PSoC™ Automotive Multitouch generation 7L

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
- Single-chip system solution that integrates touch controller with MCU functions
- Target Application
  - Entry and mid-level central information display (CID) systems
- 32-bit MCU subsystem
  - 48-MHz Arm® Cortex®-M0+ CPU
  - 12-bit SAR ADC for system monitoring (voltage, temperature) and other features (such as day/night sensor)
  - Four timer counter pulse width modulators (TCPWMs)
  - Three serial communication blocks (SCBs) that can be individually configured as SPI/I^2C/UART
  - Up to 48 KB flash for user-specific system MCU functionality
  - Up to 4 KB SRAM for user-specific system MCU functionality
  - Up to 29 programmable GPIO pins with interrupt functionality
- Multitouch capacitive touchscreen controller
  - Register-configurable
  - Noise-suppression technologies for display and EMI
    - Effective 20 V drive for higher signal-to-noise ratio (SNR)[1]
    - 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)
  - Large object rejection
  - Automatic baseline tracking to environmental changes
  - Low-power look-for-touch mode
  - Field upgrades via bootloader
  - Touchscreen sensor self-test
  - Low-power CAPSENSE™ wake-up button with power consumption of 50 µA
  - Low-power wake-on-touchscreen with power consumption of 120 µA

Note

1. Effective voltage when using 17 multi-phase TX and 5 V V_{CCTX} supply.

Features

- System performance (configuration dependent)
  - Screen sizes up to 11-inch diagonal
    - 5 mm electrode pitch; 8:3 aspect ratio
  - Screen sizes up to 12.3-inch diagonal
    - 5.7 mm electrode pitch; 8:3 aspect ratio
  - Up to 72 sense pins supporting different aspect ratios, up to 1200 intersections (46 × 26)
  - Reports up to ten fingers
  - Small finger support down to 4 mm
  - Refresh rate up to 250 Hz; other rates configurable
  - TX frequency up to 350 kHz
- 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
  - 20 mW average power
  - 20 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
    - Plastic (PET) and glass-sensor substrates
    - LCD, AMOLED, and IPS displays
    - Metal mesh
- Communication interface
  - I^2C slave at 100 kbps, 400 kbps, 1 Mbps, and 3.4 Mbps
  - SPI slave bit rates up to 8 Mbps
- Development and debug environment
  - Arm® MDK for system MCU
  - Touch tuning host emulator (TTHE) to configure touch
  - MTK for debugging
  - PSoC™ programmer for programming
- Packages
  - 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

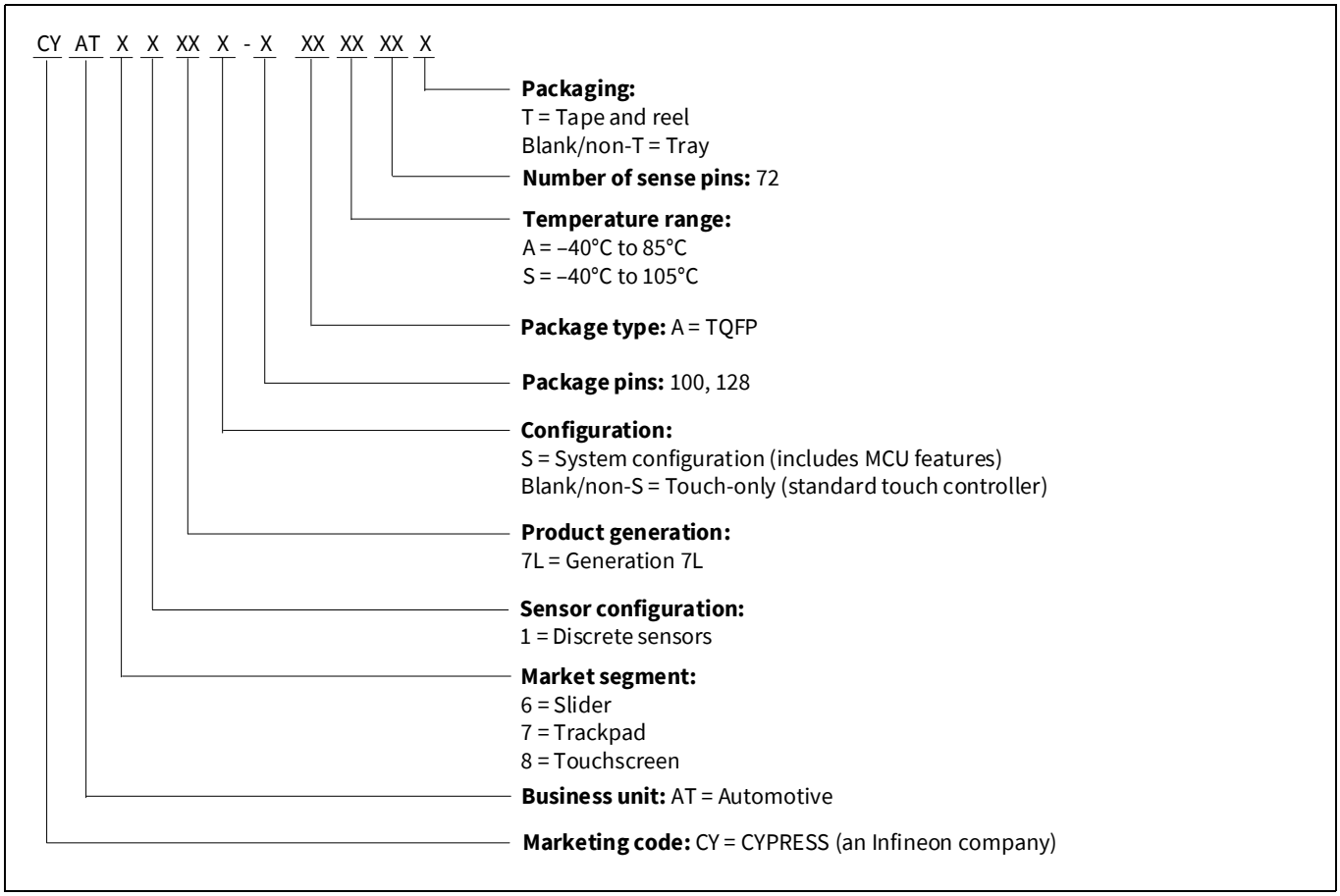
1 Ordering information

Table 1 lists the CYAT817L touchscreen controllers.

Table 1 Ordering information

Product	Number of sense pins	No. of fingers	Touch only	Touch+ MCU functions	No. of GPIOs	Package	Temperature
CYAT817L-100AA72	72	10	✓	–	13	100LD TQFP	–40°C to +85°C
CYAT817L-100AS72	72	10	✓	–	13	100LD TQFP	–40°C to +105°C
CYAT817LS-100AA72	72	10	–	✓	13	100LD TQFP	–40°C to +85°C
CYAT817LS-100AS72	72	10	–	✓	13	100LD TQFP	–40°C to +105°C
CYAT817L-128AA72	72	10	✓	–	29	128LD TQFP	–40°C to +85°C
CYAT817L-128AS72	72	10	✓	–	29	128LD TQFP	–40°C to +105°C
CYAT817LS-128AA72	72	10	–	✓	29	128LD TQFP	–40°C to +85°C
CYAT817LS-128AS72	72	10	–	✓	29	128LD TQFP	–40°C to +105°C

1.1 Ordering code definitions



Revision history

Document revision	Date	Description of changes
**	2022-07-26	Initial release.
*A	2024-05-21	Updated Package information in **Features**. Updated Package information in **Table 1**. Updated template. Updated to reflect correct metadata.
*B	2024-08-02	No content updates. Only ECN metadata updated.

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