

## SUMMARY

CYTT21XXX (28, 33, 35, 36 I/Os)

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

#### **Features**

- Multi-touch capacitive touchscreen controller
  - □ 32-bit ARM<sup>®</sup> Cortex<sup>™</sup> CPU
  - □ Register-configurable
  - □ Noise-suppression technologies for battery charger and display
    - Effective 24-V drive for higher signal-to-noise ratio (SNR)
    - ChargerArmor<sup>™</sup> for charger noise 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
  - □ Grip suppression
  - Large object rejection
  - □ Automatic baseline tracking to environmental changes
  - □ Low-power look-for-touch mode
  - ☐ Field upgrades via bootloader
  - □ Android<sup>™</sup> driver support
  - □ Cypress Manufacturing Test Kit (MTK)
  - □ Touchscreen sensor self-test and Panel ID reporting
- System performance (configuration dependent)
  - □ Screen sizes up to 5.0-inch diagonal
    - · 4.8-mm sensor pitch; 16:9 aspect ratio
  - □ Up to 36 sense pins
    - 308 intersections (22 × 14)
  - □ 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 (VPP)
    - 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
  - □ 4-mW average power
- □ 5.7-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<sup>®</sup>), and Totem-pole patterns
  - Sensor-on-Lens (SOL)
  - · 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<sup>[1]</sup>
- Package options
  - □ 44-pin 5 × 5 × 0.6-mm QFN (0.35-mm lead pitch)
  - $\square$  48-pin 6 × 6 × 0.6-mm QFN (0.4-mm lead pitch)

#### Note

1. SPI support is only available in 48-pin QFN package.



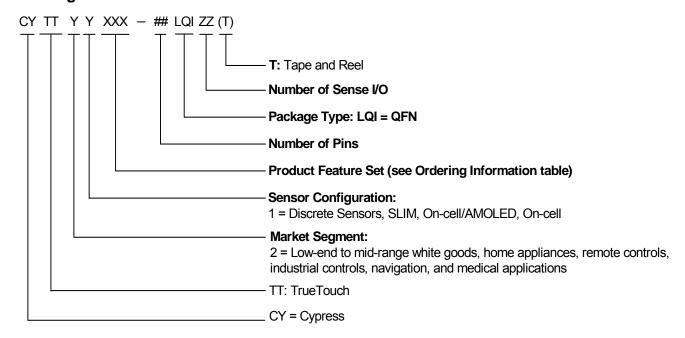
# **Ordering Information**

Table 1 lists the CYTT21XXX TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <a href="http://www.cypress.com/truetouch">http://www.cypress.com/truetouch</a>.

**Table 1. Device Ordering Information** 

	Top Marking	TrueTouch					Package
Part Number		Sense I/O	Base Features <sup>[2]</sup>	Advanced Wet-finger Tracking	Glove	Easy Wake	Туре
CYTT21100-44LQI28(T)	CYTT21000-44LQI	28	~	_	-	-	44-Pin QFN
CYTT21401-44LQI28(T)	CYTT21000-44LQI	28	~	~	<b>V</b>	-	44-Pin QFN
CYTT21402-44LQI28(T)	CYTT21000-44LQI	28	~	~	<b>V</b>	~	44-Pin QFN
CYTT21100-44LQI33(T)	CYTT21000-44LQI	33	~	_	_	_	44-Pin QFN
CYTT21401-44LQI33(T)	CYTT21000-44LQI	33	~	~	<b>V</b>	-	44-Pin QFN
CYTT21402-44LQI33(T)	CYTT21000-44LQI	33	~	~	<b>V</b>	~	44-Pin QFN
CYTT21100-44LQI35(T)	CYTT21000-44LQI	35	~	_	_	_	44-Pin QFN
CYTT21401-44LQI35(T)	CYTT21000-44LQI	35	~	~	<b>V</b>	_	44-Pin QFN
CYTT21403-44LQI35(T)	CYTT21000-44LQI	35	~	~	<b>V</b>	~	44-Pin QFN
CYTT21100-48LQI36(T)	CYTT21000-48LQI	36	<b>V</b>	_	_	_	48-Pin QFN
CYTT21401-48LQI36(T)	CYTT21000-48LQI	36	~	~	<b>V</b>	_	48-Pin QFN
CYTT21403-48LQI36(T)	CYTT21000-48LQI	36	<b>V</b>	<b>V</b>	<b>V</b>	~	48-Pin QFN

# **Ordering Code Definitions**



#### Note

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<sup>2.</sup> All devices have the following base features: Water Rejection, ChargerArmor, CapSense buttons, Large Object Detection and Rejection, and Grip Suppression.



## **Document History Page**

Document Title: CYTT21XXX (28, 33, 35, 36 I/Os) TrueTouch <sup>®</sup> Multi-Touch All-Points Touchscreen Controller Datasheet Document Number: 001-96564						
Revision	ECN	Orig. of Change	Submission Date	Description of Change		
**	4670224	SWU	02/25/2015	New datasheet.		
*A	5141053	ELG	02/17/2016	Updated Ordering Information and Ordering Code Definitions.		

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