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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.

**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^[2]

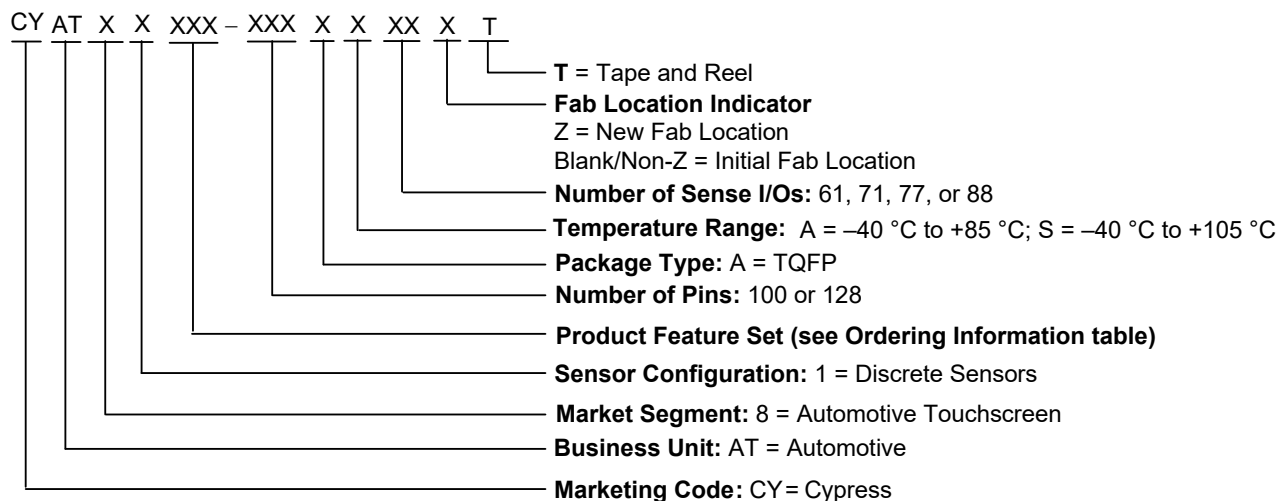
| MPN | Number of Sense pins | Number of fingers | Low-power wake-up Button | Capsense Buttons | Water Rejection | Thin Glove support | Display Armor | Gestures | Thick Overlay/Thick Glove support | 5-V Tx | Package |
|--------------------|----------------------|-------------------|--------------------------|------------------|-----------------|--------------------|---------------|----------|-----------------------------------|--------|----------|
| CYAT81682-100AA61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-100AS61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-100AA71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-100AS71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-100AA77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-100AS77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 100 TQFP |
| CYAT81682-128AA88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 128 TQFP |
| CYAT81682-128AS88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | - | - | - | 128 TQFP |
| CYAT81685-100AA61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-100AS61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-100AA71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-100AS71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-100AA77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-100AS77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 100 TQFP |
| CYAT81685-128AA88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 128 TQFP |
| CYAT81685-128AS88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | 128 TQFP |
| CYAT81688-100AA61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-100AS61Z | 61 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-100AA71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-100AS71Z | 71 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-100AA77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-100AS77Z | 77 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81688-128AA88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 128 TQFP |
| CYAT81688-128AS88Z | 88 | 10 | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 128 TQFP |
| CYAT81689-100AA61Z | 61 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |

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

Table 1. Ordering Information^[2] (continued)

| MPN | Number of Sense pins | Number of fingers | Low-power wake-up Button | Capsense Buttons | Water Rejection | Thin Glove support | Display Armor | Gestures | Thick Overlay/Thick Glove support | 5-V Tx | Package |
|--------------------|----------------------|-------------------|--------------------------|------------------|-----------------|--------------------|---------------|----------|-----------------------------------|--------|----------|
| CYAT81689-100AS61Z | 61 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81689-100AA71Z | 71 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81689-100AS71Z | 71 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81689-100AA77Z | 77 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81689-100AS77Z | 77 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 100 TQFP |
| CYAT81689-128AA88Z | 88 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 128 TQFP |
| CYAT81689-128AS88Z | 88 | 10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 128 TQFP |

Ordering Code Definitions



Document History Page

| Document Title: CYAT81X (61, 71, 77, 88 I/Os) Automotive TrueTouch® Multi-Touch All-Points Touchscreen Controller Datasheet | | | |
|--|------------|------------------------|---|
| Document Number: 002-04310 | | | |
| Revision | ECN | Submission Date | Description of Change |
| ** | 4988927 | 10/28/2015 | New summary datasheet |
| *A | 5705461 | 04/21/2017 | Updated Cypress Logo and Copyright. |
| *B | 5962384 | 11/13/2017 | Updated Ordering Information and Ordering Code Definition |
| *C | 6759712 | 12/23/2019 | Updated Ordering Information. Updated Sales links and copyright information. |

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