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Continuity of document content
The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

Continuity of ordering part numbers
Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.
SUMMARY

CYAT8165X (48 I/Os)

Automotive TrueTouch® Multi-Touch
All-Points Touchscreen Controller

Features

- Multi-touch capacitive touchscreen controller
  - 32-bit Arm® Cortex® CPU
  - Register-configurable
  - Noise-suppression technologies for display and EMI
    - Effective 20-V drive for higher signal-to-noise ratio (SNR)\(^1\)
    - AutoArmor™ improves both electromagnetic emissions and immunity
    - External display synchronization
  - Water rejection and wet-finger tracking using DualSense™
  - Multi-touch glove with automatic mode switching
    - Ten fingers with thin glove (≤1-mm thick)
    - Two fingers with thick glove (≤5-mm thick)
  - Large object rejection
  - Automatic baseline tracking to environmental changes
  - Low-power look-for-touch mode
  - Field upgrades via bootloader
  - Cypress Manufacturing Test Kit (MTK)
  - Touchscreen sensor self-test
  - Low-power CapSense® wake-up button with power consumption of 50 μA
  - Low-power wake-on-touchscreen with power consumption of 120 μA

- System performance (configuration dependent)
  - Screen sizes up to 8.5-inch diagonal
    - 6.2-mm electrode pitch; 16:9 aspect ratio
  - Up to 48 sense pins, 560 intersections; 16:9 aspect ratio (28 x 20)
  - Reports up to ten fingers
  - Small finger support down to 4 mm
  - Refresh rate up to 250 Hz; other rates configurable
  - TX frequency up to 350 kHz

- Power (configuration-dependent)
  - 1.71- to 1.95-V and 3.0- to 5.5-V logic and digital I/Os supply
  - 3.0- to 5.5-V analog supply
  - 9-mW average power
  - 11-μW typical deep-sleep power

- Sensor and system design (configuration-dependent)
  - Supports a variety of touchscreen sensors and stackups
    - Manhattan, diamond
    - Sensor-on-Lens (SOL)
    - On-cell
    - Plastic (PET) and glass-sensor substrates
    - LCD, AMOLED, and IPS displays
    - Metal mesh

- Communication interface
  - I²C slave at 100 and 400 kbps
  - SPI slave bit rates up to 8 Mbps

- Packages
  - 100-pin TQFP 14 × 14 × 1.4 mm (0.5-mm pitch)
  - 64-pin TQFP 10 × 10 × 1.4 mm (0.5-mm pitch)

- Ambient temperature range
  - Automotive-A: –40 °C to 85 °C
  - Automotive-S: –40 °C to 105 °C

Note
1. Effective voltage when using 17 multi-phase TX and 5-V \(V_{CCTX}\) supply.
## Ordering Information

Table 1 lists the CYAT8165X TrueTouch touchscreen controllers.

<table>
<thead>
<tr>
<th>Marketing Part Number</th>
<th>Number of Sense Pins</th>
<th>Number of Fingers</th>
<th>Wake up Button Support</th>
<th>Wake-on-Screen Support</th>
<th>Capsense Buttons</th>
<th>Water Rejection</th>
<th>Thin Glove Support</th>
<th>Gestures</th>
<th>Thick Overlay/Thick Glove Support</th>
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Custom generic part numbers with customized firmware available for touchpad applications.

**Note**

2. All devices have the following base features: Water Rejection, DisplayArmor™, AutoArmor™, DualSense ™, CapSense buttons, Large Object Detection and Rejection, and Grip Suppression.
**Ordering Code Definitions**

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<td><strong>Market Segment:</strong> 8 = Automotive Touchscreen</td>
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Document Title: CYAT8165X (48 I/Os), Automotive TrueTouch® Multi-Touch All-Points Touchscreen Controller
Document Number: 002-16617

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<td>5437893</td>
<td>09/16/2016</td>
<td>Initial release</td>
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<td>10/03/2019</td>
<td>Updated Features, Ordering Information, and Sales, Solutions, and Legal Information.</td>
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SUMMARY

CYAT8165X (48 I/Os)

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Document Number: 002-16617 Rev. *A
Revised October 3, 2019
Page 5 of 5