TMA568 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 (≤1mm thickness)
    - 2 fingers with thick glove (≤5mm thickness)
  - Fingernail tracking
  - 1mm passive stylus with palm rejection
  - Hover finger 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)[1]
  - 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 (≤13ms)
- 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]
  - 1.71 to 5.5V digital and I/O supply
  - 2.65 to 5.5V analog supply
  - 12mW average power
  - 15µW typical deep-sleep power
- Sensor and system design (configuration dependent)[1]
  - 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 × 6 × 0.6mm QFN (0.35mm lead pitch)
  - 70-ball 5.5 × 5.5 × 0.6mm BGA (0.5mm ball pitch)

Note
1. Performance has been verified on a 5.3-in. panel with 3.2mm sensor pitch.

Parade Technologies, Inc.

http://www.paradetech.com

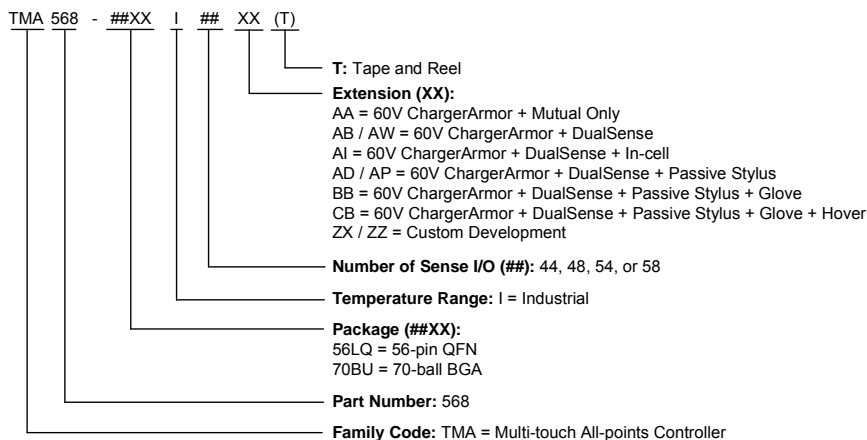**Document Number: 001-90891 Rev. 0
Revised 20150730**

Ordering Information

The following table lists the TMA568 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[2]

Segmentation	Part Number	Ext	# of Sense I/O	Typ Screen Size (in.)	In-cell	Charger Armor	Configurable TX Slew Rate	Passive Stylus	Glove	Hover
Base Part (Mutual Capacitance Only)	TMA568-56LQI	44AA(T)	44	6.0		✔	✔			
	TMA568-70BUI	58AA(T)	58	7.9		✔	✔			
Water Rejection (DualSense)	TMA568-56LQI	44AB(T)	44	6.0		✔				
	TMA568-70BUI	48AB(T)	48	6.5		✔				
	TMA568-70BUI	54AB(T)	54	7.2		✔				
	TMA568-70BUI	58AB(T)	58	7.9		✔				
	TMA568-56LQI	44AW(T)	44	6.0		✔	✔			
	TMA568-70BUI	48AW(T)	48	6.5		✔	✔			
	TMA568-70BUI	54AW(T)	54	7.2		✔	✔			
	TMA568-70BUI	58AW(T)	58	7.9		✔	✔			
	TMA568-70BUI	58AI(T)	58	7.9	✔	✔	✔			
Advance Feature and Water Rejection (DualSense)	TMA568-56LQI	44AD(T)	44	6.0		✔		✔		
	TMA568-70BUI	58AD(T)	58	7.9		✔		✔		
	TMA568-56LQI	44AP(T)	44	6.0		✔	✔	✔		
	TMA568-70BUI	58AP(T)	58	7.9		✔	✔	✔		
	TMA568-56LQI	44BB(T)	44	6.0		✔	✔	✔	✔	
	TMA568-70BUI	54BB(T)	54	7.2		✔	✔	✔	✔	
	TMA568-70BUI	58BB(T)	58	7.9		✔	✔	✔	✔	
	TMA568-56LQI	44CB(T)	44	6.0		✔	✔	✔	✔	✔
	TMA568-70BUI	54CB(T)	54	7.2		✔	✔	✔	✔	✔
	TMA568-70BUI	58CB(T)	58	7.9		✔	✔	✔	✔	✔
Custom / Kits	TMA568-70BUI	58ZZ(T)	58	7.9		✔		✔	✔	✔
	TMA568-56LQI	44ZX(T)	44	6.0		✔	✔	✔	✔	✔
	TMA568-70BUI	58ZX(T)	58	7.9		✔	✔	✔	✔	✔

Ordering Code Definitions

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TMA 568 - ##XX   I   ##   XX   (T)
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T: Tape and Reel

Extension (XX):
AA = 60V ChargerArmor + Mutual Only
AB / AW = 60V ChargerArmor + DualSense
AI = 60V ChargerArmor + DualSense + In-cell
AD / AP = 60V ChargerArmor + DualSense + Passive Stylus
BB = 60V ChargerArmor + DualSense + Passive Stylus + Glove
CB = 60V ChargerArmor + DualSense + Passive Stylus + Glove + Hover
ZX / ZZ = Custom Development

Number of Sense I/O (##): 44, 48, 54, or 58

Temperature Range: I = Industrial

Package (##XX):
56LQ = 56-pin QFN
70BU = 70-ball BGA

Part Number: 568

Family Code: TMA = Multi-touch All-points Controller

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