

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 TX 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)
 - 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 8.3-inch diagonal
 - 5-mm sensor pitch, 16:9 aspect ratio
 - Screen sizes up to 5.3-inch diagonal
 - 3.2-mm sensor pitch, 16:9 aspect ratio
 - Up to 58 sense pins
 - 777 intersections (21 × 37)
 - Reports up to 10 fingers
 - Small finger support down to 4 mm
- Large finger support up to 30 mm
- Refresh rate up to 230 Hz
- TX frequency up to 500 kHz
- Fast first-touch response (≤13 ms)
- Best-in-class charger noise immunity
 - Immunity up to 20 volts peak-to-peak (V_{PP})
 - Immunity to AT&T Zero charger noise
- Power (configuration dependent)
 - 1.71-V to 5.5-V digital and I/O supply
 - 2.65-V to 5.5-V analog supply
 - 8.5-mW average power
 - 15-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)
 - Touch-integrated display modules (on-cell, in-cell)
 - 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 all standard bit rates
 - 100 kbps, 400 kbps, 1 Mbps, and 3.4 Mbps
 - SPI slave bit rates up to 8 Mbps
- Package options
 - 56-pin 6 × 6 × 0.6-mm QFN (0.35-mm lead pitch)
 - 70-ball 5.5 × 5.5 × 0.6-mm BGA (0.5-mm ball pitch)

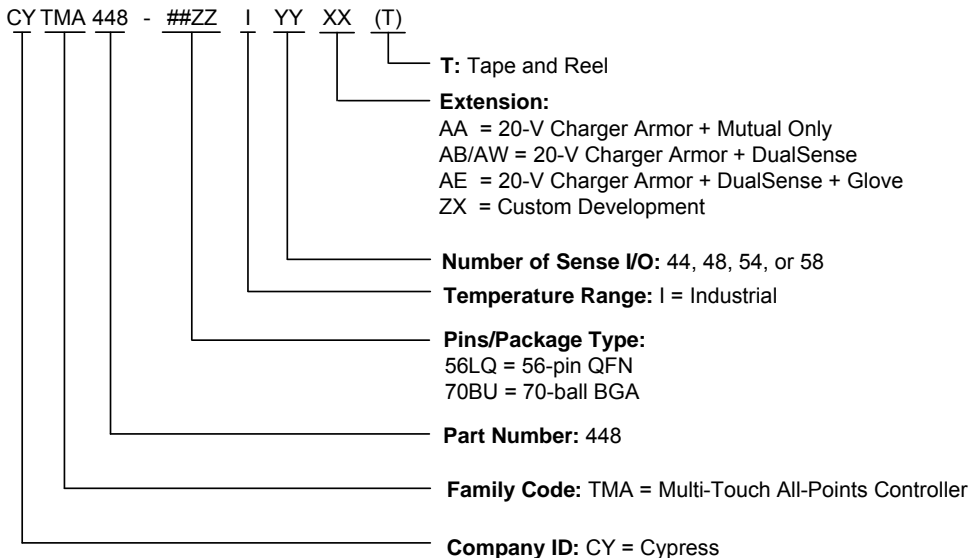
Ordering Information

Table 1 lists the CYTMA448 TrueTouch touchscreen controllers. For information on other TrueTouch families, visit <http://www.cypress.com/truetouch>.

Table 1. Device Ordering Information^[1]

| Segmentation | Part Number | Ext | Sense I/O | Typ Screen Size (inches) | Charger Armor | Configurable TX Slew rate |
|---------------------------------------|----------------|---------|-----------|--------------------------|---------------|---------------------------|
| Base Part (Mutual Capacitance Only) | CYTMA448-56LQI | 44AA(T) | 44 | 6.0 | ✓ | ✓ |
| | CYTMA448-70BUI | 58AA(T) | 58 | 7.9 | ✓ | ✓ |
| Water Rejection (DualSense) | CYTMA448-56LQI | 44AB(T) | 44 | 6.0 | ✓ | – |
| | CYTMA448-70BUI | 48AB(T) | 48 | 6.5 | ✓ | – |
| | CYTMA448-70BUI | 54AB(T) | 54 | 7.2 | ✓ | – |
| | CYTMA448-70BUI | 58AB(T) | 58 | 7.9 | ✓ | – |
| | CYTMA448-56LQI | 44AW(T) | 44 | 6.0 | ✓ | ✓ |
| | CYTMA448-70BUI | 48AW(T) | 48 | 6.5 | ✓ | ✓ |
| | CYTMA448-70BUI | 54AW(T) | 54 | 7.2 | ✓ | ✓ |
| | CYTMA448-70BUI | 58AW(T) | 58 | 7.9 | ✓ | ✓ |
| Glove and Water Rejection (DualSense) | CYTMA448-56LQI | 44AE(T) | 44 | 6.0 | ✓ | ✓ |
| | CYTMA448-70BUI | 54AE(T) | 54 | 7.2 | ✓ | ✓ |
| | CYTMA448-70BUI | 58AE(T) | 58 | 7.9 | ✓ | ✓ |
| Custom / Kits | CYTMA448-56LQI | 44ZX(T) | 44 | 6.0 | ✓ | ✓ |
| | CYTMA448-70BUI | 58ZX(T) | 58 | 7.9 | ✓ | ✓ |

Ordering Code Definitions



Notes

1. All devices have the following base features: 10-V TX, CapSense Buttons, Large Object Detection and Rejection, and Grip Suppression.

Document History Page

| Document Title: CYTMA448, TrueTouch® Multi-Touch All-Points Touchscreen Controller Document Number: 001-90890 | | | | |
|--|---------|-----------------|-----------------|---|
| Rev. | ECN | Orig. of Change | Submission Date | Description of Change |
| ** | 4256331 | KXK | 01/30/2014 | New datasheet. |
| *A | 4392605 | SWU | 05/28/2014 | Updated average power from 12 mW to 8.5 mW to match validated active power. |
| *B | 4399204 | SWU | 06/04/2014 | Added AB MPN. |
| *C | 5284373 | ELG | 05/26/2016 | Removed Windows Phone Support. Revised grammar for charger noise. Aligned charger noise support in order information table with features list. Updated template. |

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