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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 |

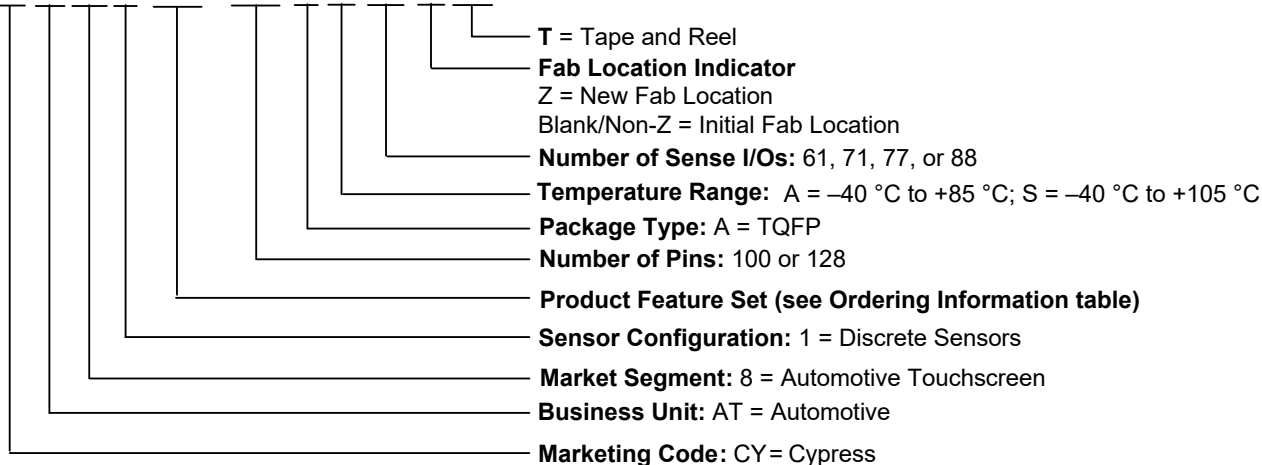
Note
2. All devices have the following base features: Water Rejection, DisplayArmor™, AutoArmor™, DualSense™, CapSense buttons, Large Object Detection and Rejection, and Grip Suppression.

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

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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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