

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** CYAT817AZA98-5B002  
**Manufacturer:** Infineon Technologies  
**Package:** 128-LQFP  
**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/infineon-technologies/cyat817aza98-5b002.html>

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**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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# PSoC™ Automotive Multitouch generation 7XL

## 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)-Q100 qualified
- Multitouch capacitive touchscreen controller
  - 32-bit Arm® Cortex® CPU
  - Register-configurable
  - Noise-suppression technologies for display and EMI
    - Hover sensing (up to 35 mm)
    - Force touch
    - Slider sensing
    - CAPSENSE™ button sensing
    - Wake-up button sensing
    - Low-power wake-up button (< 50 µA)
    - Wake-on-touch screen
    - Runtime diagnostics
    - Support for split screen
    - Support for free form shapes
    - Effective 20 V drive for higher signal-to-noise ratio (SNR)<sup>[1]</sup>
    - Auto armor technology improves both electromagnetic emissions and immunity
    - External display synchronization
  - Water rejection and wet-finger tracking using dual sense capability
  - 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
  - Low-power look-for-touch mode
  - Field upgrades via bootloader
  - Manufacturing test kit (MTK)
  - Android driver support
  - Touchscreen sensor self-test

## Note

1. Effective voltage when using 17 multi-phase TX and 5 V V<sub>CCTX</sub> supply.

## Features

- System performance (configuration dependent)
  - Screen sizes up to 15-inch diagonal
    - 5.3 mm electrode pitch; 16:10 aspect ratio
  - Up to 103 sense pins, 2500 intersections
  - Reports up to ten fingers
  - Small finger support down to 5 mm
  - Refresh rate up to 250 Hz; other rates configurable
  - TX frequency up to 300 kHz
  - 5 V TX with high-order multi-phase TX capability for higher signal-to-noise (SNR) ratio
  - High-frequency TX frequency hopping supported for optimal noise filtering
  - Integrated DSP to process and filter data for faster scanning and lower noise
  - 64 RX channels, each with its own ADC, to enable single-pass long-side scanning for faster processing of touch data and better noise filtering
- Force touch
  - Five RX channels can be used for parallel touch/force scan
  - Typical force range: 0.5 N to 10 N
  - Minimum displacement: 100 µm/10 N
  - Resolution (0.1 N)
  - Rigid body mechanic implementation
  - Refresh rate up to 100 Hz
  - Use of simple or cost-efficient FPC sensors
- Power (configuration-dependent)
  - 1.71 V to 1.95 V and 3.0 V to 5.5 V logic and digital I/Os supply
  - 3.0 V 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)
    - On-cell touch integrated display modules
    - Hybrid in-cell
    - Single-layer independent multitouch (SLIM)
    - Plastic (PET) and glass-sensor substrates
    - LCD, AMOLED, and IPS displays
    - Metal mesh
- Primary host communication interface
  - I<sup>2</sup>C slave at standard bit rates 100 kbps, 400 kbps, and 1 Mbps
  - SPI slave bit rates up to 8 Mbps
  - Optional cryptographic engine for secure communication
- Secondary safety communication interface
  - I<sup>2</sup>C/SPI configurable as master/slave<sup>[2]</sup>
  - CAN interface

## Note

2. Secondary slave interface requires custom firmware to enable.

## Features

- Interface for external sensors
  - I<sup>2</sup>C/SPI for external accelerometer
  - I<sup>2</sup>C/SPI for external IR proximity
- Package
  - 100LD TQFP 14 × 14 × 1.4 mm (0.5 mm pitch)
  - 128LD 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

**Table 1** lists the CYAT817X touchscreen controllers.

**Table 1** Ordering information<sup>[3]</sup>

| Product            | Number of sense pins | Number of fingers | Hover | Force Touch | CAPSENSE™ buttons | Low-power wake-up button / wake-on-touch screen | Slider | Haptic | Acoustic | Secondary SCB (Touch data) | CAN | Proximity | Crypto | Gesture touchscreen | Gesture slider | H2O | Package    |
|--------------------|----------------------|-------------------|-------|-------------|-------------------|-------------------------------------------------|--------|--------|----------|----------------------------|-----|-----------|--------|---------------------|----------------|-----|------------|
| CYAT817AZS61-3A202 | 61                   | 10                | ✓     | ✓           | -                 | -                                               | -      | ✓      | -        | -                          | -   | -         | -      | -                   | -              | ✓   | 100LD TQFP |
| CYAT817AZS61-3A002 | 61                   | 10                | ✓     | ✓           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS61-22002 | 61                   | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS72-3BFBA | 72                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS72-3B202 | 72                   | 10                | ✓     | ✓           | ✓                 | -                                               | -      | ✓      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS72-3B002 | 72                   | 10                | ✓     | ✓           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS72-33002 | 72                   | 10                | ✓     | -           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS72-32002 | 72                   | 10                | ✓     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS72-22002 | 72                   | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA72-3BFBA | 72                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   | 128LD TQFP |
| CYAT817AZS77-5BFBA | 77                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS77-5A202 | 77                   | 10                | ✓     | ✓           | -                 | -                                               | -      | ✓      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS77-5A002 | 77                   | 10                | ✓     | ✓           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS77-53C02 | 77                   | 10                | ✓     | -           | ✓                 | ✓                                               | ✓      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS77-520DA | 77                   | 10                | ✓     | -           | -                 | -                                               | -      | -      | -        | ✓                          | ✓   | -         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZA77-5BFBA | 77                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS77-42002 | 77                   | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS88-5BFBA | 88                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS88-52002 | 88                   | 10                | ✓     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS88-42002 | 88                   | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA88-5BFBA | 88                   | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZA88-5B202 | 88                   | 10                | ✓     | ✓           | ✓                 | -                                               | -      | ✓      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA88-5B002 | 88                   | 10                | ✓     | ✓           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA88-53002 | 88                   | 10                | ✓     | -           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA88-42002 | 88                   | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZS98-5BFFE | 103                  | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | ✓   | ✓         | ✓      | ✓                   | ✓              | ✓   |            |
| CYAT817AZS98-5BFBA | 103                  | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS98-523DA | 103                  | 10                | ✓     | -           | -                 | -                                               | -      | ✓      | ✓        | ✓                          | ✓   | -         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZS98-42002 | 103                  | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA98-5BFBA | 103                  | 10                | ✓     | ✓           | ✓                 | ✓                                               | ✓      | ✓      | ✓        | ✓                          | -   | ✓         | ✓      | ✓                   | -              | ✓   |            |
| CYAT817AZA98-5B202 | 103                  | 10                | ✓     | ✓           | ✓                 | -                                               | -      | ✓      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA98-5B002 | 103                  | 10                | ✓     | ✓           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA98-53002 | 103                  | 10                | ✓     | -           | ✓                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |
| CYAT817AZA98-42002 | 103                  | 10                | -     | -           | -                 | -                                               | -      | -      | -        | -                          | -   | -         | -      | -                   | -              | ✓   |            |

### Note

- All devices have the following base features: Water rejection, display armor noise protection technology, auto armor, dual sense, glove support, and large object detection and rejection.

## 1.1 Ordering code definitions



**Note**

4. 103 total sensor pins consist of 98 fully configurable TX or RX sensors, and 5 TX only sensors.

## Revision history

| Document revision | Date       | Description of changes                                                                                                                                                                                                                                             |
|-------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| **                | 2022-08-04 | Initial release.                                                                                                                                                                                                                                                   |
| *A                | 2024-05-16 | Updated Package information in <a href="#">Features</a> .<br>Updated Number of sense pins and Package information in <a href="#">Table 1</a> .<br>Updated <a href="#">Ordering code definitions</a> .<br>Updated template.<br>Updated to reflect correct metadata. |
| *B                | 2024-08-02 | No content updates. Only ECN metadata updates.                                                                                                                                                                                                                     |

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