Features

■ Multi-touch capacitive touchscreen controller
  ❏ 32-bit ARM® Cortex™ CPU
  ❏ Register-configurable
  ❏ Noise-suppression technologies for battery charger and display
    • Effective 24-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™
  ❏ 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
  ❏ Face detection up to 25 mm with grip suppression
  ❏ Large object rejection
  ❏ Automatic baseline tracking to environmental changes
  ❏ Low-power look-for-touch mode
  ❏ Field upgrades via bootloader
  ❏ Android™ and Windows® Phone 8 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 (V_{PP})
    • 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®), 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
  ❏ I²C slave at 100 and 400 kbps
  ❏ SPI slave bit rates up to 8 Mbps[1]

■ 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)

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 http://www.cypress.com/truetouch.

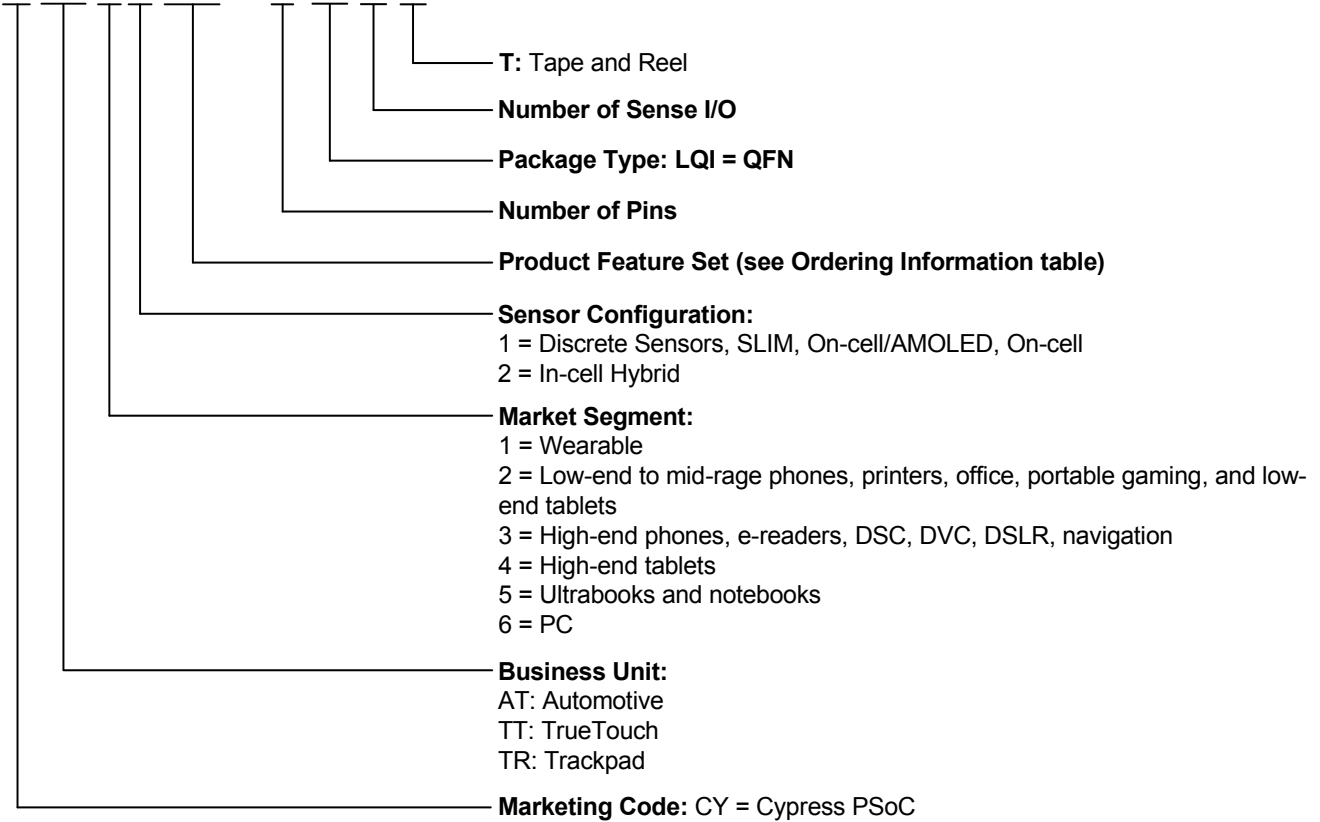**Table 1. Device Ordering Information**

Part Number	Top Marking	Sense I/O	Base Features[2]	Advanced Wet-finger Tracking	Glove	Easy Wake	Face Detection	Type
			TrueTouch					Package
CYTT21100-44LQI28(T)	CYTT21000-44LQI	28	✔	–	–	–	–	44-Pin QFN
CYTT21401-44LQI28(T)	CYTT21000-44LQI	28	✔	✔	✔	–	–	44-Pin QFN
CYTT21402-44LQI28(T)	CYTT21000-44LQI	28	✔	✔	✔	✔	–	44-Pin QFN
CYTT21100-44LQI33(T)	CYTT21000-44LQI	33	✔	–	–	–	–	44-Pin QFN
CYTT21401-44LQI33(T)	CYTT21000-44LQI	33	✔	✔	✔	–	–	44-Pin QFN
CYTT21402-44LQI33(T)	CYTT21000-44LQI	33	✔	✔	✔	✔	–	44-Pin QFN
CYTT21100-44LQI35(T)	CYTT21000-44LQI	35	✔	–	–	–	–	44-Pin QFN
CYTT21401-44LQI35(T)	CYTT21000-44LQI	35	✔	✔	✔	–	–	44-Pin QFN
CYTT21402-44LQI35(T)	CYTT21000-44LQI	35	✔	✔	✔	✔	–	44-Pin QFN
CYTT21403-44LQI35(T)	CYTT21000-44LQI	35	✔	✔	✔	✔	✔	44-Pin QFN
CYTT21100-48LQI36(T)	CYTT21000-48LQI	36	✔	–	–	–	–	48-Pin QFN
CYTT21401-48LQI36(T)	CYTT21000-48LQI	36	✔	✔	✔	–	–	48-Pin QFN
CYTT21402-48LQI36(T)	CYTT21000-48LQI	36	✔	✔	✔	✔	–	48-Pin QFN
CYTT21403-48LQI36(T)	CYTT21000-48LQI	36	✔	✔	✔	✔	✔	48-Pin QFN

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

Ordering Code Definitions

CY TT Y Y XXX – ## LQI ZZ (T)

T: Tape and Reel

Number of Sense I/O

Package Type: LQI = QFN

Number of Pins

Product Feature Set (see Ordering Information table)

Sensor Configuration:
1 = Discrete Sensors, SLIM, On-cell/AMOLED, On-cell
2 = In-cell Hybrid

Market Segment:
1 = Wearable
2 = Low-end to mid-rage phones, printers, office, portable gaming, and low-end tablets
3 = High-end phones, e-readers, DSC, DVC, DSLR, navigation
4 = High-end tablets
5 = Ultrabooks and notebooks
6 = PC

Business Unit:
AT: Automotive
TT: TrueTouch
TR: Trackpad

Marketing Code: CY = Cypress PSoC

Document History Page

Document Title: CYTT21XXX (28, 33, 35, 36 I/Os) TrueTouch® 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.

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