

# PSoC™ Automotive Multitouch Generation 7XL Multichip

## Datasheet Summary

**Note that this is a Summary Datasheet. To access the full version of this datasheet, register in [My Infineon Collaboration Platform \(MyICP\)](#).**

## Features

- Automotive Electronics Council (AEC) AEC-Q100 qualified
- Multi-chip 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)<sup>[1]</sup>
    - AutoArmor improves both electromagnetic emissions and immunity
  - Water rejection and wet-finger tracking using DualSense
  - Multitouch glove with automatic mode switching
    - Ten fingers with thin glove (≤1-mm thick)
    - Two fingers with thick glove (≤5-mm thick)
  - Fingernail tracking
  - Large object rejection
  - Automatic baseline tracking to environmental changes
  - Field upgrades via bootloader
  - Manufacturing test kit (MTK)
  - Android driver support
  - Touchscreen sensor self-test
- System performance (configuration dependent)
  - Screen sizes up to 35-inch diagonal
    - 6-mm electrode pitch; 16:10 aspect ratio
  - Up to 296 sense pins, 10320 intersections
  - Reports up to ten fingers
  - Small finger support down to 5 mm
  - Refresh rate up to 120 Hz; other rates configurable
  - TX frequency up to 150 kHz
  - 5-V TX with high-order multi-phase TX capability for higher signal-to-noise (SNR) ratio
  - Integrated DSP to process and filter data for faster scanning and lower noise
  - 192 channels, each with its own ADC, to enable single-pass long-side scanning for faster processing of touch data and better noise filtering
- 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
  - 260 mW for 3-chip solution
  - 174 mW for 2-chip solution

## Notes

1. Effective voltage when using 17 multi-phase TX and 5-V VCCTX supply.

### Features

- 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
- Primary host communication interface
  - I<sup>2</sup>C slave rates at 100 kbps, 400 kbps, and 1 Mbps
- Packages
  - 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

## 1 Ordering information

The following table lists the CYAT837X/847X (multi-chip) touchscreen controllers<sup>[2]</sup>.

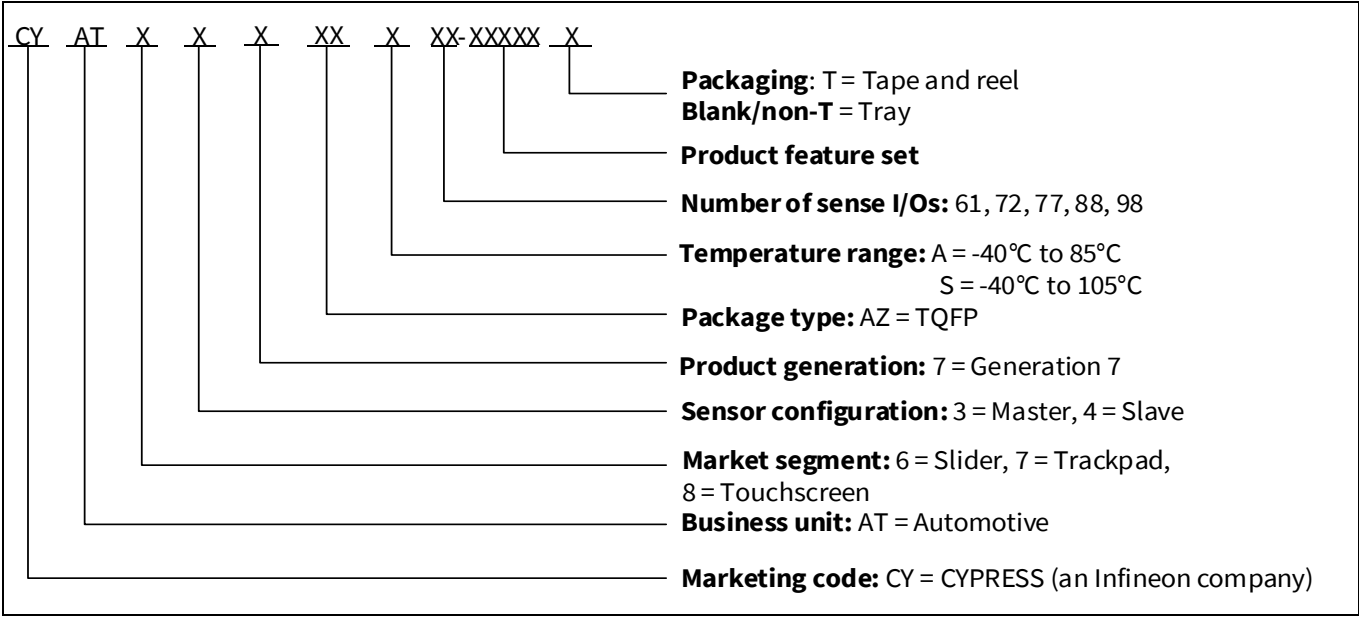
**Table 1**      **Ordering information**

| MPN                | Number of pins | 128-pin TQFP | 100-pin TQFP | Multi-touch | Glove | H2O | Package      |
|--------------------|----------------|--------------|--------------|-------------|-------|-----|--------------|
| CYAT837AZA98-42002 | 98             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT837AZS98-42002 | 98             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZA98-42002 | 98             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZS98-42002 | 98             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT837AZA88-42002 | 88             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT837AZS88-42002 | 88             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZA88-42002 | 88             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZS88-42002 | 88             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT837AZA77-42002 | 77             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT837AZS77-42002 | 77             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZA77-42002 | 77             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZS77-42002 | 77             | ✓            | –            | ✓           | ✓     | ✓   | 128-pin TQFP |
| CYAT847AZA72-22002 | 72             | –            | ✓            | ✓           | ✓     | ✓   | 100-pin TQFP |
| CYAT847AZS72-22002 | 72             | –            | ✓            | ✓           | ✓     | ✓   | 100-pin TQFP |
| CYAT847AZA61-22002 | 61             | –            | ✓            | ✓           | ✓     | ✓   | 100-pin TQFP |
| CYAT847AZS61-22002 | 61             | –            | ✓            | ✓           | ✓     | ✓   | 100-pin TQFP |

### Notes

- All devices have the following base features: Water rejection, DisplayArmor, AutoArmor, DualSense, glove support, and large object detection and rejection.

**1.1      Ordering code definitions**



## Revision history

| Document revision | Date       | Description of changes |
|-------------------|------------|------------------------|
| **                | 2022-07-26 | Initial release.       |

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