

# Product Line Card

Comprehensive portfolio of mixed-signal ICs for innovative applications

---

As a specialist for mixed-signal integrated circuits and system-on-chip solutions, iC-Haus has been designing and manufacturing application-specific standard products (ASSPs) and custom ASICs for more than 25 years.

We supply industrial, medical, and automotive applications with innovative, reliable, and FMEA-approved integrated circuits and microsystems.



# Product Line Card

## I/O iCs

I/O Circuits <i>for industrial sensors, control panels, PLC</i>		Package	OTR*
iC-DI	Dual Sensor Interface with 3.3 V/5 V Power Supply	QFN24 4x4	A
iC-GF	IO-Link Transceiver for IO-Link Slaves	QFN24 4x4	A
iC-JRX	2x4 Bidirectional 24 V High-Side Driver with $\mu$ C Interface	PLCC44	C
iC-JX	4x4 Bidirectional 24 V High-Side Driver with Load Diagnosis and $\mu$ C Interface	MQFP52	A
iC-MD	RS422 Quadrature Encoder Receiver/Counter with SPI and BiSS Interface	TSSOP20	E
iC-TW9	16-Bit ABZ Quadrature Counter	QFN16 3x3	E
iC-VRV	2x4 24 V Low-Side Driver with I/O Function and $\mu$ C Interface	PLCC44	C

## Interface iCs · BiSS®

*for absolute position measurement, motor feedback and drive systems, safety relevant systems, multiple sensor systems*

Interface iCs · BiSS®		Package	OTR*
iC-MB3	BiSS Interface Master, 1 channel/3 slaves	TSSOP24	I, A

## Power Management iCs

### Power Management iCs

*for industrial sensors, rotary and linear encoders*

Power Management iCs		Package	OTR*
iC-DC	Programmable Dual 2.5/3.3/5 V Buck/Boost SMPS	QFN24 4x4	A, E
iC-JJ	Power Management IC with Autarky Function	MQFP44	A(+)
iC-WD	Switched-Mode Dual 5 V Regulator for 8 V to 36 V	S08, S08-TP, (DFN10 4x4)	I, A
iC-WDA	Switched-Mode Dual 3.3 V Regulator for 8 V to 36 V	DFN10 4x4	I, A
iC-WDB	Switched-Mode 3.3 V (200 mA) and 5 V Regulators for 8 V to 36 V	DFN10 4x4	I, A
iC-WDC	Switched-Mode 3.3 V and 5 V (200 mA) Regulators for 8 V to 36 V	DFN10 4x4	I, A

## Sensor iCs

### Optical

*for photoelectric sensors, identification systems, scanners, spectroscopy, machine vision systems, position encoders*

Optical		Package	OTR*
iC-LA	64x1 Linear Image Sensor with Bidirectional Shift and Extendable Data I/O	optoBGA LA3C	I(+)
iC-LF1401	128x1 Linear Image Sensor with Electronic Shutter Function	optoLGA LF2C, optoBGA LF3C	A(+)
iC-LFL1402	256x1 Gap-Free Linear Image Sensor with Electronic Shutter Function	optoBGA LFL1C	A(+)
iC-LFS	32x1 Linear Image Sensor with Electronic Shutter Function	cQFN10 4x4	C
iC-LQNP	Pulse and AC Light Sensor with Complementary Outputs	T018-4 L/F, optoBGA LQ1C, cDFN6	I, E
iC-OC	Dual Integrating Opto Sensor with Shift Register for Chain Connection	bare die, COB	C(+)
iC-OD	Optical Position-Sensitive Detector (PSD) with Ambient Light Suppression	optoLGA OD4C	I, E
iC-ODL	Optical Position-Sensitive Detector (PSD) with Ambient Light Suppression	optoBGA ODL2C	I, E
iC-OR	5-Element Photodiode Array	bare die, COB	I, M
iC-VP	Photoswitch with Adjustable Sensitivity	T018-4L, T018-4F	I, E

\* OTR: Operational Temperature Range C: 0 to +70°C, I: -20 to +85°C, A: -40 to +85°C, E: -40 to +125°C, M: -55 to 125°C, (+): extended

<b>Magnetic</b> <i>for linear position sensing, gear tooth sensing, length measurement</i>		<b>Package</b>	<b>OTR*</b>
iC-MZ	Differential Hall Switch and Gear-Tooth Sensor with Line Driver	DFN10 4x4	E
iC-SM2L	AMR Linear Position Sensor (Pitch: 2 mm)	LGA SM2C	I(+), E
iC-SM5L	AMR Linear Position Sensor (Pitch: 5 mm)	LGA SM2C	I(+), E

## Linear Functions

<b>Linear Functions</b> <i>for signal conditioners, measurement amplifiers, receivers for 24 V control systems, test equipment, analog computation and modulators, demodulators, voltage-controlled amplifiers</i>		<b>Package</b>	<b>OTR*</b>
iC-BM	Quad Four-Quadrant Analog Multiplier	S018W	A
iC-HC	Dual Ultrafast ATE Signal Comparator up to 36 V	TSSOP16	E
iC-HQ	Quad High-Performance Op Amp with Ultralow Offset (< 1 µV)	TSSOP14	E
iC-HQL	Quad High-Performance Op Amp with Ultralow Offset (< 10 µV)	TSSOP14	E

## Safety Light Curtain iCs

<b>Transmitters</b> <i>for machine safeguarding systems (IEC 61496-1, ESPE), measuring light curtains</i>		<b>Package</b>	<b>OTR*</b>
iC-NL	Light-Grid Pulse Driver with Modulation Input	S08, MSOP8	C, I
iC-NT	Light-Grid Pulse Driver for Light Curtains, Light Barriers and Electro-Sensitive Protective Equipment	S08, MSOP8	C, I
iC-NX	8-Channel Light-Grid Pulse Driver with Modulation Input	TSSOP16	C, I
iC-NXL	8-Channel Light-Grid Pulse Driver	TSSOP16	C, I

<b>Receivers</b> <i>for machine safeguarding systems (IEC 61496-1, ESPE), measuring light curtains</i>		<b>Package</b>	<b>OTR*</b>
iC-LK	Light-Grid Pulse Receiver with Integrated Photodiode	cQFN16 4x4	C
iC-ME	2-Channel Light-Grid Pulse Receiver	DFN10 4x4	C, I
iC-MK	2-Channel Light-Grid Pulse Receiver	DFN10 4x4	C, I
iC-NE	Light-Grid Pulse Receiver for Light Curtains, Light Barriers and Electro-Sensitive Protective Equipment	S08, MSOP8	C, I
iC-NK	Light-Grid Pulse Receiver	S08, MSOP8	C, I

## Encoder iCs · Silicon for Motion®

<b>Optical Encoder iCs</b> <i>for motion control, drive systems, robotics, optical encoders (incremental, singleturn, multiturn)</i>		<b>Package</b>	<b>OTR*</b>
iC-LG	21-Bit Optical Position Encoder with Serial/Parallel and Sin/Cos Output	BLCC LG5C, oBGA LG21C, COB	I, E
iC-LGC	21-Bit Optical Position Encoder with Serial/Parallel and Sin/Cos Output – BiSS C	BLCC LG5C, oBGA LG21C, COB	I, E
iC-LSB	8-Channel Active Photosensor Array	optoBGA LS2C	I(+)
iC-LSC	12-Channel Active Photosensor Array	optoBGA LS2C	I(+)
iC-LSHB	Incremental Photosensor Array	optoBGA LSH2C	I(+)
iC-LSHC	3-Channel Sin/Cos Photosensor Array	optoBGA LSH2C	I(+)
iC-LTA	6-Channel Incremental Opto Encoder	optoBGA LSH2C, oQFN32-(N)5x5	A(+)
iC-LV	5-Bit Optical Encoder with Cascadable Serial Interface (SSI)	BLCC LV4C, COB	I, E

iC-OF	3-Bit Optical Encoder	BLCC 0F3C, optoBGA 0F4C	I, E
iC-OG	8-Bit Differential Scanning Optical Encoder with LED Control	BLCC 0GC	I, E
iC-OV	5-Bit Optical Encoder	BLCC 0VC	I(+)
iC-OW	Incremental Optical Encoder with A/B-Gated Index and LED Control	optoBGA 0W1C	I(+)
iC-PD3948	5-Channel Phased Array Sine Encoder (D39, 2048 PPR)	optoBGA LSH2C, oQFN32-(N)5x5	A(+)
iC-PN2656	Phased Array Nonius Encoder (D26, 256 PPR)	optoBGA LSH2C, oQFN32-(N)5x5	A(+)
iC-PN2624	Phased Array Nonius Encoder (D26, 1024 PPR)	optoBGA LSH2C, oQFN32-(N)5x5	A(+)
iC-PT3310	Phased Array Opto Encoder (D33, 1000 PPR)	oQFN32-(N)5x5	A(+)
iC-PT3313	Phased Array Opto Encoder (D33, 1250 PPR)	oQFN32-(N)5x5	A(+)
iC-PT3320	Phased Array Opto Encoder (D33, 2000 PPR)	oQFN32-(N)5x5	A(+)
iC-PT3324	Phased Array Opto Encoder (D33, 1024 PPR)	oQFN32-(N)5x5	A(+)
iC-PT3325	Phased Array Opto Encoder (D33, 2500 PPR)	oQFN32-(N)5x5	A(+)
iC-WG	14-Bit Differential Scanning Optical Encoder iC	BLCC WGC	I(+)

<b>Magnetic Encoder iCs</b>		<b>Package</b>	<b>OTR*</b>
<i>for linear and angular encoders, position measurement systems, robotics, motion and vehicle control</i>			
iC-MA	8-Bit Angular Hall Encoder iC, Cascadable	DFN10 4x4	E
iC-MH	12-Bit Angular Hall Encoder iC with Commutation, Incremental and Serial Outputs	QFN28 5x5	E
iC-MHA	Angular Hall Encoder with Sin/Cos Outputs	QFN28 5x5	E
iC-ML	8-Bit Linear Position Hall Encoder, Cascadable	TSSOP20	E
iC-MP	8-Bit Hall Encoder iC with Ratiometric Output	DFN10 4x4	E

<b>Interpolators</b>		<b>Package</b>	<b>OTR*</b>
<i>for angle sensors, rotary encoders, linear scales, digital gauges, PLC/IPC interface boards, servo controls</i>			
iC-MG	8-Bit Sin/Cos Interpolation iC with RS422 Line Driver	TSSOP20	I(+), E
iC-MN	3-Channel, Simultaneous Sampling 13-Bit Sin/Cos Interpolation IC with Nonius Calculation	QFN48 7x7	A(+)
iC-MQ	Programmable 9-Bit Sin/Cos Interpolation IC with Fail-Safe RS422 Line Driver	TSSOP20	I(+), E
iC-NG	8-Bit Sine-to-Digital Converter Processor with Waveform Adaptation	S028, SSOP28	I, E
iC-NQ	13-Bit Signal Conditioning Interpolator with BISS B Interface	TSSOP20	I, E
iC-NQC	13-Bit Signal Conditioning Interpolator with BISS C Interface	TSSOP20	I, E
iC-NQL	13-Bit Signal Conditioning Interpolator with SSI Interface	TSSOP20	I, E
iC-NV	6-Bit Sin/Cos Flash Converter with Pin-Selectable Interpolation (to x16)	TSSOP20	I, E
iC-NVH	6-Bit Sin/Cos Flash Converter with Pin-Selectable Interpolation (to x16), half-cycle index	TSSOP20	I, E
iC-TW2	Programmable 8-Bit Sin/Cos Interpolation IC with EEPROM	QFN24 4x4	E
iC-TW4	8-Bit Sin/Cos Interpolator with Automatic Offset Correction	QFN24 4x4	E

<b>Signal Conditioning</b>		<b>Package</b>	<b>OTR*</b>
<i>for linear encoders, incremental encoders, optical position sensors, magnetic position sensors</i>			
iC-MSB	Sin/Cos Sensor Signal Conditioner with Fail-Safe 1 Vpp Line Driver	TSSOP20, TSSOP20-TP	I(+), A(+)
iC-MSB2	Sin/Cos Sensor Signal Conditioner/Multiplexer with Fail-Safe 1 Vpp Line Driver	TSSOP20	I(+)
iC-TW3	Automatic Signal Conditioner with LUT Temperature Compensation and 1 Vpp (100 Ohm) / 2 Vpp Outputs	QFN32 5x5	E
iC-WT	3-Channel Photodiode Amplifier-Comparator with LED Controller	S016N	I(+)

# Product Line Card

Driver iCs			
Laser Diode/LED Drivers		Package	OTR*
<i>for industrial sensors, barcode scanners, laser leveling, laser printers, copiers, laser pointers</i>			
iC-HB	Triple 155 MHz Laser Switch with LVDS Inputs	QFN24 4x4	I
iC-HG	200 MHz Laser Switch for up to 3 A	QFN28 5x5	I
iC-HK, iC-HKB	155 MHz Dual Channel Spike-Free Laser Switch	S08N-TP, MSOP8-TP	I
iC-HL	Non-Volatile Laser Bias Potentiometer for Laser APCs	DFN10 4x4	I
iC-NZ	Fail-Safe Laser Diode Driver for CW and Pulse Operation up to 155 MHz	QFN28 5x5	I
iC-NZN	N-Type Laser Diode Driver with APC and ACC	QFN28 5x5	I(+)
iC-NZP	P-Type Laser Diode Driver with APC and ACC	QFN28 5x5	I
iC-VJ, iC-VJZ	Laser Diode Controller with Transmitter Functions	S016N	I
iC-WJ, iC-WJZ	Laser Diode Driver for CW and Pulse Operation up to 300 kHz	S08, MSOP8	I
iC-WJB	Laser Diode Driver for Battery Supplies of 2.7 V to 6 V	S08, MSOP8	I
iC-WK, iC-WKL	Universal Laser Saver® for CW Operation from 2.4 V up	S08, MSOP8	A
iC-WKM	M-Type CW Laser Diode Driver, Optimized for (Blue) M-Type Laser Diodes	S08N-TP, DFN10 4x4	A
iC-WKN	N-Type CW Laser Diode Driver, Optimized for N-Type Laser Diodes	S08N-TP, DFN10 4x4	A
iC-WKP	P-Type CW Laser Diode Driver, Optimized for P-Type Laser Diodes	S08N-TP, DFN10 4x4	A
Relay/Solenoid Drivers		Package	OTR*
<i>for relays, magnetic valves, photovoltaic modules</i>			
iC-GE	PWM Relay/Solenoid Driver for a Wide Operating Voltage Range	QFN16 4x4	A
iC-JE	Power-Saving PWM Relay/Solenoid Driver	S08	I
24V Line Drivers		Package	OTR*
<i>for factory automation, industrial controls, position sensors</i>			
iC-DL	3-Channel Differential Line Driver with Integrated Impedance Adaptation	QFN28 5x5	I, E
iC-HD2	Quad Differential Line Driver, Pin-Compatible with xx2068	TSSOP20, TSSOP20-TP	I, E
iC-HD7	Quad Differential Line Driver, Pin-Compatible with xx7272 and 26LS31	S016N	I, E
iC-HE	Triple Differential Line Driver	S014N	I, E
iC-HX	3-Channel Differential Line Driver with Reduced Power Dissipation	QFN28 5x5	I, E
iC-VX	3-Channel Differential Line Driver with Complementary 24 V Outputs	S016W, TSSOP20	I(+)
iC-WE	3-Channel 75 Ohm Line Driver for RS422 and 24 V Applications	S016W, S020W, TSSOP20-TP	I, E
ET7272	Quad Differential Line Driver with Separate Logic Bias and Driver Bias	S016N, TSSOP20	A(+)
Output Stages		Package	OTR*
<i>for proximity sensors, light barriers, relays, microcontroller applications</i>			
iC-DN	200 mA Low-Side Switch for 4 V to 36 V with Input/Output Decoupling	SOT23-6L, SC59-3L	E
iC-DP	200 mA High-Side Switch and Level Shift for 4 V to 36 V with Input/Output Decoupling	SOT23-6L, SC59-3L	E
iC-DX	Universal Digital Sensor Output Driver	DFN6 2x2	E(+)
iC-MFL	8-Fold Fail-Safe Logic N-FET Driver	QFN24 4x4	E
iC-MFLT	12-Fold Fail-Safe Logic N-FET Driver	QFN28 5x5	E
iC-MFN	8-Fold Fail-Safe N-FET Driver with a Level Shift of up to 40 V	QFN24 4x4	E
iC-MFP	8-Fold Fail-Safe P-FET Driver with a Level Shift of up to 40 V	QFN24 4x4	E

## LEDs

LEDs <i>for optical encoders</i>		Package	OTR*
iC-SD	Infrared 750 nm LED with Lens for High-Resolution Optical Encoders	BLCC SD1C	E
iC-SD85	Infrared 850 nm LED with Flat Glass for High-Resolution Optical Encoders	oLGA SD2C-2	E
iC-SG85	Infrared 850 nm LED with Plastic Lens for High-Quality Large Area Illumination in High-Resolution Optical Encoders	BLCC SG1C, BLCC SG4C	E
iC-TL33	Infrared 740 nm LED with Lens for High-Resolution Optical Encoders	T046-2L1	E
iC-TL85	Infrared 850 nm LED with Lens or Flat Window for High-Resolution Optical Encoders	T046-2L1, T046-2F	E

## Tools

Tools <i>for evaluation, development, manufacturing</i>	
iC212	High-Speed Photoreceiver with Si-PIN Photodiode
MB3A	BiSS (SSI)-to-PC Adapter (LPT)
MB3U	BiSS (SSI)-to-PC Adapter (USB)
MB3U-I2C	BiSS (SSI) and I2C-to-PC Adapter (USB)
MB4U	High-Performance BiSS (SSI)-to-PC USB Adapter
SinCosYzer®	Sine Encoder Signal Acquisition with Graphical Analysis

Let iC-Haus act as your ASIC design and production partner...

For more details on how iC-Haus can help you realize the full potential of your projects – on time, on budget, and with every assurance of maximum quality, reliability, and performance – feel free to contact us by phone under +49 6135 92920.

You can also send us an Email request to [asic@ichaus.de](mailto:asic@ichaus.de) or visit us online on [www.ichaus.com](http://www.ichaus.com).

iC-Haus, your ISO 9001:2000-certified partner