

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 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 thickness)
 - 2 fingers with thick glove (≤5-mm thickness)
 - Face detection with grip suppression
 - Finger nail tracking
 - Passive stylus with palm rejection
 - Hover finger sensing
 - 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 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)
- Best-in-class charger noise immunity
 - Immunity up to 60 peak-to-peak voltage (V_{PP})
 - Immunity to AT&T Zero charger and Duracell chargers
- Power (configuration dependent)
 - 1.71- to 5.5-V digital and I/O supply
 - 2.65- to 5.5-V analog supply
 - 5.6-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 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
 - I²C slave at all standard bit rates
 - 100 kbps, 400 kbps, 1 Mbps, and 3.4 Mbps
 - SPI slave bit rates 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

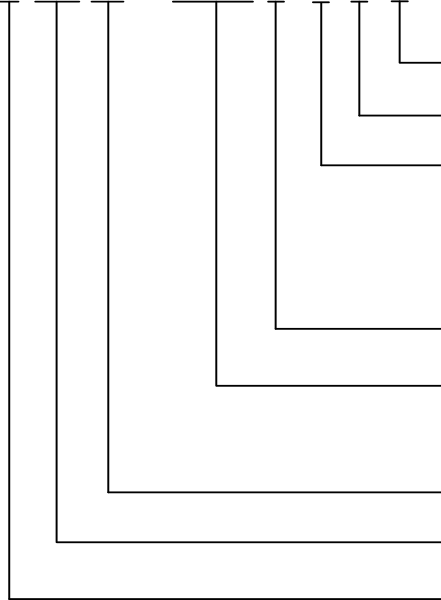
Table 1 lists the CYTMA545 TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <http://www.cypress.com/truetouch>.

Table 1. Device Ordering Information^[1]

Device Family and Part Number		TrueTouch				Advanced Features				Package
Family	Part Number	Sense Pins	Typ Screen Size (inches) ^[2]	Max Fingers	TX Slew Rate Control	Glove	Stylus	Hover	Face Detection	
Base	CYTMA545-44LQI33AA(T)	33	4.5	10	–	–	–	–	–	44-Pin QFN
	CYTMA545-48LQI36AA(T)	36	5	10	–	–	–	–	–	48-Pin QFN
Water Rejection (DualSense)	CYTMA545-44LQI33AB(T)	33	4.5	10	–	–	–	–	–	44-Pin QFN
	CYTMA545-48LQI36AB(T)	36	5	10	–	–	–	–	–	48-Pin QFN
	CYTMA545-48LQI36BB(T)	36	5	10	–	✓	✓	–	–	48-Pin QFN
Custom Reserved for Kits	CYTMA545-48LQI36ZZ(T)	36	5	10	–	✓	✓	✓	✓	48-Pin QFN
Base	CYTMA545-44LQI33AAA(T)	33	4.5	10	✓	–	–	–	–	44-Pin QFN
	CYTMA545-48LQI36AAA(T)	36	5	10	✓	–	–	–	–	48-Pin QFN
Water Rejection (DualSense)	CYTMA545-44LQI33ABA(T)	33	4.5	10	✓	–	–	–	–	44-Pin QFN
	CYTMA545-48LQI36ABA(T)	36	5	10	✓	–	–	–	–	48-Pin QFN
	CYTMA545-48LQI36BBA(T)	36	5	10	✓	✓	✓	–	–	48-Pin QFN
Custom Reserved for Kits	CYTMA545-48LQI36ZZA(T)	36	5	10	✓	✓	✓	✓	✓	48-Pin QFN

Ordering Code Definitions

CY TMA 545 - ##LQI ## XX A (T)



- T = Tape and Reel**
- A = TX Slew Rate Control**
- Features (XX)**
 - AA = Base
 - AB = Base Part + Water Rejection (DualSense)
 - BB = Base Part + Water Rejection (DualSense) + Stylus + Glove
 - ZZ = Custom Development
- Number of Sense I/O (##): 33 or 36**
- Pins/Package Type (##LQI)**
 - 44LQI = 44-pin QFN
 - 48LQI = 48-pin QFN
- Part Number: 545**
- Family Code: TMA = Multi-Touch All-Points Controller**
- Marketing Code: CY = Cypress PSoC**

Notes

1. All devices have the following base features: 10-V TX, ChargerArmor, CapSense Buttons, Large Object Detection and Rejection, Grip Suppression, Water Rejection, Self-capacitance, and High Noise Immunity (see Table 2 on page 6).
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: CYTMA545 TrueTouch® Multi-Touch All-Points Touchscreen Controller Document Number: 001-90908				
Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	4267426	SWU	02/19/2014	New datasheet.

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