SUMMARY

CYTMA445A

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 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
  - Grip suppression
  - 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 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 noise
- 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
  - I^2C 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.

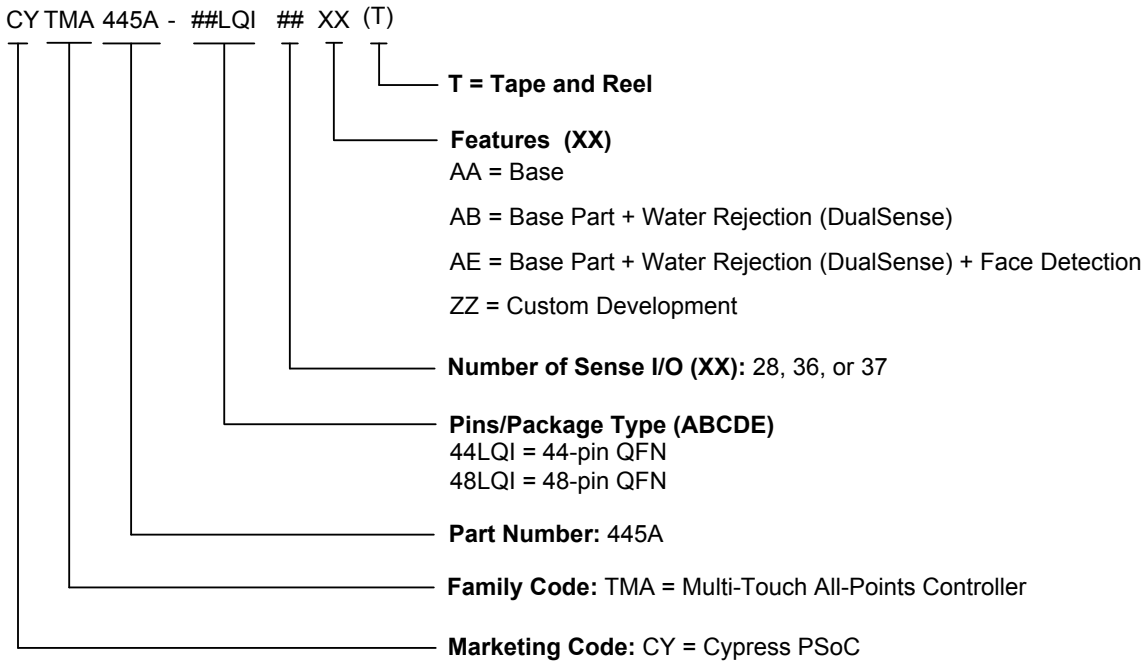
Ordering Information

Table 1 lists the CYTMA445A TrueTouch touchscreen controllers. For information on other TrueTouch families, visit http://www.cypress.com/truetouch.

Table 1. Device Ordering Information[2]

Device Part Number		TrueTouch				Package
Segmentation	**Part Number**	**Sense I/O**	**35-V_{PP} Charger Armor**	**DualSense**	**Glove**	**Type**
Base Part	CYTMA445A-44LQI28AA(T)	28	✔	–	–	44-Pin QFN
	CYTMA445A-44LQI33AA(T)	33	✔	–	–	44-Pin QFN
	CYTMA445A-44LQI35AA(T)	35	✔	–	–	44-Pin QFN
	CYTMA445A-48LQI36AA(T)	36	✔	–	–	48-Pin QFN
DualSense	CYTMA445A-44LQI28AB(T)	28	✔	✔	–	44-Pin QFN
	CYTMA445A-44LQI33AB(T)	33	✔	✔	–	44-Pin QFN
	CYTMA445A-44LQI35AB(T)	35	✔	✔	–	44-Pin QFN
	CYTMA445A-48LQI36AB(T)	36	✔	✔	–	48-Pin QFN
Advanced Feature	CYTMA445A-44LQI35AE(T)	35	✔	✔	✔	44-Pin QFN
	CYTMA445A-48LQI36AE(T)	36	✔	✔	✔	48-Pin QFN
Custom (Reserved for Kits)	CYTMA445A-44LQI35ZZ(T)	35	✔	✔	✔	44-Pin QFN
	CYTMA445A-48LQI36ZZ(T)	36	✔	✔	✔	48-Pin QFN

Ordering Code Definitions



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

Document History Page

Document Title: CYTMA445A, TrueTouch® Multi-Touch All-Points Touchscreen Controller Document Number: 001-90901				
Revision	**ECN**	**Orig. of Change**	**Submission Date**	**Description of Change**
**	4379892	SWU	05/14/2014	New datasheet.
*A	4427766	SWU	07/02/2014	Changed maximum V_{DDA} supply from 5.5 V to 4.7 V. Changed Deep Sleep power from 5.674 µW to 6.3 µW. Changed charger noise (ChargerArmor) immunity from 15Vpp to 35 Vpp. Fixed typo for supported Charger Armor voltage in Ordering Information table. Fixed MPN sense I/O typo in Ordering Information table.
*B	4484730	SWU	08/27/2014	Added “Datasheet” to document title.
*C	4670224	SWU	02/25/2015	Fixed typo: Removed footnote link from External display synchronization on the front page. Removed support for On-cell/hybrid in-cell touch-integrated display modules.
*D	5316805	ELG	06/21/2016	Updated Features. Updated Ordering Information. Updated CY Logo and Sales Disclaimer.

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