



## NXP constant-current LED controller PCA9922 for LED video walls

# Maximize the impact of LED video walls while cutting costs

This constant-current LED driver extends advertising budgets by maximizing the impact of LED video walls while reducing overall cost. It is a pin-to-pin and functionally equivalent 5-V alternative to the ST2221A and STP08CDC596.

### Key features

- ▶ 8 LED driver outputs with low-side, constant-current control
- ▶ 25-MHz serial interface
- ▶ Maximum current from 15 to 60 mA for all 8 output channels (set by external resistor)
- ▶ Constant current matching at 25 °C,  $V_{DD} = 5.0$  V:
  - Bit-to-bit:  $\pm 6$  %
  - Chip-to-chip:  $\pm 10$  %
- ▶ Gradual turn-on/turn-off output to limit EMI
- ▶ Error detection mode for line open, output short to ground, LED open, and LED short
- ▶ Operating voltage: 3.3 to 5.5 V
- ▶ ESD protection exceeds 2000 V HBM and 1000 V CDM
- ▶ Package options: DIP16, TSSOP16 and HVQFN20

### Key applications

- ▶ Full-color, multi-color, and monochrome LED signs
- ▶ LED billboard displays
- ▶ Colorful LED video walls
- ▶ Traffic display signs
- ▶ Transportation and commercial LED signs
- ▶ Scrolling message boards

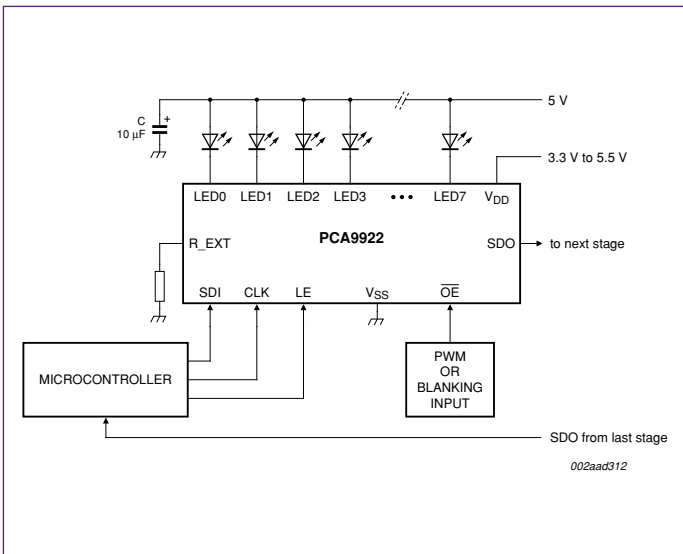
The NXP PCA9922 is a single-chip solution for LED display-driving that is optimized for LED video walls, video billboards, and digital signage. It is a low-cost, 5-V alternative that is pin-to-pin compatible with and functionally equivalent to the SS2221A and STP08CDC596 (exception: error data is inverted).

The PCA9922 integrates a shift register, accompanying data latches, eight NPN constant-current sink drivers, and an LED output error detection circuit.

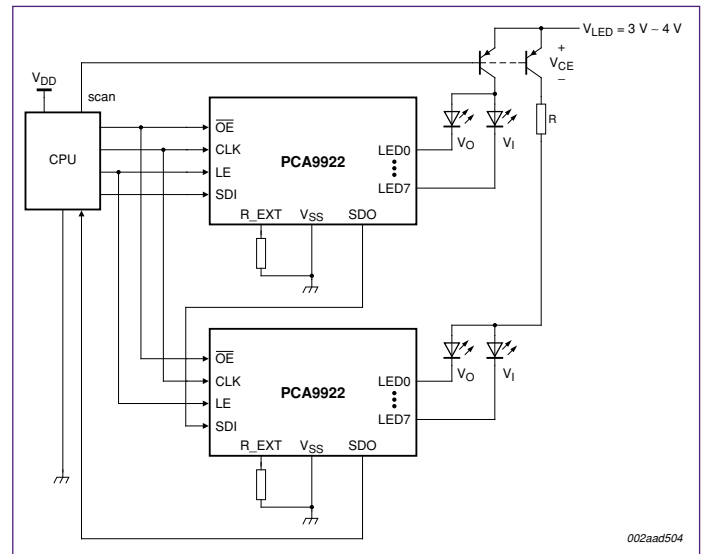
The shift register and latches allow direct interfacing with microprocessor-based systems. With a 5-V logic supply, typical serial data-input rates can reach up to 25 MHz. A serial data output permits cascading between multiple devices in applications requiring additional drive lines. Open LED connections can be detected and signaled back to the host microprocessor through the SERIAL DATA OUT pin.

The brightness of an LED sign is proportional to the current flowing through the LEDs. The PCA9922 is designed specifically to address the variables that affect the brightness consistency of an LED sign. Selection of the Rext (current setting resistor) value determines the maximum current to be maintained by the outputs.

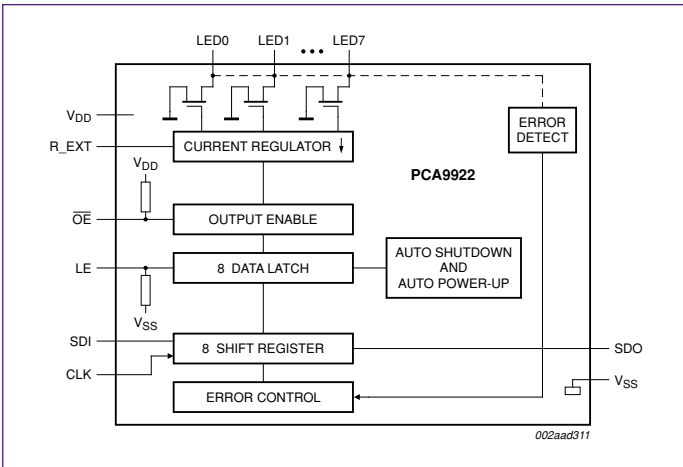
## Typical Application



## The PCA9922 in a typical multi-device architecture



## PCA9922 block diagram



## Ordering Information

Type number	Package	Number of pins	ST Type Number	Silicon Touch Type Number
PCA9922N	DIP16	16	STP08CDC596B1	ST2221A
PCA9922PW	TSSOP16	16	STP08CDC596TTR	ST2221A
PCA9922BS	HVQFN20	20	-	-

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