

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 $\mathsf{AT}\&\mathsf{T}^{\mathbb{R}}$ 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
 - □ 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.

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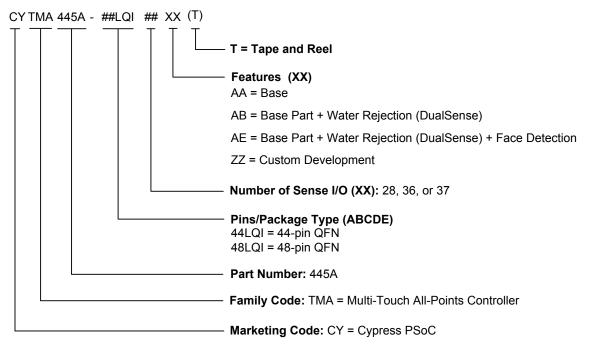
Ordering Information

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	TrueTouch				Package	
Segmentation	Part Number	Sense I/O	35-V _{PP} Charger Armor	DualSense	Glove	Туре
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
	CYTMA445A-44LQI28AB(T)	28	~	~	-	44-Pin QFN
DualSense	CYTMA445A-44LQI33AB(T)	33	~	~	-	44-Pin QFN
DuaiSense	CYTMA445A-44LQI35AB(T)	35	~	~	-	44-Pin QFN
	CYTMA445A-48LQI36AB(T)	36	~	~	-	48-Pin QFN
Advanced	CYTMA445A-44LQI35AE(T)	35	~	~	~	44-Pin QFN
Feature	CYTMA445A-48LQI36AE(T)	36	~	~	~	48-Pin QFN
Custom	CYTMA445A-44LQI35ZZ(T)	35	~	~	~	44-Pin QFN
(Reserved for Kits)	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 μ W to 6.3 μ W. 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.	
*В	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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