standard "No Slow Tail" (NST) "Near Infrared" (NIR)	iC212 iC212NIR

Please send your purchase orders to our order handling team:

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