An inductive wireless power transfer (WPT) system consists of transmitter electronics, transmit coil, receive coil and receiver electronics. The LTC4120-based resonant coupled system uses dynamic harmonization control (DHC) to optimize power transfer and provide overvoltage protection. This eliminates the need for precise mechanical alignment between the transmit and receive coils as well as the need for a coupling core. The LTC4120 wireless buck charger forms the basis for the receiver electronics. The receive coil can be integrated into the receiver electronics circuit board. The LTC4125 is a power controller for a simple but versatile wireless power transmitter. The LTC4125 enhances a basic wireless power transmitter by providing three additional key features: an AutoResonant™ function that maximizes available receiver power, an Optimum Power Search algorithm that maximizes overall wireless power system efficiency and foreign object detection to ensure safe and reliable operation when operating in the presence of conductive foreign objects.

LTC4120 Product Page: www.linear.com/product/LTC4120
LTC4120 Application Note: www.linear.com/docs/43968
LTC4125 Product Page: www.linear.com/product/LTC4125
LTC4123 Product Page: www.linear.com/product/LTC4123

### Part Number | Device Architecture | **V**<sub>IN</sub> Range (V) | Power Level (W) | AutoResonant Drive | Foreign Object Detection | Optimum Power Transfer | Practical Coupling Distance (mm) | Package (mmxmm) |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Wireless Power Transmitter</strong></td>
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<td>LTC4125</td>
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<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>13 Full Power 16 Half Power</td>
<td>4x5 QFN-20</td>
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<th>Part Number</th>
<th>Device Architecture</th>
<th><strong>V</strong>&lt;sub&gt;IN&lt;/sub&gt; Range (V)</th>
<th>Power Level (W)</th>
<th>Charge Current (mA)</th>
<th>Practical Coupling Distance (mm)</th>
<th>Cell(s) Chemistry</th>
<th>Charge Termination Method</th>
<th>Package (mmxmm)</th>
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<tr>
<td><strong>Battery Chargers</strong></td>
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<tr>
<td>LTC4120</td>
<td>Wireless Receiver &amp; Battery Charger</td>
<td>4.25 to 40</td>
<td>2</td>
<td>50 to 400</td>
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<td>1 to 3 Lithium</td>
<td>Adj. Timer</td>
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<td>25</td>
<td>12</td>
<td>1 Nickle</td>
<td>Adj. Timer</td>
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<td>LTC4071</td>
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<td>Thermal NTC</td>
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<td>LT3652HV</td>
<td>High Power Battery Charger</td>
<td>4.9 to 34 (40V Abs Max)</td>
<td>2</td>
<td>2A</td>
<td>12</td>
<td>1 to 5 Lithium Lead-Acid</td>
<td>Adj. Timer or C/10</td>
<td>3x3 DFN-12 MSOP-12E</td>
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</table>
Wireless Power Receiver and Buck Battery Charger

Wireless Power Receiver/Charger
The LTC4120, a high performance wireless receiver and battery charger, serves as the central component of the receiver electronics in a wireless battery charging system. The Linear Technology wireless power system is designed to transmit up to 2W to a battery with a maximum charge current of 400mA. The programmable float voltage of the device accommodates several battery chemistries and configurations. The IC utilizes a patented dynamic harmonization control (DHC) technique that enables high efficiency contactless charging with maximum $T_X$ to $R_X$ coil distance and misalignment without any of the thermal or overvoltage issues typically associated with wireless power systems. Wireless charging with the LTC4120 enables or improves many different applications. For instance, expensive connectors which become failure-prone in harsh environments can be eliminated. Similarly, wireless charging allows for a completely sealed enclosure for applications that require sterilization. Elimination of wires enables rechargeable batteries to be placed in moving or rotating equipment. Some applications are simply too small to use a conventional connector. Wireless charging can also provide transformerless galvanic isolation for high reliability isolated applications.

LTC4120 Features
- Dynamic Harmonization Control Reduces Alignment Sensitivity and Extends Power Transmission Range
- Enables Up to 2W Wireless Charging at Up to a 1.2cm Gap
- Adjustable Battery Charge Voltage: 3.5V to 11V
- 50mA to 400mA Charge Current, Programmed with a Single Resistor
- No Microprocessor or Firmware Required
- No Transformer Core
- Wide Rectified Input Voltage Range: 4.3V to 40V
- Thermally Enhanced 16-Lead 3mm × 3mm QFN Package

LTC4125: Monolithic 5W Wireless Power Transmitter
- AutoResonant Switching Frequency Adjusts to Resonant Capacitance and Transmit Coil Inductance
- Transmit Power Automatically Adjusts to Receiver Load
- Input Voltage Range: 3V to 5.5V
- Integrated 100mΩ Full Bridge Switches
- Multiple Foreign Object Detection Methods
- NTC Input for System/Component Temperature Qualified Power Transfer
- Thermally Enhanced 20-Lead 4mm × 5mm QFN Package