NXP Chip-On-Glass (COG) LCD driver PCA8539

COG automotive-grade LCD driver up to 18 x 100 dot matrix

This highly integrated, full-featured graphic driver provides programmable V_{LCD} (up to 16 V) and programmable frame frequency (up to 360 Hz) to support a wide range of applications, including the high-contrast Vertical Alignment (VA) displays with true-black background and a wide viewing angle.

KEY FEATURES

▸ 100 segment and 18 backplane outputs
  - Graphics with up to 1 800 display elements
  - Up to 225 seven-segment alphanumeric characters
  - Up to 112 fourteen-segment alphanumeric characters
▸ Multiplex rates selectable for 1:12 and 1:18
▸ On-chip generation of V_{LCD} from 4 V up to 16 V
▸ Software-programmable temperature compensation of V_{LCD} for high, stable contrast over full temperature range
▸ Software programmable and calibrated frame frequency from 45 to 360 Hz
▸ Integrated temperature sensor with temperature readout
▸ Wide power supply range: 2.5 to 5.5 V
▸ 2-line I²C (up to 400 kHz) or 4-lines SPI (up to 3 MHz) selectable via input pin
▸ Extended operating temperature range (-40 to +105 °C)
▸ Bare die with bumps for COG applications
▸ AEC-Q100 complaint for automotive applications
▸ Allows to display Chinese and Japanese characters
▸ Can drive big graphic display up to 7"

APPLICATIONS

▸ Automotive
  - Instrument clusters
  - Climate control
  - Car entertainment
  - Car radios
▸ Industrial and consumer
  - White goods
  - Medical and healthcare
  - Measuring equipment
  - Machine control systems
  - Information boards
  - General-purpose display modules

The NXP PCA8539 is a single-chip LCD driver that generates the drive signals for any segmented LCD with up to 1 800 elements, a dot matrix LCD with up to 18 rows and 100 columns, or any combination of dot matrix with icons.
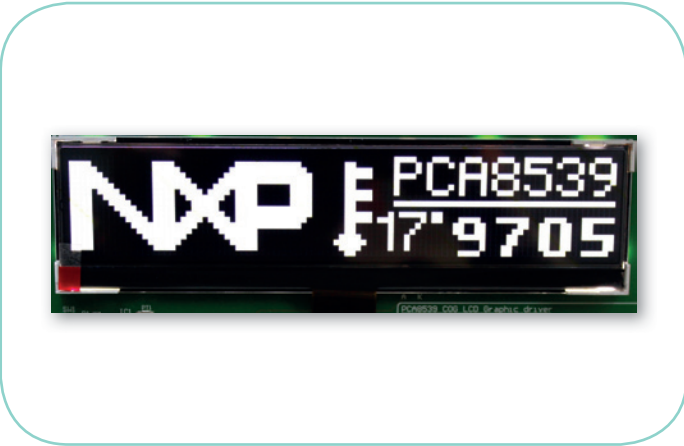
Suitable for use with a wide range of LCDs, it features an internal charge pump with internal capacitors for on-chip generation of an LCD supply of up to 16 V.
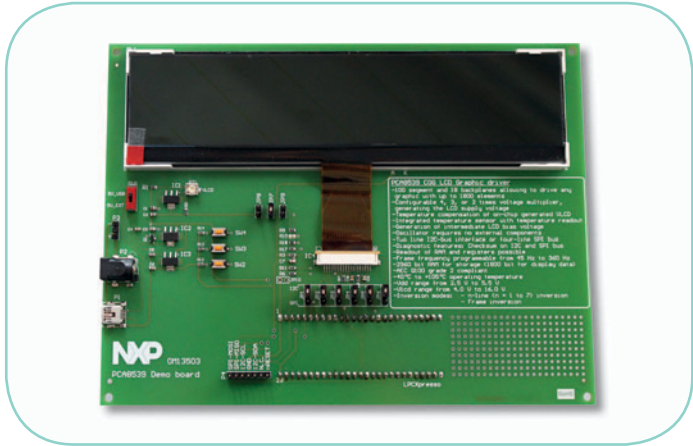
To ensure optimal and stable contrast over the entire temperature range, the PCA8539 includes advanced temperature compensation of V_{LCD} with six programmable temperature regions and eight programmable slopes in each region.

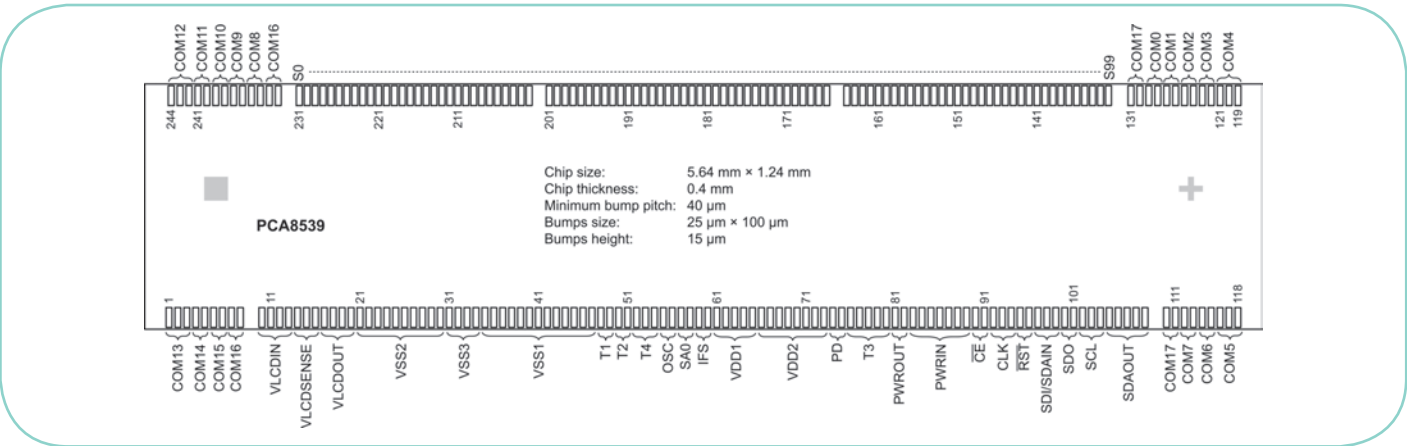The driver features an internal oscillator that governs data flow from the internal RAM to the display.

The PCA8539 communicates via the two-line I²C-bus (up to 400 kHz) or the four-line SPI-bus (up to 3 MHz).
The serial interface is selectable through an input pin.

Example: 7" VA graphic display 18 x 100

Demo board OM13503

Chip size: 5.64 mm × 1.24 mm
Chip thickness: 0.4 mm
Minimum bump pitch: 40 μm
Bumps size: 25 μm × 100 μm
Bumps height: 15 μm

PCA8539

Pinning information

Ordering information

Type	Package and description	PCA8539DUG/DA	Delivery format	IC version
PCA8539DUG/DA	Bare die; 244 bumps; 5.64 x 1.24 x 0.4 mm; Gold bump hardness: 60 to 120 HV	9353 015 19033	Chip in tray	1