



THIS SPEC IS OBSOLETE

Spec No: 001-93968

Spec Title: CYTT21X/31X (40, 44, 48 IOS) TRUETOUCH(R)  
MULTI-TOUCH ALL-POINTS TOUCHSCREEN  
CONTROLLER DATASHEET (SUMMARY)

Replaced by: NONE

# TrueTouch® Multi-Touch All-Points Touchscreen Controller Datasheet

## Features

### ■ Multi-touch capacitive touchscreen controller

- 32-bit ARM® Cortex™ CPU
- Register-configurable
- Noise-suppression technologies for battery charger and display
  - Effective 14-V drive for higher signal-to-noise ratio (SNR)
  - ChargerArmor™ for charger noise immunity
  - External display synchronization
- Water rejection and wet-finger tracking using DualSense™
- 2.5-mm passive stylus with automatic mode switching and palm rejection
- 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
- Android™ driver support
- Cypress Manufacturing Test Kit (MTK)
- Touchscreen sensor self-test and Panel ID reporting

### ■ System performance (configuration dependent)

- Screen sizes up to 7.0-inch diagonal
  - 5.0-mm electrode pitch; 16:9 aspect ratio
- Screen sizes up to 5.5-inch diagonal
  - 4.0-mm electrode pitch; 16:9 aspect ratio
- Up to 48 sense pins
  - 527 intersections (31 × 17)

- Reports up to ten fingers
- Small finger support down to 4 mm
- Large finger support up to 30 mm
- Refresh rate up to 300 Hz; other rates configurable
- TX frequency up to 500 kHz
- Best-in-class charger noise immunity
  - Immunity up to 35-V peak-to-peak (V<sub>PP</sub>)
  - Immunity to AT&T® Zero charger

### ■ Power (configuration-dependent)

- 1.71- to 1.95-V or 2.0- to 5.5-V digital and I/O supply
- 2.65- to 4.7-V analog supply
- 9-mW average power
- 10.7-μW typical deep-sleep power

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

- Supports a variety of touchscreen sensors and stackups
  - Manhattan, diamond, Single-Layer Independent Multi-touch (SLIM®), and Totem-pole patterns
  - Sensor-on-Lens (SOL)
  - On-cell touch-integrated display modules
  - Plastic (PET) and glass-sensor substrates
  - LCD, AMOLED, and IPS displays
  - Metal mesh
- Single-layer flexible printed circuit (FPC) routing enabled by flexible TX/RX configurations

### ■ Communication interface

- I<sup>2</sup>C slave at 100 and 400 kbps
- SPI slave bit rates up to 8 Mbps

### ■ Package

- 56-pin 6 × 6 × 0.6-mm QFN (0.35-mm lead pitch)

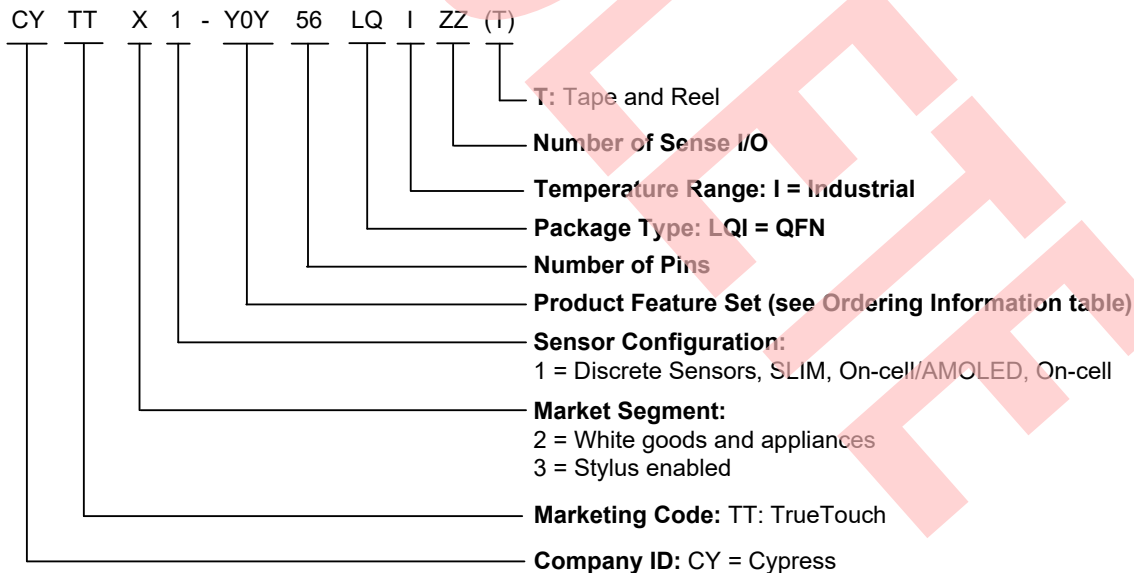
**Ordering Information**

Table 1 lists the CYTT21X/31X TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <http://www.cypress.com/truetouch>.

**Table 1. Ordering Information** <sup>[1]</sup>

MPN	Top Marking	Features						Package
		Sense I/O	Max Touches	Charger Armor	Glove	Easy Wake <sup>[2]</sup>	Passive Stylus	
CYTT21100-56LQI48(T)	CYTT21000-56LQ	48	10	✓	–	–	–	56 QFN
CYTT21401-56LQI48(T)	CYTT21000-56LQ	48	10	✓	✓	–	–	56 QFN
CYTT21403-56LQI48(T)	CYTT21000-56LQ	48	10	✓	✓	✓	–	56 QFN
CYTT21100-56LQI44(T)	CYTT21001-56LQ	44	10	✓	–	–	–	56 QFN
CYTT21401-56LQI44(T)	CYTT21001-56LQ	44	10	✓	✓	–	–	56 QFN
CYTT21403-56LQI44(T)	CYTT21001-56LQ	44	10	✓	✓	✓	–	56 QFN
CYTT21100-56LQI40(T)	CYTT21001-56LQ	40	10	✓	–	–	–	56 QFN
CYTT21401-56LQI40(T)	CYTT21001-56LQ	40	10	✓	✓	–	–	56 QFN
CYTT21403-56LQI40(T)	CYTT21001-56LQ	40	10	✓	✓	✓	–	56 QFN
CYTT31702-56LQI48(T)	CYTT31000-56LQ	48	10	✓	✓	✓	✓	56 QFN

**Ordering Code Definitions**



**Notes**

1. All devices have the following base features: ChargerArmor, DualSense, CapSense buttons, Large Object Detection and Rejection, and Grip Suppression.
2. Easy-wake is a gesture made while the LCD is completely powered off to provide a quick and easy method to wake up a device and open a specific application. These gestures include finger swiping and tracing alphanumeric symbols.

**Document History Page**

Document Title: CYTT21X/31X (40, 44, 48 IOs) TrueTouch® Multi-Touch All-Points Touchscreen Controller Datasheet Document Number: 001-93968				
Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	4621131	SWU	01/14/2015	New datasheet.
*A	4670224	SWU	02/25/2015	Updated Document Title.
*B	4688471	SWU	03/25/2015	Updated Document Title. Updated Features: Replaced "Immunity up to 15-V peak-to-peak (V <sub>PP</sub> )" with "Immunity up to 35-V peak-to-peak (V <sub>PP</sub> )". Updated Ordering Information: Updated Table 1: Updated part numbers. Added a column "Top Marking".
*C	5073152	ELG	01/05/2016	Updated Features: Removed "Face detection up to 20 mm". Removed "Windows® Phone 8.1 driver". Updated Ordering Information: Updated Table 1: Updated part numbers. Removed "Face Detection" column. Updated Ordering Code Definitions. Updated to new template. Completing Sunset Review.
*D	6383043	ELG	11/14/2018	Obsoleting the spec.

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