



## SUMMARY

## CYTMA525 Datasheet

# TrueTouch<sup>®</sup> 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
  - Passive stylus
  - Fingernail tracking
  - Hover finger 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 3.0-inch diagonal
    - 4.3-mm electrode pitch, 4:3 aspect ratio
  - Up to 25 sense pins
    - 154 intersection (14 × 11)
  - Reports up to 4 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-V peak-to-peak ( $V_{PP}$ )
    - Immunity to AT&T Zero and Duracell charger noise
- 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- $\mu$ W 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<sup>®</sup>) patterns
    - Sensor-on-lens (SOL)
    - On-cell touch integrated display modules
    - Plastic (PET) and glass sensor substrates
    - LCD and AMOLED displays
- Communication interface
  - I<sup>2</sup>C 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
  - 49-ball 3.085 × 3.25 × 0.55-mm WLCSP (0.4-mm ball pitch)
  - 48-ball 4.3 × 4.3 × 0.6-mm UFBGA (0.5-mm ball pitch)

**Ordering Information**

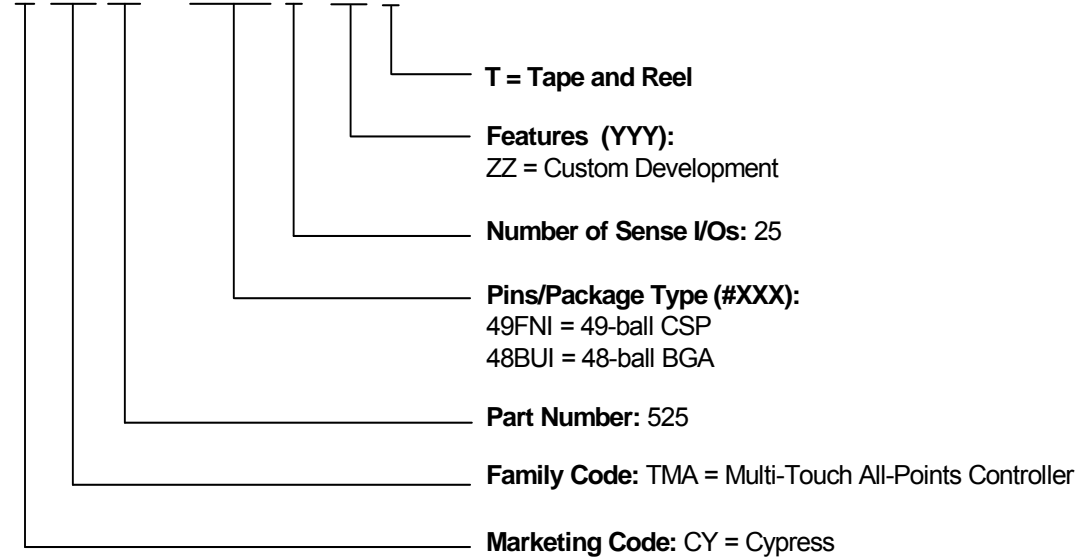
Table 1 lists the CYTMA525 Datasheet TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <http://www.cypress.com/truetouch>.

**Table 1. Device Ordering Information<sup>[1]</sup>**

Device Family and Part Number		TrueTouch				Advanced Features		Package
Family	Part Number	Sense Pins	Typ Screen Size (inches) <sup>[2]</sup>	Max Fingers	TX Slew Rate Control	Glove	Hover	
Custom Reserved for Kits	CYTMA525-49FNI25ZZT	25	3.0	✓	✓	✓	✓	49-ball CSP
	CYTMA525-48BUI25ZZ(T)	25	3.0	✓	✓	✓	✓	48-ball UFBGA

**Ordering Code Definitions**

CYTMA 525 - #XXX 25 · YYY T



**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.
2. 4.3-mm electrode pitch for screen sizes up to 3.0-inch diagonal 4:3 aspect ratio. Larger screen sizes can be supported with a larger pitch.

**Document History Page**

<b>Document Title: CYTMA525 Datasheet TrueTouch® Multi-Touch All-Points Touchscreen Controller</b>				
<b>Document Number: 001-90979</b>				
Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	4521985	SWU	10/01/2014	Initial release
*A	5449494	ELG	09/29/2016	Added passive stylus and removed Windows Phone 8 driver support. Removed CYTMA525-49FNI25ABT part. Updated the template.

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