

# TrueTouch® Multi-Touch All-Points Touchscreen Controller

## Features

### ■ Multi-touch capacitive touchscreen controller

- 32-bit ARM Cortex CPU
- Register configurable
- Noise suppression technologies for battery charger, and display
  - Effective 28-V drive for higher signal-to-noise ratio (SNR)
  - ChargerArmor™ for charger noise immunity
  - External display synchronization
- Water rejection and wet finger tracking
- Passive stylus
- Multi-touch glove with autoswitching
  - 10 fingers with thin glove (≤1-mm thick)
  - 2 fingers with thick glove (≤5-mm thick)
- Finger nail tracking
- Grip suppression
- Large object rejection
- Automatic baseline tracking to environmental changes
- Low-power look-for-touch mode
- Easy wake gesture
- Field upgrades via bootloader
- Android™ driver support
- Cypress manufacturing test kit (MTK)
- Touchscreen sensor self-test and ID reporting

### ■ System performance (configuration dependent)

- Screen sizes up to 5.9-inch diagonal
  - 4.7-mm sensor pitch, 4:3 aspect ratio
- Up to 45 sense pins
  - 494 intersections (26 × 19)
- Reports up to 10 fingers
- Small finger support down to 4 mm
- Large finger support up to 22 mm
- Refresh rate up to 150 Hz; other rates configurable
- Fast first-touch response (≤25 ms)

### ■ Charger noise immunity

- Immunity up to 10 volts peak-to-peak ( $V_{PP}$ )

### ■ Power (configuration dependent)

- 1.71- to 5.5-V digital and I/O supply
- 2.65- to 5.5-V analog supply
- 10-mW average power
- 4.5- $\mu$ W typical deep-sleep power

### ■ Sensor and system design (configuration dependent)

- Supports a variety of touchscreen sensors and stackups
  - Manhattan and diamond patterns
  - Sensor-on-lens (SOL)
  - On-cell touch integrated display modules
  - Plastic (PET) and glass sensor substrates
  - LCD and AMOLED displays
- Single-layer flexible printed circuit (FPC) routing enabled by flexible TX/RX configurations

### ■ Communication interface

- I<sup>2</sup>C slave at all standard bit rates
  - 100 kbps, 400 kbps, 1 Mbps, and 3.4 Mbps
- SPI slave bit rates up to 10 Mbps

### ■ Package options

- 44-pin 5 × 5 × 0.6-mm QFN (0.35-mm lead pitch)
- 48-pin 6 × 6 × 0.6-mm QFN (0.4-mm lead pitch)
- 56-pin 6 × 6 × 0.6-mm QFN (0.35-mm lead pitch)
- 49-ball 3.8 × 3.9 × 0.6-mm WLCSP (0.5-mm ball pitch)
- 60-ball 5.5 × 5.5 × 0.6-mm UFBGA60 (0.5-mm ball pitch)

**Ordering Information**

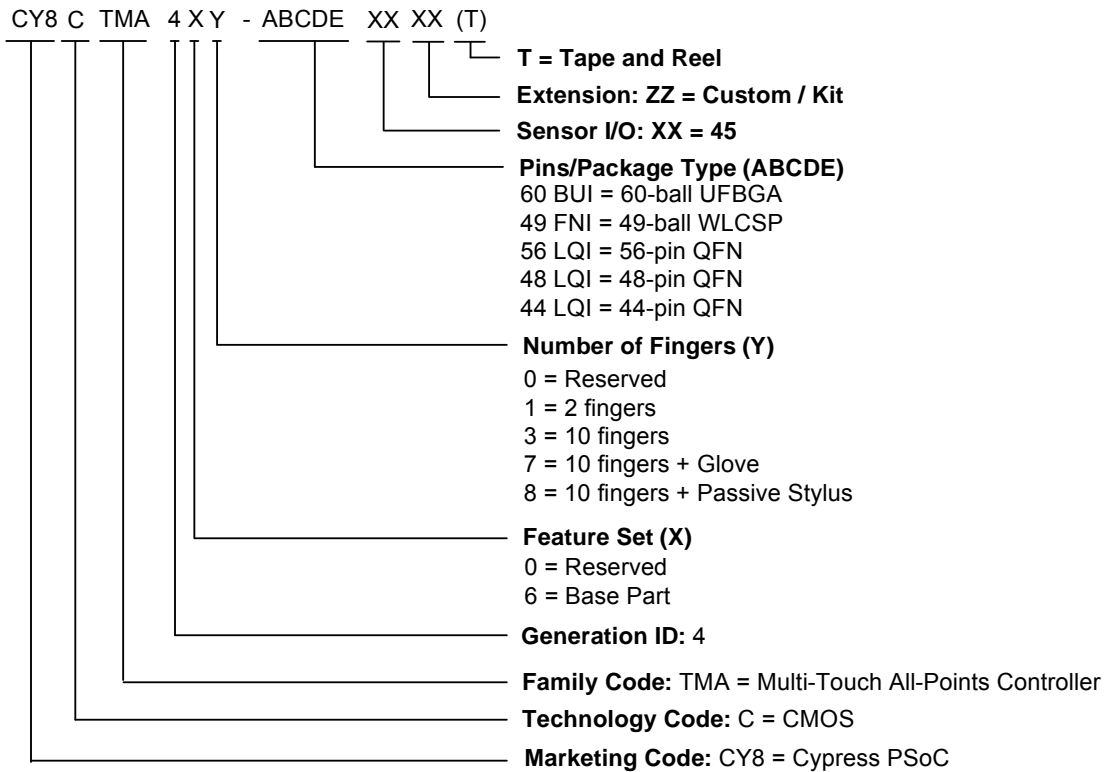
Table 1 lists the CY8CTMA46X (Gen4) TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <http://www.cypress.com/truetouch>.

**Table 1. Device Ordering Information**

Family	Part Number	Sense Pins	Typ Screen Size (inches) <sup>[1]</sup>	Max Fingers	ChargerArmor	CapSense Button	Water Rejection	Large Object	10V TX	Glove	External Display Sync	Passive Stylus	Package Type
Base	CY8CTMA461-48LQI(T)	35	4.6	2	✓	✓	✓	✓	✓	–	✓	–	48-Pin QFN
	CY8CTMA463-44LQI(T)	31	4.1	10	✓	✓	✓	✓	✓	–	✓	–	44-Pin QFN
	CY8CTMA463-48LQI(T)	35	4.6	10	✓	✓	✓	✓	✓	–	✓	–	48-Pin QFN
	CY8CTMA463-56LQI(T)	44	5.8	10	✓	✓	✓	✓	✓	–	✓	–	56-Pin QFN
	CY8CTMA463-49FNIT	36	4.8	10	✓	✓	✓	✓	✓	–	✓	–	49-Ball WLCSP
	CY8CTMA463-60BUI(T)	45	5.9	10	✓	✓	✓	✓	✓	–	✓	–	60-Ball UFBGA
Glove	CY8CTMA467-44LQI(T)	31	4.1	10	✓	–	✓	✓	✓	✓	✓	–	44-Pin QFN
	CY8CTMA467-48LQI(T)	35	4.6	10	✓	–	✓	✓	✓	✓	✓	–	48-Pin QFN
	CY8CTMA467-56LQI(T)	44	5.8	10	✓	–	✓	✓	✓	✓	✓	–	56-Pin QFN
	CY8CTMA467-49FNIT	36	4.8	10	✓	–	✓	✓	✓	✓	✓	–	49-Ball WLCSP
	CY8CTMA467-60BUI(T)	45	5.9	10	✓	–	✓	✓	✓	✓	✓	–	60-Ball UFBGA
Passive Stylus	CY8CTMA468-44LQI(T)	31	4.1	10	✓	–	✓	✓	✓	–	✓	✓	44-Pin QFN
	CY8CTMA468-48LQI(T)	35	4.6	10	✓	–	✓	✓	✓	–	✓	✓	48-Pin QFN
	CY8CTMA468-56LQI(T)	44	5.8	10	✓	–	✓	✓	✓	–	✓	✓	56-Pin QFN
	CY8CTMA468-49FNIT	36	4.8	10	✓	–	✓	✓	✓	–	✓	✓	49-Ball WLCSP
	CY8CTMA468-60BUI(T)	45	5.9	10	✓	–	✓	✓	✓	–	✓	✓	60-Ball UFBGA
Custom Reserved for Kits	CY8CTMA400-44LQI(T)	31	4.1	10	✓	✓	✓	✓	✓	✓	✓	–	44-Pin QFN
	CY8CTMA400-48LQI(T)	35	4.6	10	✓	✓	✓	✓	✓	✓	✓	–	48-Pin QFN
	CY8CTMA400-56LQI(T)	44	5.8	10	✓	✓	✓	✓	✓	✓	✓	–	56-Pin QFN
	CY8CTMA400-49FNIT	36	4.8	10	✓	✓	✓	✓	✓	✓	✓	–	49-Ball WLCSP
	CY8CTMA400-60BUI(T)	45	5.9	10	✓	✓	✓	✓	✓	✓	✓	–	60-Ball UFBGA

**Note**  
1. 4.7 mm pitch, 4:3 aspect ratio.

**Ordering Code Definitions**



## Document History Page

Document Title: CY8CTMA46X TrueTouch® Multi-Touch All-Points Touchscreen Controller Document Number: 001-91021				
Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	4274818	SWU	02/11/2014	New summary datasheet.
*A	5284373	ELG	05/26/2016	Removed Windows Phone Support. Revised grammar for charger noise. Aligned charger noise support in order information table with features list. Updated template.

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