



TMA448 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 28V 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 ($\leq 1\text{mm}$ thickness)
 - 2 fingers with thick glove ($\leq 5\text{mm}$ thickness)
 - Fingernail tracking
 - Large-object rejection
 - Automatic baseline tracking to environmental changes
 - Low-power look-for-touch mode
 - Field upgrades via bootloader
 - Android[™] and Windows[®] 8 driver support
 - Parade Technologies[™] TrueTouch[®] Manufacturing Test Kit (MTK)
 - Touchscreen sensor self-test and Panel ID reporting
- System performance (configuration dependent)
 - Screen sizes up to 8.3-in. diagonal
 - 5mm sensor pitch, 16:9 aspect ratio
 - Screen sizes up to 5.3-in. diagonal
 - 3.2mm sensor pitch, 16:9 aspect ratio
 - Up to 58 sense I/O
 - 777 intersections (21×37)
 - Reports up to 10 fingers
 - Small finger support down to 4mm
- Large finger support up to 30mm
- Refresh rate up to 230Hz
- TX frequency up to 500kHz
- Fast first-touch response ($\leq 13\text{ms}$)
- Best-in-class charger noise immunity
 - Immunity up to 20V peak-to-peak (V_{PP})
 - Immunity to AT&T[®] Zero charger
- Power (configuration dependent)
 - 1.71 to 5.5V digital and I/O supply
 - 2.65 to 5.5V analog supply
 - 8.5mW average power
 - 15 μ W 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
 - 100kbps, 400kbps, 1Mbps, and 3.4Mbps
 - SPI slave bit rates up to 8Mbps
- Package options
 - 56-pin $6 \times 6 \times 0.6\text{mm}$ QFN (0.35mm lead pitch)
 - 70-ball $5.5 \times 5.5 \times 0.6\text{mm}$ BGA (0.5mm ball pitch)

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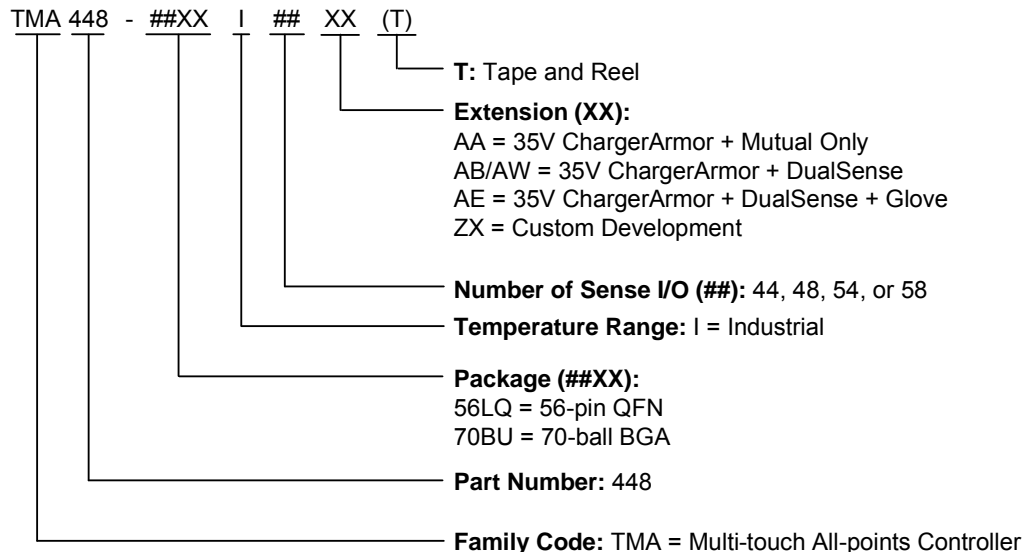
Ordering Information

The following table lists the TMA448 TrueTouch Multi-touch all-points touchscreen controller ordering information. For information on other TrueTouch families, visit <http://www.paradetech.com/products/products-overview/>.

Device Ordering Information^[1]

Segmentation	Part Number	Ext	Features			
			# of Sense I/O	Typ Screen Size (in.)	ChargerArmor	Configurable TX Slew Rate
Base Part (Mutual Capacitance Only)	TMA448-56LQI	44AA(T)	44	6.0	✓	✓
	TMA448-70BUI	58AA(T)	58	7.9	✓	✓
Water Rejection (DualSense)	TMA448-56LQI	44AB(T)	44	6.0	✓	
	TMA448-70BUI	48AB(T)	48	6.5	✓	
	TMA448-70BUI	54AB(T)	54	7.2	✓	
	TMA448-70BUI	58AB(T)	58	7.9	✓	
	TMA448-56LQI	44AW(T)	44	6.0	✓	✓
	TMA448-70BUI	48AW(T)	48	6.5	✓	✓
	TMA448-70BUI	54AW(T)	54	7.2	✓	✓
	TMA448-70BUI	58AW(T)	58	7.9	✓	✓
Glove and Water Rejection (DualSense)	TMA448-56LQI	44AE(T)	44	6.0	✓	✓
	TMA448-70BUI	54AE(T)	54	7.2	✓	✓
	TMA448-70BUI	58AE(T)	58	7.9	✓	✓
Custom / Kits	TMA448-56LQI	44ZX(T)	44	6.0	✓	✓
	TMA448-70BUI	58ZX(T)	58	7.9	✓	✓

Ordering Code Definitions



Notes

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