SUMMARY

CYTMA445

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 28-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
    - 10 fingers with thin glove (≤1-mm thick)
    - 2 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 5.0-inch diagonal
    - 4.8-mm sensor pitch, 16:9 aspect ratio
  - Up to 36 sense pins
    - 299 intersections (23 × 13)
  - Reports up to 10 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
  - Fast first-touch response (≤13 ms)
  - Charger noise immunity
    - Immunity up to 35 peak-to-peak voltage (V_{PP})
    - Immunity to AT&T Zero charger
- Power (configuration dependent)
  - 1.71- to 5.5-V digital and I/O supply
  - 2.65- to 5.5-V analog supply
  - 6.75-mW average power
  - 4.5-µW typical deep-sleep power
- Sensor and system design (configuration dependent)
  - Supports a variety of touchscreen sensors and stackups
    - Manhattan, diamond, and Single Layer Independent Multi-touch (SLIM®) 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^2C slave at all standard bit rates
    - 100 kbps, 400 kbps, 1 Mbps, and 3.4 Mbps
  - SPI slave bit rate 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)

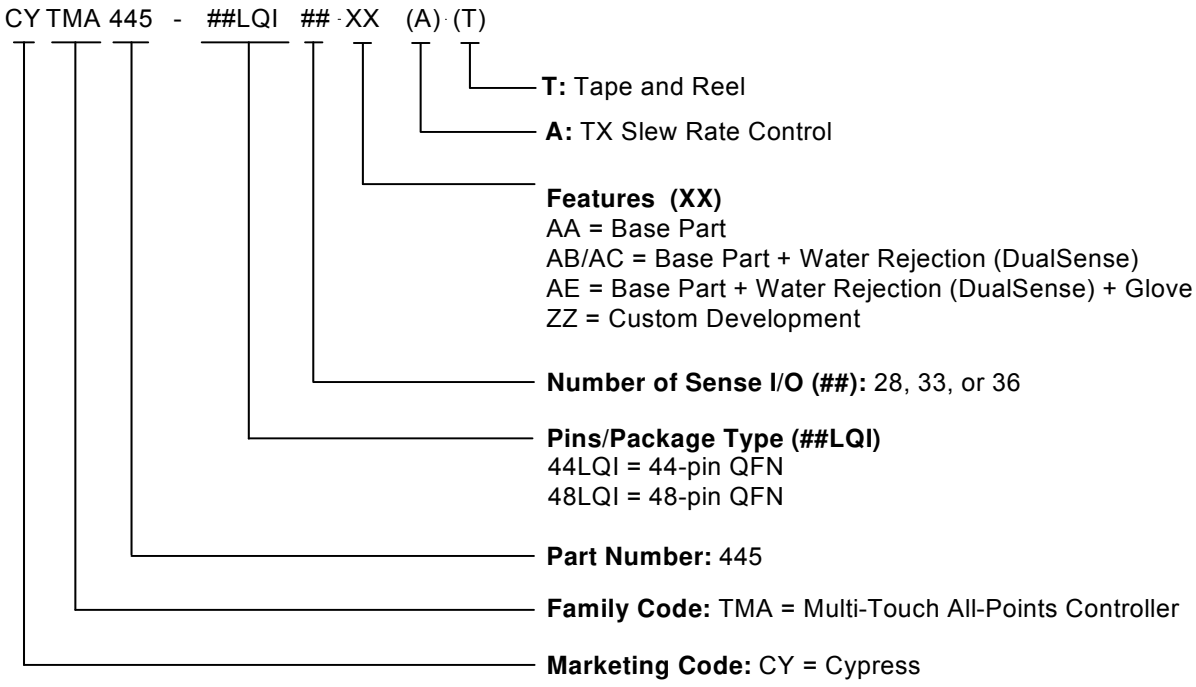
Ordering Information

Table 1 lists the CYTMA445 TrueTouch touchscreen controllers. For information on other TrueTouch® families, visit http://www.cypress.com/truetouch.

Table 1. Device Ordering Information[1]

Device Part Number		Base Features					Glove	Package
Family	Part Number	Sense Pins	Typ Screen Size (inches)[2]	Max Fingers	TX Slew Rate Control	Improved ESD Performance		
Water Rejection (DualSense)	CYTMA445-48LQI36AE(T)	36	5.0	10	–	–	✔	48-Pin QFN
Custom Reserved for Kits	CYTMA445-44LQI33ZZ(T)	33	4.5	10	–	–	✔	44-Pin QFN
Base	CYTMA445-44LQI28AAA(T)	28	3.9	10	✔	✔	–	44-Pin QFN
	CYTMA445-44LQI33AAA(T)	33	4.5	10	✔	✔	–	44-Pin QFN
	CYTMA445-48LQI36AAA(T)	36	5.0	10	✔	✔	–	48-Pin QFN
Water Rejection (DualSense)	CYTMA445-44LQI33ABA(T)	33	4.5	10	✔	✔	–	44-Pin QFN
	CYTMA445-48LQI36ABA(T)	36	5.0	10	✔	✔	–	48-Pin QFN
	CYTMA445-44LQI33ACA(T)	33	4.5	10	✔	✔	–	44-Pin QFN
	CYTMA445-48LQI36ACA(T)	36	5.0	10	✔	✔	–	48-Pin QFN
	CYTMA445-44LQI33AEA(T)	33	4.5	10	✔	✔	✔	44-Pin QFN
	CYTMA445-48LQI36AEA(T)	36	5.0	10	✔	✔	✔	48-Pin QFN
Custom Reserved for Kits	CYTMA445-44LQI33ZZA(T)	33	4.5	10	✔	✔	✔	44-Pin QFN
	CYTMA445-48LQI36ZZA(T)	36	5.0	10	✔	✔	✔	48-Pin QFN

Ordering Code Definitions



Notes
1. All devices have the following base features: 10-V TX, ChargerArmor, CapSense buttons, Large Object Detection and Rejection, and Grip Suppression.
2. 4.7-mm pitch for screen sizes up to 4.9-inch diagonal, 4.8-mm pitch for 5.0-inch diagonal screen size, 16:9 aspect ratio. Larger screen sizes can be supported with a larger pitch.

Document History Page

Document Title: CYTMA445 TrueTouch® Multi-Touch All-Points Touchscreen Controller Datasheet Document Number: 001-90907				
Revision	**ECN**	**Orig. of Change**	**Submission Date**	**Description of Change**
**	4267426	SWU	02/19/2014	New datasheet
*A	4379995	SWU	05/14/2014	Removed 24 I/O device Updated refresh rate from 250 Hz to 300 Hz
*B	4392605	SWU	05/28/2014	Removed Proximity feature and related manufacturing part numbers. Updated average power from 6.1 mW to 6.75 mW to match validated active power.
*C	4466944	SWU	08/08/2014	Added “Datasheet” to document title.
*D	5139587	ELG	02/18/2016	Updated Ordering Information. Updated copyright information.

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