SUMMARY

CYAT8165X (48 I/Os)

Automotive TrueTouch® Multi-Touch All-Points Touchscreen Controller

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 8.5-inch diagonal
    - 6.2-mm electrode pitch; 16:9 aspect ratio
  - Up to 48 sense pins, 527 intersections; 16:9 aspect ratio (17 RX and 31 TX)
  - 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- 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
  - 9-mW average power
  - 11-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 and 400 kbps
  - SPI slave bit rates up to 8 Mbps
- Package
  - 100-pin TQFP 14 × 14 × 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.

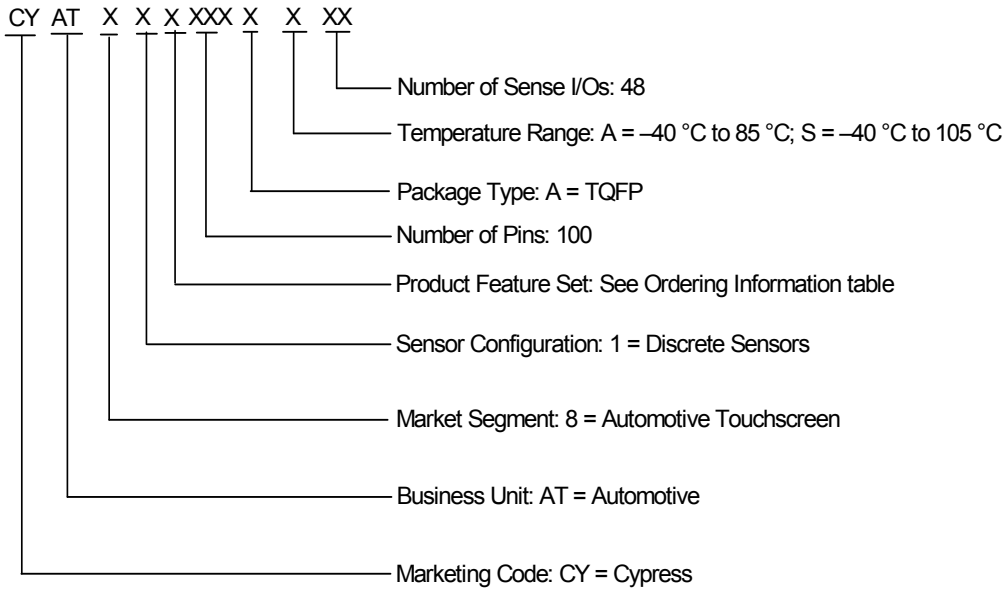
Ordering Information

Table 1 lists the CYAT8165X TrueTouch touchscreen controllers.

Table 1. Ordering Information[2]

Marketing Part Number	Number of Sense Pins	Number of Fingers	5-V Tx	Display Armor	Capsense Buttons	Water Rejection	Thin Glove Support	Gestures	Thick Overlay/Thick Glove Support	Package
CYAT81650-100AA48	48	10	✔	✔	–	–	–	–	–	100-pin TQFP
CYAT81650-100ASA48	48	10	✔	✔	–	–	–	–	–	100-pin TQFP
CYAT81652-100AA48	48	10	✔	✔	✔	✔	✔	–	–	100-pin TQFP
CYAT81652-100AS48	48	10	✔	✔	✔	✔	✔	–	–	100-pin TQFP
CYAT81655-100AA48	48	10	✔	✔	✔	✔	✔	✔	–	100-pin TQFP
CYAT81655-100AS48	48	10	✔	✔	✔	✔	✔	✔	–	100-pin TQFP
CYAT81658-100AA48	48	10	✔	✔	✔	✔	✔	✔	✔	100-pin TQFP
CYAT81658-100AS48	48	10	✔	✔	✔	✔	✔	✔	✔	100-pin TQFP

Ordering Code Definitions



Note

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

Document History Page

Document Title: CYAT8165X (48 I/Os), Automotive TrueTouch® Multi-Touch All-Points Touchscreen Controller Document Number: 002-16617				
Revision	**ECN**	**Orig. of Change**	**Submission Date**	**Description of Change**
**	5437893	GACH	09/16/2016	Initial release

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