SUMMARY

Automotive TrueTouch®
Multi-Touch All-Points
Touchscreen Controller Datasheet

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

- System performance (configuration dependent)
  - Screen sizes up to 15-inch diagonal
    - 6.0-mm electrode pitch; 16:10 aspect ratio
  - Up to 88 sense pins, 1836 intersections; 16:10 aspect ratio
    (34 TX × 54 RX)
  - Reports up to ten fingers
  - Small finger support down to 4 mm

- 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
  - 30-mW average power
  - 30-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)
    - 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

- Package
  - 100-pin TQFP 14 × 14 × 1.4 mm (0.5-mm pitch)
  - 128-pin TQFP 14 × 20 × 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 CYAT81X TrueTouch touchscreen controllers.

**Table 1. Ordering Information**

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<th>Family</th>
<th>MPN</th>
<th>Number of Sense Pins</th>
<th>Number of Fingers</th>
<th>CapSense Buttons</th>
<th>Water Rejection</th>
<th>Thin Glove Support</th>
<th>Display Armor</th>
<th>Gestures</th>
<th>Thick Overlay/Thick Glove Support</th>
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**Notes**

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

- **Number of Sense I/Os**: 61, 71, 77, or 88
- **Temperature Range**: A = –40 °C to 85 °C
  S = –40 °C to 105 °C
- **Package Type**: A = TQFP
- **Number of Pins**: 100 or 128
- **Product Feature Set (see Ordering Information table)**
- **Sensor Configuration**:
  1 = Discrete Sensors
  2 = In-cell Hybrid
- **Market Segment**:
  8 = Automotive Touchscreen
- **Business Unit**:
  AT = Automotive
- **Marketing Code**: CY = Cypress
## Document History Page

<table>
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<tr>
<th>Revision</th>
<th>ECN</th>
<th>Orig. of Change</th>
<th>Submission Date</th>
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<td>4988927</td>
<td>MANU</td>
<td>10/28/2015</td>
<td>New summary datasheet</td>
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SUMMARY

CYAT81X
(61, 71, 77, 88 I/Os)

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<th>cypress.com/arm</th>
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PSoC® Solutions

| PSoC 1 | PSoC 3 | PSoC 4 | PSoC 5LP | PSoC 6 |

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Forums | WICED IoT Forums | Projects | Video | Blogs |
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**Cypress Semiconductor:**
- CYAT81688-100AA61T
- CYAT81688-100AS77
- CYAT81688-128AS88
- CYAT81688-100AA77
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- CYAT81688-100AS77Z
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