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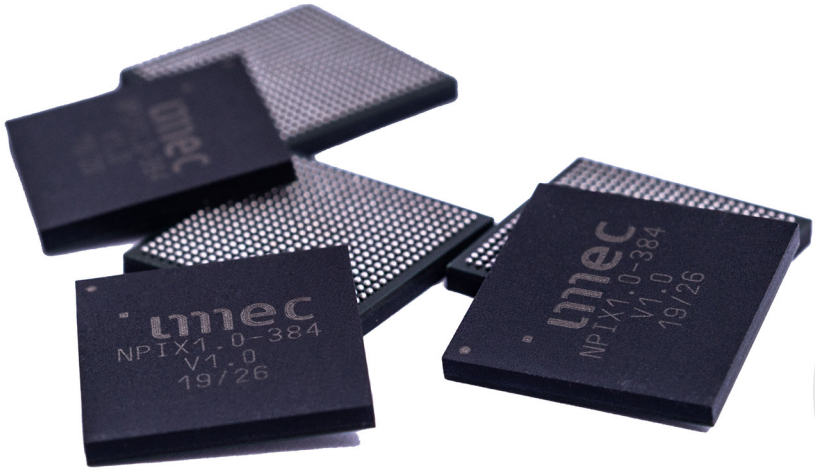

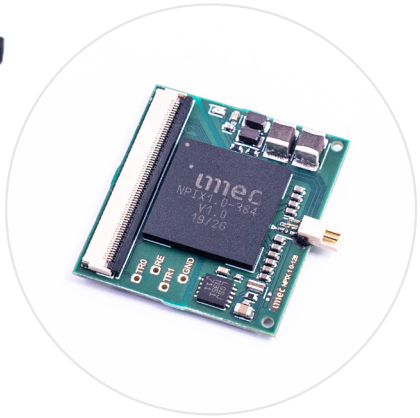

NEUROPIXELS 1.0 384 CHANNEL NEURAL RECORDING INTEGRATED CIRCUIT

For use with passive neural probes

Key Features

- 384 channel Neural Recording Integrated Circuit (NRIC)
- Integrated signal conditioning and digitization with on chip amplifiers, filters and 10 bit ADC's
- 384 parallel, dual-band (AP[1], LFP[2]), low-noise recording channels
- Input- referred noise: AP band = 5.9 µV (typical) and LFP band = 9.2 µV (typical)
- Bandwidth: AP band = 0.3-10 kHz and LFP band = 0.5-500 Hz
- Sampling frequency: AP band = 30 kHz and LFP band = 2.5 kHz
- Fully characterized and qualified
- Compatible with SpikeGLX and Open Ephys software
- Package type: BGA (Ball grid array)
- Size packaged chip: 12 x 12 mm
- Small and lightweight 128 channel headstage/ reference design (3.3 g)

Description

The Neuropixels[3] 1.0 Neural Recording Integrated Circuit (NRIC) is a CMOS integrated digital electrophysiology chip for neuroscience research in small animals, rodents and non-human primates. The NRIC features 384 low-power channels and it is based on the field proven integrated Neuropixels 1.0 neural probe in widespread use in the Neuroscience community.

The 384 parallel, configurable, low-noise recording channels enable simultaneous, dual-band recording of hundreds of neurons. On-chip circuitry includes amplifiers, analog and digital filters and ADC's for signal conditioning and digitization resulting in a small and light-weight package. This NRIC can be used to design miniature and light-weight headstages, an essential interface board for reliable power supply, probe configuration, data streaming and system/probe diagnostics. The NRIC is compatible with the Neuropixels 1.0 PXIe based Card and Control System and OneBox, and is supported by the SpikeGLX and Open Ephys software. The NRIC is also available as a 128-channel headstage (reference design) which can interface with neural probes of up to 128 sites. This headstage is also compatible with the Neuropixels 1.0 PXIe system and OneBox.

1 Action potentials
2 Local field potentials
3 JJ Jun et al., Nature 2017, 551, 232–236

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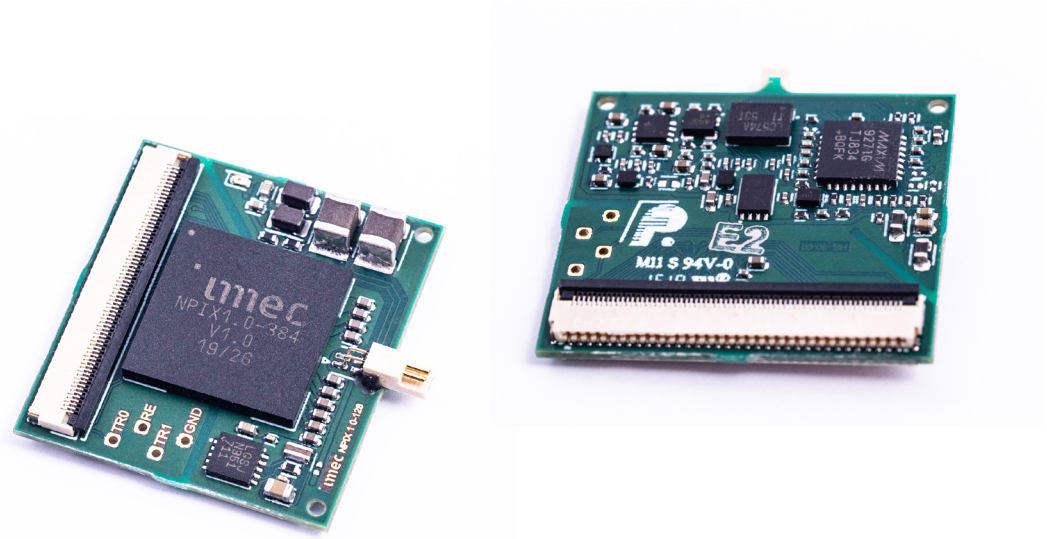

NEUROPIXELS 1.0
128-CHANNEL DIGITAL HEADSTAGE
(REFERENCE DESIGN) SOLD SEPARATELY

Key Features

- User-friendly plug & play 128-channel digital headstage
- Ultra-thin, 5m-long cable for bidirectional data communication and power supply
- Works with Neuropixels 1.0 PXIe data acquisition card for up to 4 headstages per card or with the OneBox for up to two headstages per box
- Various hardware/software trigger modes
- API for custom software development
- Detailed data sheets to enable third party hardware interoperability
- Compatible with SpikeGLX and Open Ephys software

Description

The small and lightweight 128-channel headstage is a digital neural interface recording system which can support 64/128 site passive probes and includes the Neuropixels 1.0 NRIC. This headstage can transmit data through a 5m twisted pair data/power cable.

Ordering information

ORDER CODE	DESCRIPTION
NRIC1384	Neuropixels 1.0 Neural Recording Integrated Circuit (NRIC) chip
NPNH_HS_30	Neuropixels 1.0 Neural Recording Integrated Circuit (NRIC) headstage

Key specifications

ANALOG INPUT HEAD STAGE	
SIZE	24 x 22 x 5 mm
WEIGHT	3.3 g
PROBE CONNECTOR	2 x 67-pin ZIF
CABLE CONNECTOR	4-pin (Omnetics)
LED INDICATOR	One red LED
MECHANICAL FIXTURES	Two mounting holes of 1 mm Ø
CONFORMAL COATING	ELPEGUARD / SL 1307 FLZ-T

About Neuropixels
The Neuropixels 1.0 neural probe is an advanced silicon CMOS digital integrated microsystem and a tool for neuroscience research. It was developed through a collaboration funded by Howard Hughes Medical Institute (HHMI), Wellcome Trust, Gatsby Charitable Foundation and Allen Institute for Brain Science. Probes were designed, developed and fabricated at imec, Leuven, Belgium in collaboration with HHMI Janelia Research Campus, Allen Institute for Brain Science and University College London.

* Small animals like rodents and non-human primates