Features

- Multi-touch capacitive touchscreen controller
  - 32-bit ARM® Cortex® CPU
  - Register configurable
  - Noise-suppression technologies for battery charger and display
    - Effective 28V 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)
  - Face detection with grip suppression
  - Fingernail tracking
  - Passive stylus with palm rejection
  - Hover finger sensing
  - 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 5.0-in. diagonal
    - 4.8mm sensor pitch, 16:9 aspect ratio
  - Up to 36 sense I/O
    - 299 intersections (23 × 13)
  - Reports up to 10 fingers
  - Small finger support down to 4mm
  - Large finger support up to 30mm
  - Refresh rate up to 300Hz; other rates configurable
  - TX frequency up to 500kHz
  - Fast first-touch response (<13ms)
  - Best-in-class charger noise immunity
    - Immunity up to 60V peak-to-peak (VPP)
    - Immunity to AT&T® Zero and Duracell® chargers

- Power (configuration dependent)
  - 1.71 to 5.5V digital and I/O supply
  - 2.65 to 5.5V analog supply
  - 5.6mW average power
  - 4.5μW 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®) patterns
    - Sensor-on-Lens (SOL)
    - On-cell touch integrated display modules
    - Plastic (PET) and glass-sensor substrates
    - LCD and AMOLED displays
  - 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 10Mbps

- Package options
  - 44-pin 5 × 5 × 0.6mm QFN (0.35mm lead pitch)
  - 48-pin 6 × 6 × 0.6mm QFN (0.4mm lead pitch)
### Ordering Information

The following table lists the TMA545 TrueTouch Multi-touch all-points touchscreen controller ordering information. For information on other TrueTouch families, visit [http://www.paradetech.com/products/products-overview/](http://www.paradetech.com/products/products-overview/).

#### Device Ordering Information[1](#)

<table>
<thead>
<tr>
<th>Device Family and Part Number</th>
<th>Features</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family</strong></td>
<td><strong>Part Number</strong></td>
<td><strong># of Sense I/O</strong></td>
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<tr>
<td>Base</td>
<td>TMA545-44LQI33AA(T)</td>
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<tr>
<td></td>
<td>TMA545-48LQI36AA(T)</td>
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<tr>
<td>Water Rejection (DualSense)</td>
<td>TMA545-44LQI33AB(T)</td>
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<td>TMA545-48LQI36AB(T)</td>
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<td>TMA545-48LQI36BB(T)</td>
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<tr>
<td>Custom Reserved for Kits</td>
<td>TMA545-48LQI36ZZ(T)</td>
<td>36</td>
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<tr>
<td>Base</td>
<td>TMA545-44LQI33AAA(T)</td>
<td>33</td>
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<td></td>
<td>TMA545-48LQI36AAA(T)</td>
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<td>Custom Reserved for Kits</td>
<td>TMA545-48LQI36ZZA(T)</td>
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</tr>
</tbody>
</table>

#### Ordering Code Definitions

```
TMA 545 - ##LQ I ## XX A (T)
```

- **T**: Tape and Reel
- **A**: TX Slew Rate Control

**Features (XX):**

- AA = Base Part
- AB = Base Part + Water Rejection (DualSense)
- BB = Base Part + Water Rejection (DualSense) + Stylus + Glove
- ZZ = Custom Development

**Number of Sense I/O (#):** 33 or 36

**Temperature Range:** I = Industrial

**Package (##LQ):**

- 44LQ = 44-pin QFN
- 48LQ = 48-pin QFN

**Part Number:** 545

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

### Notes

1. All devices listed have the following base features: 10V TX, ChargerArmor, CapSense Buttons, Large-Object Detection and Rejection, Grip Suppression, Water Rejection, Self-capacitance, and High-Noise Immunity.

2. 4.7mm pitch for screen sizes up to 4.9-in. diagonal, 4.8mm pitch for 5.0-in. diagonal screen size, 16:9 aspect ratio. Larger screen sizes can be supported with a larger pitch.