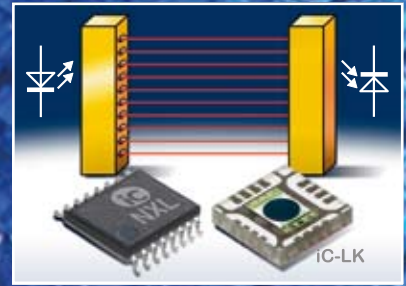


# LIGHT-GRID DRIVERS / RECEIVERS



Typical applications cover light curtains, light barriers and electro-sensitive protective equipment in general.

## Receivers

The light-grid receiver iCs include a bandpass amplifier plus input safety switches with the iC-ME and iC-MK resp. on-chip photo diode with the iC-LK, a differential current-signal output plus control logic to activate the amplifier and the output.

## Drivers

The light-grid driver iCs feature an adjustable LED current sink which is also controlled by a multi-stage shift register. The decrease in LED efficiency with a rise in temperature is compensated by a positive temperature coefficient of the current sink. In order to generate defined light pulses, the LEDs are actively discharged.

## Applications

- Light curtains
- Light barriers
- Electro-sensitive protective equipment (ESPE)

## Features

### Receivers

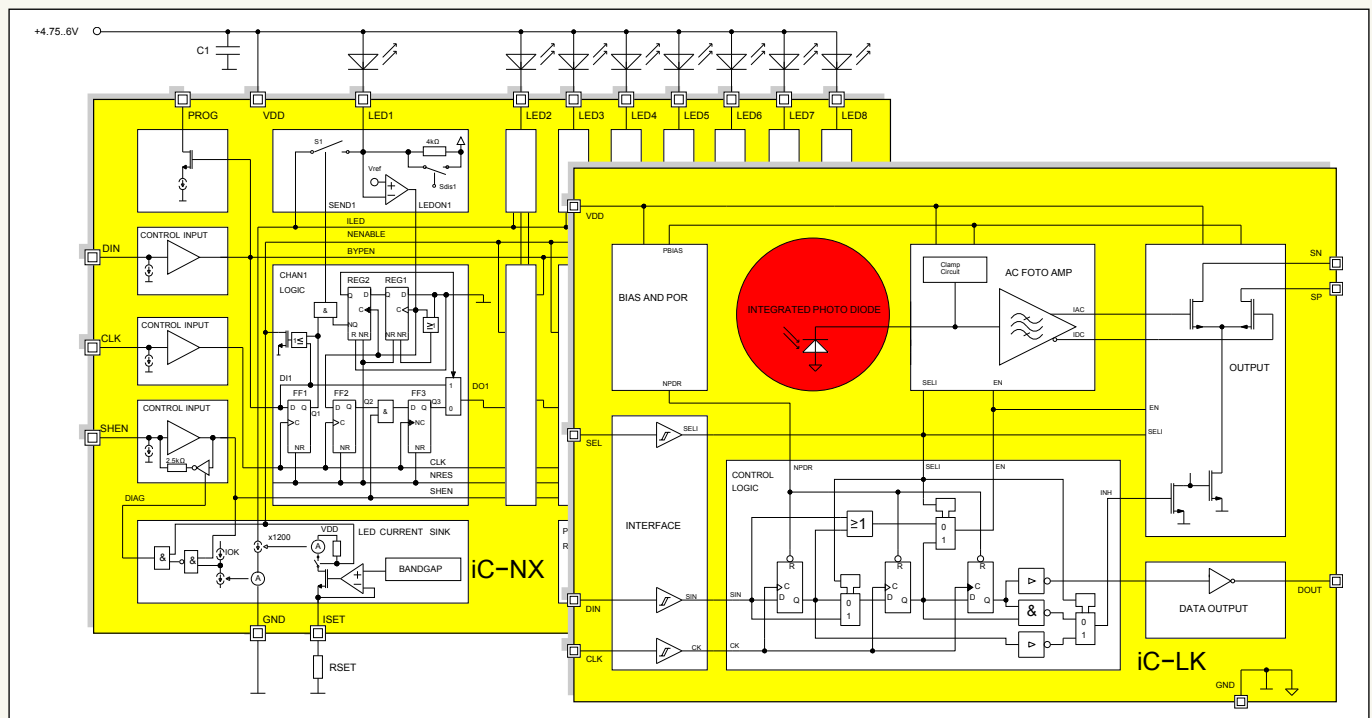
- Photoelectric amplifier with integrated bandpass, iC-ME and iC-MK with dual inputs, iC-LK with on-chip photo diode
- Nonlinear transfer function with a wide dynamic input range
- Fast flash recovery time

### Drivers

- Adjustable LED current, with iC-NX / NXL for up to 8 LEDs
- Controlled current slew rate enables short light pulses
- LED efficiency degradation compensated by positive current temperature coefficient

### iC-NX, iC-NXL

- Diagnostic message with LED interrupts
- LED short-circuit recognition
- Suited for high-risk applications according to IEC 1496-1



# LIGHT-GRID DRIVERS / RECEIVERS

## Receivers

The logic consists of a multi-stage shift register, which consecutively enables the bandpass amplifier and the output stage of one iC after the other in a chain.

For light curtain applications in which only one device is activated at a time, the outputs SN and SP can be connected to a two-wire bus. The amplifier and output automatically return to standby after processing the serial input data at DIN. Therefore, a chain configuration with multiple beams can be set up with just a single data bit within a shift cycle.

## Drivers

With iC-NK and iC-NX the LED pulse duration is defined by two consecutive clock pulses, whereas with iC-NL and iC-NXL it is defined by a clock independent modulation input.

## 8-fold drivers

A broken LED connection or insufficient LED current is signalled by manipulating the input current at the input pins SHEN (iC-NX) resp. CDI (iC-NXL) which act as bidirectional diagnostic interfaces. Short circuits at the LED outputs are also detected; these directly alter the data transfer within the shift register. An LEDON signal cannot be generated for LED pins which short circuit with the supply line; the data shift is blocked, causing the entire shift register to fill with "zeros".

A short circuit from output to output, however, fills the shift register with "ones" and consecutive LEDs are supplied with partial current. When the next device in the chain is activated the doubled power consumption can be recognised by the system control via the supply line.

These devices can be programmed to bridge any channel with the exception of channel 1. To this end the unused LED pins (pins without an LED) are connected to pin PROG.

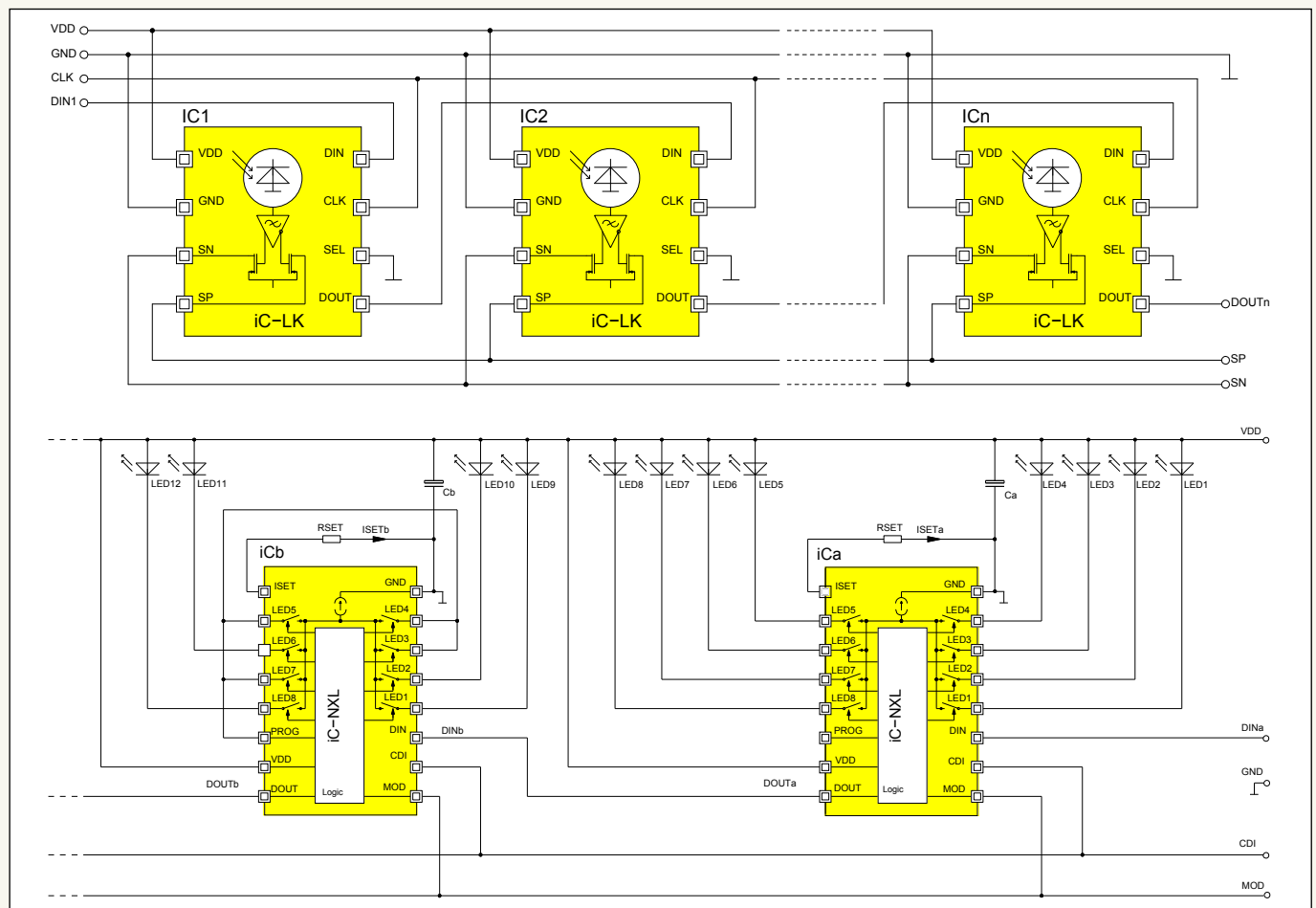
## Chip Families

### iC-NE/NT Family (high gain)

iC-NE	S08 / MSOP8	Single receiver
iC-ME	DFN10	Dual receiver
iC-LK	cQFN16	Single receiver with on-chip photo diode
iC-NT	S08 / MSOP8	Single LED driver
iC-NX	TSSOP16	8-fold LED driver

### iC-NK/NL Family (high speed, modulation input)

iC-NK	S08 / MSOP8	Single receiver
iC-MK	DFN10	Dual receiver
iC-LK	cQFN16	Single receiver with on-chip photo diode
iC-NL	S08 / MSOP8	Single LED driver
iC-NXL	TSSOP16	8-fold LED driver



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