

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) AEC-Q100 qualified
- Multi-touch 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)^[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)
 - 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_{CCTX} 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
 - 5 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/cost-efficient FPC sensors
- 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)
 - On-cell touch integrated display modules
 - Hybrid In-Cell
 - Single-Layer Independent Multi-Touch (SLIM)
 - Plastic (PET) and glass-sensor substrates
 - LCD, AMOLED, and IPS displays
 - Metal mesh
- Primary host communication interface
 - I²C 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
 - I²C/SPI configurable as master/slave^[2]
 - CAN interface

Note

2. Secondary slave interface requires custom firmware to enable.

Features

- Interface for external sensors
 - I²C/SPI for external accelerometer
 - I²C/SPI for external IR proximity
- 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

Ordering information

1 Ordering information

Table 1 lists the CYAT817X touchscreen controllers.

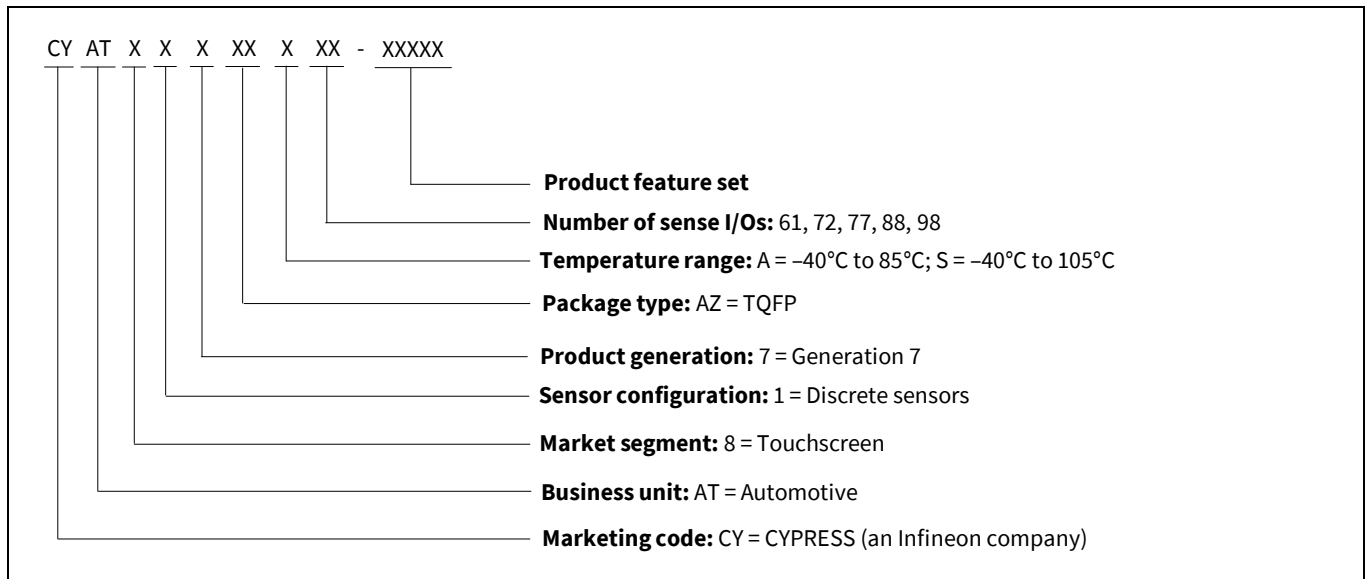
Table 1 Ordering information^[3]

MPN	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	✓	✓	-	-	-	✓	-	-	-	-	-	-	-	✓	100-pin 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	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	-	✓	
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	98	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CYAT817AZS98-5BFBA	98	10	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	-	✓	
CYAT817AZS98-523DA	98	10	✓	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	-	✓	
CYAT817AZS98-42002	98	10	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	
CYAT817AZA98-5BFBA	98	10	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	-	✓	
CYAT817AZA98-5B202	98	10	✓	✓	✓	-	-	✓	-	-	-	-	-	-	-	✓	
CYAT817AZA98-5B002	98	10	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	
CYAT817AZA98-53002	98	10	✓	-	✓	-	-	-	-	-	-	-	-	-	-	✓	
CYAT817AZA98-42002	98	10	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	

Note

3. 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

Revision history

Document revision	Date	Description of changes
**	2022-08-04	Initial release.