Low-power, single-chip LCD controller/drivers for automotive and industrial

These fully featured LCD drivers are specifically designed for high-contrast vertical alignment (VA) LCDs with multiplex rates up to 1:8.

**Key features**
- Up to 352 elements for driving up to
  - 44 seven-segment numeric characters
  - 22 fourteen-segment alphanumeric characters
- AEC-Q100 compliance (PCA8537)
- Selectable backplane driver configuration: static, 2, 4, 6, or 8 backplane multiplexing
- Software-programmable internal charge pump for on-chip LCD voltage generation with internal capacitors
- 400 kHz I2C (AH versions) or 5 MHz SPI (BH versions) interface
- Programmable temperature compensation of $V_{LCD}$ in four regions
- Selectable display bias configurations
- Wide range of digital power supply: 1.8 to 5.5 V
- Wide LCD supply range: from 2.5 V for low-threshold LCDs up to 9.0 V for high-threshold nematic and VA LCDs
- Display memory bank switching in static, duplex, and quadruplex drive modes
- 352-bit RAM for display storage
- Programmable frame frequency from 60 to 300 Hz in steps of 10 Hz (factory calibrated)
- Integrated temperature sensor with temperature readout
- On-chip calibration of internal oscillator frequency and $V_{LCD}$
- Manufactured in silicon gate CMOS process

**Applications**
- Industrial
  - White goods
  - Handheld electronics
  - Battery operated equipment
  - Machine control systems
  - Measuring equipment
  - Information boards
  - Panels
  - Consumer
  - Industrial
  - Medical and health care
  - General purpose display modules
- Automotive
  - Instrument cluster
  - Car radio
  - Climate control units

The NXP PCF8537 and PCA8537 generate the drive signals for any static or multiplexed LCD with up to eight backplanes, 46 segments, and 352 elements. The PCA8537 is AEC-Q100 compliant for automotive applications.
Both devices feature an internal charge pump with internal capacitors for on-chip generation of the LCD driving voltage. To ensure an optimal and stable contrast over the full temperature range, they offer programmable temperature compensation of the LCD supply voltage. A two-line I²C bus (in AH versions) or a three-line SPI bus (in BH versions) make the drivers easy to connect to a standard microcontroller.

**Ordering information**

<table>
<thead>
<tr>
<th>Type number</th>
<th>Interface type</th>
<th>Application</th>
<th>Package Name</th>
<th>Description</th>
<th>Version</th>
<th>12NC</th>
<th>Minimum order quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCF8537AH</td>
<td>I²C</td>
<td>Industrial</td>
<td>TQFP64</td>
<td>Plastic thin quad flat package, 64 leads; body 10 x 10 x 1.0 mm</td>
<td>SOT357-1</td>
<td>9352 978 97518</td>
<td>1500</td>
</tr>
<tr>
<td>PCF8537BH</td>
<td>SPI</td>
<td>Industrial</td>
<td></td>
<td></td>
<td></td>
<td>9352 978 98518</td>
<td></td>
</tr>
<tr>
<td>PCA8537AH</td>
<td>I²C</td>
<td>Automotive</td>
<td></td>
<td></td>
<td></td>
<td>9352 978 95518</td>
<td></td>
</tr>
<tr>
<td>PCA8537BH</td>
<td>SPI</td>
<td>Automotive</td>
<td></td>
<td></td>
<td></td>
<td>9352 978 96518</td>
<td></td>
</tr>
</tbody>
</table>

**The 352 PCx8537 segments (alphanumeric, numeric, and icons)**

- 20 x 14-segment displays = 280 segments
- 8 x 7-segment displays + dots = 64 segments
- 8 icons = 352 segments