Power management for handheld and portable devices.
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Introduction

High integration combined with a broad IP portfolio, a complete system competence and state-of-the-art technology

ST is a leading supplier of power management and mixed-signal ICs for handheld and wearable applications, offering a wide range of products from simple power management ICs up to highly-integrated devices that mix power management blocks with advanced analog and digital functionality.

TARGET APPLICATIONS

- Smartphones and other slim-line electronics
- Handheld consoles
- Smart watches
- Wearables and fitness devices
- Tablet PCs
- Medical portable equipment
ST supplies over 70% of the world’s ICs used to power AMOLED displays that enable today’s advanced handheld devices to deliver high-quality web and video experiences on the move.

ST’s dedicated AMOLED power ICs add value to new designs by simplifying power-supply circuitry. DC-DC converters are produced using ST’s innovative BCD process technology, which ensures outstanding energy efficiency and results in longer battery life. In addition, high immunity to cellphone communication noise keeps displays consistent and flicker-free.

### HIGHLIGHTS

**STOD32A**

The STOD32A, our most recent and innovative chip, is particularly well-suited for battery-operated products with display panels up to 6 inches. Thanks to its high efficiency and very low ripple levels, this triple DC-DC converter satisfies the continuous demand for energy saving, noise immunity in smaller application areas.

On a single chip, the STOD32A integrates a 300 mA step-up and an inverting DC-DC converter needed to generate the positive and negative supplies to power the AMOLED display, as well as an auxiliary step-up converter to provide the supply voltage for the source driver IC.

**STOD32W**

The STOD32W has the same architecture of the STOD32A, optimizing performance (system efficiency, noise immunity, etc...) in a lower output current range (100 mA max.) with a smaller package size (12-bump chip-scale package) thus making this device perfectly suitable for wearable devices with displays up to 3 inches.

### KEY FEATURES

- Advanced silicon-on-insulator manufacturing technology
- Synchronous rectification
- PFM/PWM operation for best-in-class efficiency (up to 93%)
- High frequency (1.6 MHz) for the smallest application areas
- High output voltage accuracy
- Low output ripple
- High immunity to GSM noise
- User-programmable negative output voltage
- Dynamic transistor control to optimize efficiency under any load condition

### KEY BENEFITS

- Increased battery lifetime
- Simplified power-supply circuitry
- Flicker-free displays
- Meet needs for growing AMOLED panel sizes
- Improved picture quality
- Increased ruggedness and reliability
### DEVICE SUMMARY

<table>
<thead>
<tr>
<th>Part number</th>
<th>Package (mm)</th>
<th>Topology</th>
<th>Input voltage</th>
<th>Step-up output voltage</th>
<th>Inverting output voltage</th>
<th>Aux. output voltage</th>
<th>Maximum efficiency</th>
<th>Accuracy positive output voltage</th>
<th>Accuracy negative output voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST0D03B</td>
<td>VFDFPN 12L 3 x 3 x 0.6</td>
<td>Step-up and inverting</td>
<td>2.5 to 4.8 V</td>
<td>4.6 V</td>
<td>-2.4 to -5.4 V</td>
<td>-</td>
<td>87%</td>
<td>±0.8%</td>
<td>±1.5%</td>
</tr>
<tr>
<td>ST0D13AS</td>
<td>VFDFPN 12L 3 x 3 x 0.6</td>
<td>Step-up and inverting</td>
<td>2.5 to 4.5 V</td>
<td>4.6 V</td>
<td>-2.4 to -6.4 V</td>
<td>-</td>
<td>89%</td>
<td>±0.6%</td>
<td>±1.4%</td>
</tr>
<tr>
<td>ST0D13CM</td>
<td>VFDFPN 12L 3 x 3 x 0.6</td>
<td>Step-up and inverting</td>
<td>2.5 to 4.5 V</td>
<td>4.6 V</td>
<td>-1.4 to -4.4 V</td>
<td>-</td>
<td>89%</td>
<td>±0.5%</td>
<td>±0.8%</td>
</tr>
<tr>
<td>ST0D1317B</td>
<td>VFDFPN 10L 3 x 3 x 0.8</td>
<td>Step-up and LDO</td>
<td>2.6 to 4.8 V</td>
<td>6.0 to 13.0 V</td>
<td>NA</td>
<td>-</td>
<td>85%</td>
<td>±1%</td>
<td>NA</td>
</tr>
<tr>
<td>ST0D30</td>
<td>QFN 18L 3.5 x 3.5 x 0.6</td>
<td>Two step up and one inverting</td>
<td>2.5 to 4.5 V</td>
<td>4.6 V</td>
<td>-1.4 to -5.4 V</td>
<td>6.7 to 7.6 V</td>
<td>90%</td>
<td>±0.5%</td>
<td>±0.8%</td>
</tr>
<tr>
<td>ST0D32A</td>
<td>VFQFPN 16L 3 x 3 x 0.55</td>
<td>Boost + Inverting</td>
<td>2.9 to 4.5 V</td>
<td>4.6 V</td>
<td>-0.8 to -4.8 V</td>
<td>5.8 to 7.9 V</td>
<td>93%</td>
<td>±0.5%</td>
<td>±1%</td>
</tr>
<tr>
<td>ST0D32W</td>
<td>Flip-Chip 1.6 x 1.7 12 bumps</td>
<td>Boost + Inverting</td>
<td>2.9 to 4.5 V</td>
<td>4.6 V</td>
<td>-0.8 to -4.6 V</td>
<td>6.6 to 7.6 V</td>
<td>92%</td>
<td>±0.5%</td>
<td>±1%</td>
</tr>
</tbody>
</table>
ST’s battery management devices provide high efficiency, high power density and low standby current consumption. Our product portfolio includes complete solutions for battery chargers: switching chargers that offer charge currents up to 1.2 A, integrating in the same chip a fuel gauge function; linear chargers with charge currents from 1 mA to 1 A and wireless power ICs compliant with PMA and Qi standards. By combining wireless power technology with high efficiency and smart charging, ST creates easier, faster, innovative ways to power up smartphones, tablets and other mobile devices. ST’s portfolio also includes battery fuel gauge ICs that can be located in the battery pack or in the handheld device and integrate functions to monitor the battery voltage, current and temperature.

**BATTERY CHARGER HIGHLIGHTS**

**STBC02**
The STBC02 is a highly integrated power management IC, embedding a linear battery charger, a 150 mA LDO, 2 SPDT load switches, a smart reset/watchdog block and a protection circuit module (PCM) to prevent the battery from being damaged under fault conditions. The STBC02 uses a CC/CV algorithm to charge the battery; the fast charge and the pre-charge current can be both independently programmed using dedicated resistors. The STBC02 draws less than 10 nA from the connected battery in shipping mode conditions, maximizing the battery life during shelf life.

**KEY FEATURES**
- Linear battery charger
- Charge current programmable from 1 to 450 mA
- Power path
- Watchdog/smart reset
- Shipping mode

**KEY BENEFITS**
- Compact size, no inductor cost
- Tailored charge current according to battery capacity
- Longer battery life
- More robust software platform stability
- Very long shelf life
STBCFG01
The STBCFG01 is a switching battery charger IC integrating the functions needed to charge single-cell Li-ion batteries, monitor the battery’s state-of-charge and generate 5 V to supply USB OTG bus-powered devices. The IC also integrates an LDO regulator to support system boot in dead battery conditions.

Battery charge indicators, or fuel gauges, have become essential for managing devices such as smartphones, tablets and back-up battery packs. Accurate time-remaining predictions enhance the user’s experience, and can be critical in certain types of portable electronics such as medical devices.

The STBCFG01 uses accurate measurements of the battery voltage to estimate the battery’s state-of-charge (SOC).

FEATURES
- Single chip solution: battery charger + fuel gauge + OTG + LDO
- Charge current up to 1.2 A
- Instant-on operation: system loads powered with deeply discharged or dead batteries
- Few external components

BENEFITS
- High space saving thanks to integration
- Reduced BOM cost: current sensing resistor not needed

STNS01
The STNS01 is a linear battery management IC integrating power path, battery protection, LDO and shipping mode functionality. Shipping mode reduces battery consumption during shelf life. Power path is suitable to start up the system in dead battery conditions.

FEATURES
- Programmable charge current up to 200 mA
- Integrated 3.1 V LDO regulator
- Automatic power path management
- Embedded protection circuit
- Very low battery leackage current (4.5 µA typ.)

BENEFITS
- Space saving thanks to the integration of LDO, battery protection and thin DFN12 3x3 package
- Overall system reliability improvement due to integration
- Allows user a wide choice of the battery

DEVICE SUMMARY

<table>
<thead>
<tr>
<th>Part number</th>
<th>Charge current (A)</th>
<th>Charge voltage (V)</th>
<th>Input voltage (V)</th>
<th>V_{min} (V)</th>
<th>I_{min} (mA)</th>
<th>Package</th>
<th>Other functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>STBCFG01</td>
<td>1.2</td>
<td>3.52 to 4.78</td>
<td>3.6 to 6.3 (5 typ)</td>
<td>20</td>
<td>450 or 100</td>
<td>CSP 25 2.3 x 2.2 mm²</td>
<td>500 mA OTG 4.85 V LDO</td>
</tr>
<tr>
<td>L6924D/U</td>
<td>Prog up to 1</td>
<td>4.1 or 4.2</td>
<td>2.5 to 12</td>
<td>15</td>
<td>Prog by R</td>
<td>VFQFPN 16 3 x 3 x 1.0</td>
<td>NTC, timer, flags</td>
</tr>
<tr>
<td>STC4054</td>
<td>Prog up to 0.8</td>
<td>4.2</td>
<td>4.25 to 6.25</td>
<td>7</td>
<td>I_{min}/10</td>
<td>TSOT23-5L 3 x 3 x 1.0</td>
<td>1 flag</td>
</tr>
<tr>
<td>STNS01</td>
<td>15 to 500 mA</td>
<td>4.2 (up to 4.45 with external resistor)</td>
<td>4.55 to 5.4</td>
<td>16</td>
<td>I_{min}/10</td>
<td>VFDFPN 12 3 x 0.75</td>
<td>3.1 V LDO, power path, LDO, flags, enable, NTC</td>
</tr>
<tr>
<td>STBC02</td>
<td>1 to 450 mA</td>
<td>4.2 to 4.45 V</td>
<td>4.55 to 5.4 V</td>
<td>16</td>
<td>1 to 450 mA</td>
<td>Flip-chip30 3.0, 3.1, 3.3 V LDO, power-path, NTC, smart-reset, watchdog, 5-wire</td>
<td></td>
</tr>
<tr>
<td>STBC03</td>
<td>1 to 650 mA</td>
<td>4.2 to 4.45 V</td>
<td>4.5 to 5.4 V</td>
<td>16</td>
<td>1 to 650 mA</td>
<td>Flip-chip30 3 V LDO, power path, NTC, Sw.Matrix, Dig.Enables</td>
<td></td>
</tr>
</tbody>
</table>
STWBC transmitter highlights

STWBC is a family of products developed to support the needs of Wireless Charging Transmitters. It includes transmitters for several types of applications ranging from wearables, mobile phones, tablets and automotive. STWBC provides consumer with Qi certified solutions, matching the requirements of safety and interoperability of the most popular wireless charging standard. Additionally, STWBC embeds STMicroelectronics years of experience in power conversion ICs and thus offers 3 mw minimal stand-by consumption (A11 topology), superior Foreign Object Detection and an easy-to-use graphical interface for monitoring the application behaviour, debug and real-time measurements.

All STWBC products are Flash-based. In combination with a flexible, API-based firmware, this allows the user to include additional software features as well as fine tune each application parameters even during the production line. Each product comprises an IC, an evaluation board, firmware, graphical interface and support documentation.

DEVICE SUMMARY

<table>
<thead>
<tr>
<th>Part number</th>
<th>Application</th>
<th>Ptot (W)</th>
<th>Coils</th>
<th>Topology</th>
<th>Vin (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STWBC</td>
<td>Consumer</td>
<td>5</td>
<td>1</td>
<td>Qi A11</td>
<td>5</td>
</tr>
<tr>
<td>STWBC-WA</td>
<td>Wearable</td>
<td>1, 2</td>
<td>1</td>
<td>*Not applicable</td>
<td>5</td>
</tr>
<tr>
<td>STWBC-MC</td>
<td>Automotive</td>
<td>5</td>
<td>3</td>
<td>Qi A34</td>
<td>5-16</td>
</tr>
<tr>
<td>ASTWBC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5-12</td>
</tr>
<tr>
<td>STWBC-MP</td>
<td>Consumer</td>
<td>15</td>
<td>1</td>
<td>*In progress</td>
<td>5-12</td>
</tr>
</tbody>
</table>
**FEATURES**

- Boost power transfers
- Adapt the transmitted power to actual load conditions
- Enables safe operation with foreign object detection (FOD)
- Embedded 32-bit core, easily accessible via the I2C interface
- Certification with the leading Qi and PMA standards

**BENEFITS**

- Ideal for a wide application spectrum from low- to medium-power and different Li-ion and LiPO battery chemistries
- Support direct battery charging
- Customization and superior diagnostics

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**DEVICE SUMMARY**

<table>
<thead>
<tr>
<th>Part number</th>
<th>AC input voltage (max.)</th>
<th>Output leakage current (direct charging mode) (max.)</th>
<th>Output voltage</th>
<th>Output power</th>
<th>User GPIOs</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>STWLC03</td>
<td>32 Vpp</td>
<td>1 µA</td>
<td>Programmable 5 V – 7.5 V</td>
<td>5 W (Qi)</td>
<td>4</td>
<td>Flip-chip77</td>
</tr>
<tr>
<td>STWLC04</td>
<td>32 Vpp</td>
<td>1 µA</td>
<td>Programmable 5 V – 7.5 V</td>
<td>1 W</td>
<td>4</td>
<td>Flip-chip77</td>
</tr>
</tbody>
</table>

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**BATTERY MONITORING ICs**

**STC3115/STC3117**

ST’s battery fuel gauge ICs can be located in the battery pack or in the handheld device and integrate functions to monitor the battery voltage, current and temperature. Using a built-in Coulomb counter, these fuel gauge ICs calculate battery charge and store the data in 16-bit register resolution for retrieval by the system controller. Access is via an industry-standard I2C interface, enabling the controller to create an accurate graphical representation of the remaining battery-operating time. Battery-monitoring fuel gauge ICs combine a small footprint with outstanding measurement accuracy and extremely low power consumption to increase battery runtime and lifespan in mobile phones, multimedia players, digital cameras, and other space-constrained portable devices.

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**FEATURES**

- OptimGauge™ algorithm for STC3115
- OptimGauge+™ algorithm for STC3117
- Coulomb counter and voltage gas gauge operations
- Programmable low battery alarm
- Internal temperature sensor

**BENEFITS**

- 3% accuracy of battery state of charge no need for shunt resistor
- Accurate estimation of battery state of charge at power-up
- Reliable battery swap detection
- SoH and impedance tracking with OptimGauge+ algorithm (ST IP)
- Charger enable and system reset control for accurate OCV reading
- Minimum form factor

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**DEVICE SUMMARY**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Charging sensing voltage range</th>
<th>Charging sensing resistor</th>
<th>Typical supply current (Icc)</th>
<th>Supply voltage (VDD)</th>
<th>Comment</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>STC3115</td>
<td>±40 mV</td>
<td>5 to 50 mΩ</td>
<td>0.045 µA</td>
<td>2.7 V 4.5 V</td>
<td>OptimGauge™ algorithm</td>
<td>1.4 x 2.0 mm 10-bump CSP 2.0 x 3.0 mm DFN10</td>
</tr>
<tr>
<td>STC3117</td>
<td>±40 mV</td>
<td>5 to 50 mΩ</td>
<td>0.04 µA</td>
<td>2.7 V 4.5 V</td>
<td>Patented OptimGauge™ algorithm for accurate battery capacity calculation</td>
<td>1.5 x 1.6 mm 9-bump CSP</td>
</tr>
</tbody>
</table>
ST’s DC-DC synchronous converters are designed for wearable and portable applications. Buck, buck-boost and boost switching regulators provide low power consumption, high-efficiency power conversion, and are available in very small packages from standard leadless plastic to flip-chip pure bumped silicon. The switching frequency control loop guarantees high dynamic response with very small inductor size. All products are optimized to work with Li-ion batteries, USB sources or the latest battery chemistries.

### Highlights

**ST1S01**

This 400 mA NanoQuiescent™ buck converter with deep power saving mode is designed for wearables and applications requiring high efficiency at light loads and very good transient response: 2 MHz (max.) PWM control loop. It provides digital V_{out} selection and power good output (PGO) monitoring. Available in a thin 8-bump flip-chip (1.4 mm x 1.1 mm) package.

**STBB3**

This 2 A buck-boost converter with power-saving mode targets low quiescent current applications (<45 µA) at light loads and high current loads up to 2.4 A. Available in a miniature 20-bump flip-chip (2.5 mm x 1.75 mm) package.

### Device Summary

<table>
<thead>
<tr>
<th>Part number</th>
<th>Maximum current (mA)</th>
<th>Quiescent current @ no load (µA)</th>
<th>V_{out} range (V)</th>
<th>Characteristics</th>
<th>Package</th>
<th>Package dimensions (mm)</th>
<th>Max. thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST1S15</td>
<td>500</td>
<td>40</td>
<td>2.5 to 5.5</td>
<td>Low quiescent, 6 MHz</td>
<td>Flipchip6</td>
<td>1.19 x 0.935</td>
<td>0.60</td>
</tr>
<tr>
<td>ST1S12</td>
<td>700</td>
<td>500</td>
<td>2.3 to 5.5</td>
<td>Low quiescent, 1.7 MHz</td>
<td>TDFN6L</td>
<td>2.0 x 2.0</td>
<td>0.60</td>
</tr>
<tr>
<td>ST8R00</td>
<td>1000</td>
<td>10 mA</td>
<td>4.0 to 6.0</td>
<td>Low quiescent, 1.2 MHz</td>
<td>QFN8L</td>
<td>4.0 x 4.0</td>
<td>1.00</td>
</tr>
<tr>
<td>L6920</td>
<td>250, 350, 500</td>
<td>10</td>
<td>0.6 to 5.0</td>
<td>Low V_{start-up}, 1 MHz</td>
<td>MSOP8L</td>
<td>4.9 x 3.0</td>
<td>1.10</td>
</tr>
<tr>
<td>STBB1A</td>
<td>1000</td>
<td>200</td>
<td>2.2 to 5.5</td>
<td>Low quiescent, 1.5 MHz</td>
<td>QFN10L</td>
<td>3.0 x 3.0</td>
<td>1.00</td>
</tr>
<tr>
<td>STBB2J</td>
<td>1800</td>
<td>35</td>
<td>2.2 to 5.5</td>
<td>Low quiescent, 3 MHz</td>
<td>Flipchip20</td>
<td>2.1 x 1.8</td>
<td>0.60</td>
</tr>
<tr>
<td>STBB3JR</td>
<td>2100</td>
<td>35</td>
<td>1.8 to 5.5</td>
<td>Low quiescent, 2.2 MHz</td>
<td>Flipchip20</td>
<td>2.5 x 1.75</td>
<td>0.60</td>
</tr>
<tr>
<td>STBB3JCC</td>
<td>2100</td>
<td>35</td>
<td>1.8 to 5.5</td>
<td>Const. current HB-WLED</td>
<td>Flipchip20</td>
<td>2.5 x 1.75</td>
<td>0.60</td>
</tr>
<tr>
<td>ST1PS01</td>
<td>400</td>
<td>0.5</td>
<td>2.2 to 5.5</td>
<td>NanoQuiescent, 2 MHz (max.)</td>
<td>Flipchip8</td>
<td>1.41 x 1.11</td>
<td>0.60</td>
</tr>
</tbody>
</table>
ST offers a complete portfolio of high-performance low-dropout regulators with state-of-the-art figures on the key merit parameters, all fitting into the smallest packages available. ST’s ultra-small, high-performance LDOs are particularly suitable for the latest generation of portable devices.

**HIGHLIGHTS**

**LDLN025**
250 mA LDO with ultra-low noise (6.5 μVRMS) and very high PSRR (80 dB @ 100 Hz, 60 dB @ 100 kHz).
Available in 4-bump CSP (0.63 mm x 0.63 mm) and 4-lead DFN (1 mm x 1 mm) packages.

**LDBL20**
200 mA LDO with very high PSRR (80 dB @ 1 kHz).
Available in a miniature ST STAMP™ (0.47 mm x 0.47 mm) package.

**LD93030**
300 mA LDO with automatic green mode for ultra-low Iq (<1 µA) at low loads.
Available in 4-bump CSP (0.69 mm x 0.69 mm) and 6-lead DFN (1.2 mm x 1.3 mm) packages.

**LD39030/39030J**
200/300 mA LDO with very high power supply rejection ratio (PSRR) (80 dB @ 1 kHz) and 0.5% precision.
Available in miniature 4-lead DFN (1 mm x 1 mm and 0.8 mm x 0.8 mm) packages.
## DEVICE SUMMARY

<table>
<thead>
<tr>
<th>Part number</th>
<th>Maximum current (mA)</th>
<th>Package</th>
<th>Package dimensions (mm)</th>
<th>Characteristics</th>
<th>Quiescent current @ no load (µA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD39015J</td>
<td>150</td>
<td>CSP 4-bump</td>
<td>1.1 x 1.1</td>
<td>Low noise</td>
<td>18</td>
</tr>
<tr>
<td>LD39115J</td>
<td>150</td>
<td>CSP 4-bump</td>
<td>0.8 x 0.8</td>
<td>Low noise</td>
<td>20</td>
</tr>
<tr>
<td>LDLN015</td>
<td>150</td>
<td>DFN6</td>
<td>2 x 2</td>
<td>Ultra-low noise</td>
<td>35</td>
</tr>
<tr>
<td>LDLN15</td>
<td>150</td>
<td>SOT23-5L</td>
<td>2 x 2</td>
<td>High PSRR</td>
<td>31</td>
</tr>
<tr>
<td>STL015</td>
<td>150</td>
<td>SOT23-5L</td>
<td>3 x 3</td>
<td>Capacitor-less</td>
<td>140</td>
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<tr>
<td>STLQ020</td>
<td>200</td>
<td>CSP 4-bump DFN6</td>
<td>0.8 x 0.8</td>
<td>Ultra-low Iq</td>
<td>1.4</td>
</tr>
<tr>
<td>LD39020</td>
<td>200</td>
<td>DFN4</td>
<td>0.8 x 0.8</td>
<td>High PSRR</td>
<td>20</td>
</tr>
<tr>
<td>LDBL20</td>
<td>200</td>
<td>ST STAMP™</td>
<td>0.47 x 0.47</td>
<td>High PSRR</td>
<td>20</td>
</tr>
<tr>
<td>LD120</td>
<td>200</td>
<td>SOT23-5L</td>
<td>1.1 x 1.3</td>
<td>Cost-effective</td>
<td>30</td>
</tr>
<tr>
<td>LDLN025</td>
<td>250</td>
<td>CSP 4-bump DFN4</td>
<td>0.63 x 0.63</td>
<td>Ultra-low noise</td>
<td>12</td>
</tr>
<tr>
<td>LDK130</td>
<td>300</td>
<td>SOT23-5L</td>
<td>2 x 2</td>
<td>Cost-effective</td>
<td>30</td>
</tr>
<tr>
<td>LD39030</td>
<td>300</td>
<td>DFN4</td>
<td>0.8 x 0.8</td>
<td>High PSRR</td>
<td>20</td>
</tr>
<tr>
<td>LD39030SJ</td>
<td>300</td>
<td>CSP 4-bump</td>
<td>0.8 x 0.8</td>
<td>Low noise</td>
<td>20</td>
</tr>
<tr>
<td>LD39130</td>
<td>300</td>
<td>CSP 4-bump DFN6</td>
<td>0.69 x 0.69</td>
<td>Green mode Ultra-low Iq</td>
<td>&lt;1</td>
</tr>
<tr>
<td>LD39050</td>
<td>500</td>
<td>DFN6</td>
<td>2 x 2</td>
<td>Ultra-low drop and low noise</td>
<td>20</td>
</tr>
<tr>
<td>LDL112</td>
<td>1200</td>
<td>DFN6</td>
<td>2 x 2</td>
<td>Ultra-low drop and low Iq</td>
<td>35</td>
</tr>
</tbody>
</table>

The new LDBL20 manages 200 mA in 0.22 mm²

ST’s LDBL20 series of low-dropout voltage regulators enables a new era in the design of ultra-compact linear points of load. The LDBL20 provides up to 200 mA of current, with an input voltage ranging from 1.5 to 5.5 V.

Thanks to the new miniature ST STAMP™ chip scale package, the LDBL20 allows designing a PCB footprint that is less than half the size of competing 200 mA LDO solutions with the same performance.

The LDBL20 is a very versatile linear power supply solution for space-constrained handheld applications such as smartphones, tablets, wearables and solid-state disks.

**ST STAMP™: a step further in miniaturization**

ST STAMP™ (ST Small Thickness Advanced Micro Package) is ST’s trademark for our new unique and innovative bumpless CSP package.

Compared to the smallest DFN plastic packages and flip-chips, the ST STAMP™ solution provides similar package performance and reliability, reducing the total height to 200 µm or less, with a smaller footprint.