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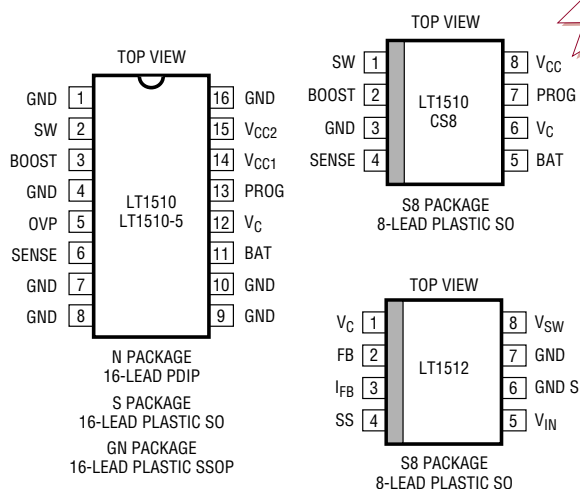
LT1510/LT1511/LT1512/LT1513: Constant-Current /Constant-Voltage Battery Chargers

- Charges Li-Ion, NiCd, NiMH: Only One Resistor Required to Program Charging Current
- Surface Mount Packages
- LT1510:
 - 1.5A Step-Down Topology
 - 0.5% Voltage Accuracy
 - 5% Full-Charging Current Accuracy with Internal Sense Resistor
 - 500kHz Switching Frequency (LT1510-5)
 - 8-Lead and 16-Lead Narrow SO Packages
 - (+) or (-) Terminal Battery Current Sensing
- LT1512/LT1513:
 - SEPIC Topology
 - V_{IN} Can Be Higher or Lower than Battery
 - 500kHz, 1.5A Switch (LT1512) or 3A Switch (LT1513)
 - Charges Any Number of Cells Up to 20V

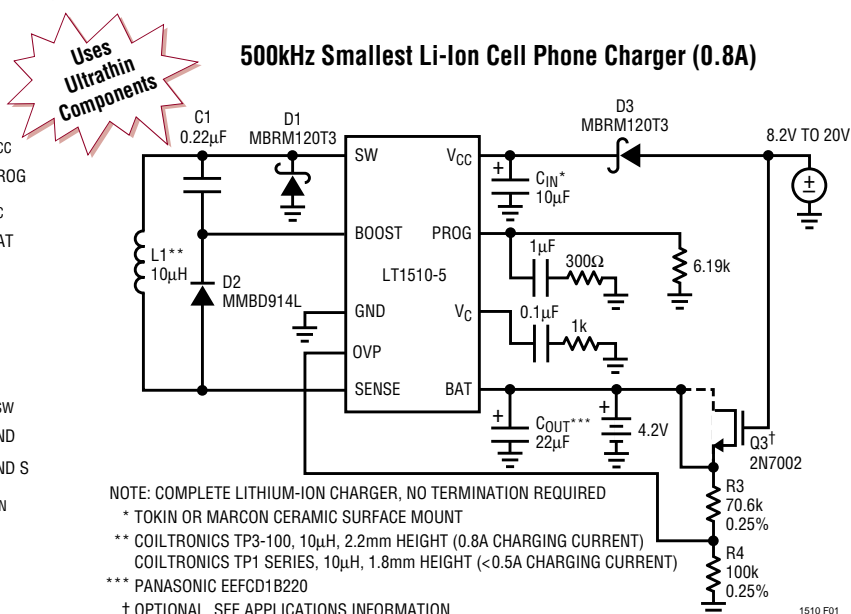
Battery Charger Selection Guide

Characteristics	LT1510CS8	LT1510	LT1510-5*	LT1511	LT1512	LT1513
Max Charging Current	1.2A	1.5A	1.5A	3A	1A	2A
Charges Li-Ion Cells						
Charges NiCd and NiMH Cells						
Step-Up						
Step-Down						
V _{BAT} Maximum	20V	20V	20V	20V	20V	20V
Up to 28V Wall Adapter						
Packages	8-Lead SO	16-Lead SO 16-Lead SSOP	16-Lead SSOP	24-Lead SO	8-Lead SO 8-Lead PDIP	7-Lead DD

*Ideal for in-phone charger!!



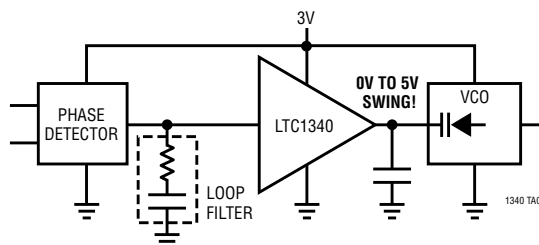
500kHz Smallest Li-Ion Cell Phone Charger (0.8A)



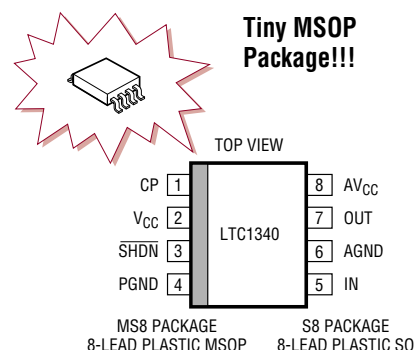
Frequency Synthesizer Varactor Drive

LTC1340: Provides Full VCO Control Range with Only 2.7V Supply

- **Generates 5V Varactor Drive from a 3V Supply**
- Wide Supply Voltage Range: 2.7V to 6V
- Requires Only 3 External Components
- Micropower Operation: 500 μ A Max
- Shutdown Mode Drops Supply Current Below 1 μ A
- **Low Output Noise: 15 μ V_{RMS}**
- Up to 500kHz Signal Bandwidth
- Tiny 8-Lead MS8 or SO-8 Packages



Tiny MSOP Package!!!



Buck DC/DC Converters

LTC1433/LTC1434: 450mA, Low Noise Current Mode DC/DC Converters

- **High Efficiency: Up to 93%**
- **Constant Frequency Adaptive Power™ Operation**
- **Wide Input Voltage Range: 3V to 13.5V**
- Internal 0.6Ω Power Switch ($V_{IN} = 10V$)
- Low Dropout Operation: 100% Duty Cycle
- Low-Battery Detector
- Internal Power-On Reset Timer
- Current Mode Operation for Excellent Line and Load Transient Response
- Low Quiescent Current: 470μA
- Shutdown Mode Draws Only 15μA Supply Current
- ±1% Reference Accuracy
- Available in 16- and 20-Lead Narrow SSOP

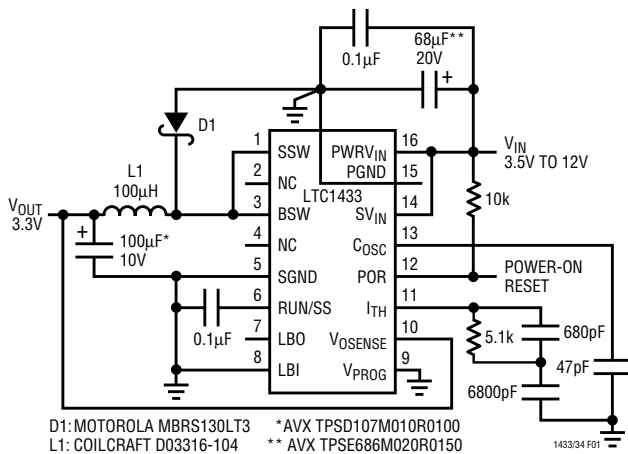
Adaptive Power is a trademark of Linear Technology Corporation.

**Operates
from Single
Li-Ion Cell**

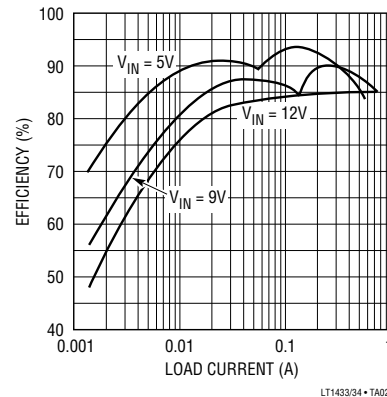
Choose the Right Step-Down Converter for Your Phone

Characteristics	LTC1433/LTC1434	LTC1435/LTC1436	LTC1174	LTC1265	LTC1626	LTC1147L	LTC1474/LTC1475
Min Input Voltage	3V	3.5V	4V	3.5V	2.5V	3.5V	3V
Max Input Voltage	13.5V	36V	13.5V	13V	7V	16V	20V
Max Switch Current	450mA	Dual N-Channel	600mA	1.2A	600mA	2A	400mA
Key Features	Low Noise Up to 93% Efficiency	Low Noise Synchronizable	> 90% Efficiency	> 90% Efficiency at 1A Output	Works Down to 2.5V Input	Compact	10μA Quiescent Current
Packages	16-Lead/20-Lead SSOP	16-Lead/24-Lead SSOP	8-Lead SO	14-Lead SO	14-Lead SO	8-Lead SO	8-Lead SO/MSOP
Data Sheet	96DB 4-196	96DB 4-212	94DB 4-447	95DB 4-212	NEW	NEW	NEW

High Efficiency Step-Down Converter

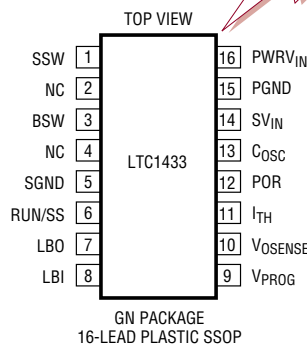
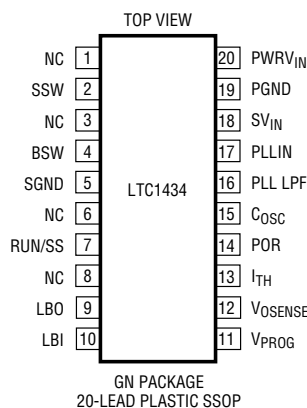


LTC1433 Efficiency for $V_{OUT} = 3.3V$



LT1433/34 • TA02

**Small
SO-8
Footprint!**



Fast Low Dropout Regulators

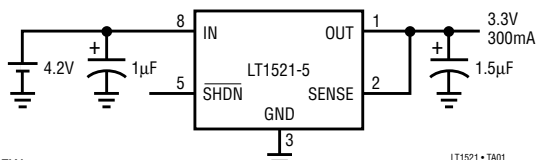
LT1521/LT1521-Fast: Low Dropout Linear Regulators with Fast Transient Response

- Fast Load Transient Response for DSP V_{CC}
- Dropout Voltage: 0.5V
- Output Current: 300mA
- Quiescent Current: 12 μ A
- No Protection Diodes Needed
- Adjustable Output from 3.8V to 20V
- Fixed Output Voltages: 3V, 3.3V, 5V
- Controlled Quiescent Current in Dropout
- Shutdown $I_Q = 6\mu$ A
- Stable with 1.5 μ F Output Capacitor
- Reverse Battery Protection
- No Reverse Current
- Thermal Limiting

Choose the Right LDO Regulator for Your Application

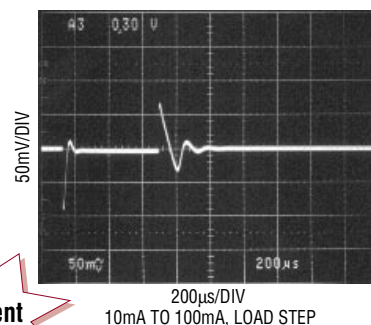
Characteristics	LT1521	LT1521-FAST	LT1120A	LT1121	LT1129	LTC1234
Max Output Current	300mA	300mA	125mA	150mA	700mA	700mA
Max Input Voltage	20V	20V	36V	30V	30V	13V
Dropout Voltage	0.5V	0.5V	0.4V	0.42V	0.45V	0.3V
Key Features	12 μ A I_Q , Fast	35 μ A I_Q , Fast	Includes Comparator	Reverse Battery Protection	Reverse Battery Protection	20 μ A I_Q , Fast
Packages	SO-8, SOT-223	SO-8	SO-8/ 8-Lead PDIP	SO-8, SOT-223	SOT-223, SO-8, 5-Lead DD	SO-8
Data Sheet	95DB 4-79	NEW	94DB 4-96	94DB 4-114	94DB 4-125	NEW

3.3V Battery-Powered Supply with Shutdown

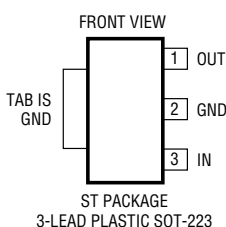
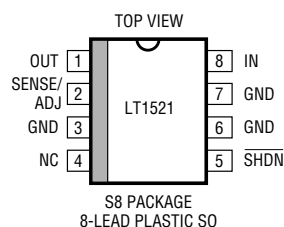


V_{SHDN} (PIN 5)	OUTPUT
<0.25	OFF
>2.80	ON
NC	ON

LT1521-Fast Transient Response



Fast Transient Response

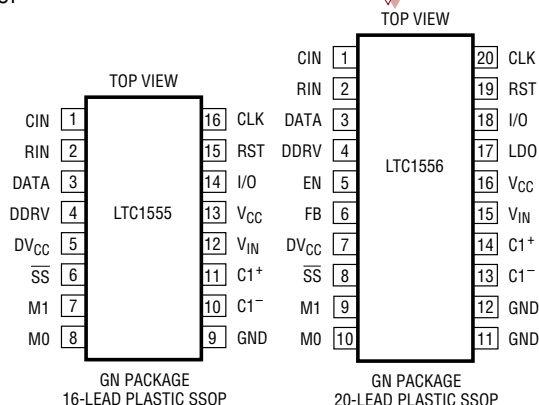
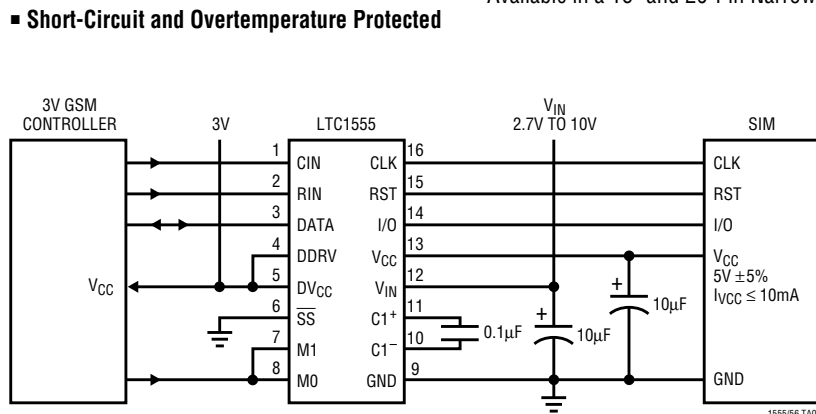


SIM Interface

LTC1555/LTC1556: Power Supply and Level Translator for 3V/5V SIM Cards

- Step-Up/Step-Down Charge Pump Generates 5V
- Input Voltage Range: 2.7V to 10V
- Output Current: 10mA ($V_{IN} \geq 2.7V$)
20mA ($V_{IN} \geq 3V$)
- 3V to 5V Signal Level Translators
- >10kV ESD on All SIM Contact Pins
- Short-Circuit and Overtemperature Protected
- Very Low Operating Current: 50 μ A
- Very Low Shutdown Current: < 1 μ A
- Soft Start Limits Inrush Current at Turn-On
- Programmable 3V to 5V Output Voltage
- 650kHz Switching Frequency
- Auxiliary 4.3V LDO or Power Switch (LTC1556 Only)
- Available in a 16- and 20-Pin Narrow SSOP

Includes 4.3V LDO/Power Switch



Boost DC/DC Converters

LT1308: 600kHz High Efficiency, 2A Switch Boost Converter in SO-8

- 5V at 1A from One Li-Ion Cell
- 100 μ A Quiescent Current
- Logic Controlled Shutdown to 3 μ A
- Low $V_{CE(SAT)}$ Switch: 330mV at 2A
- Burst Mode™ Operation at Light Load
- Current Mode Operation for Excellent Line and Load Transient Response and Low Ripple
- Available in 8-Lead SO or PDIP
- Operates with Supply Voltage as Low as 1V

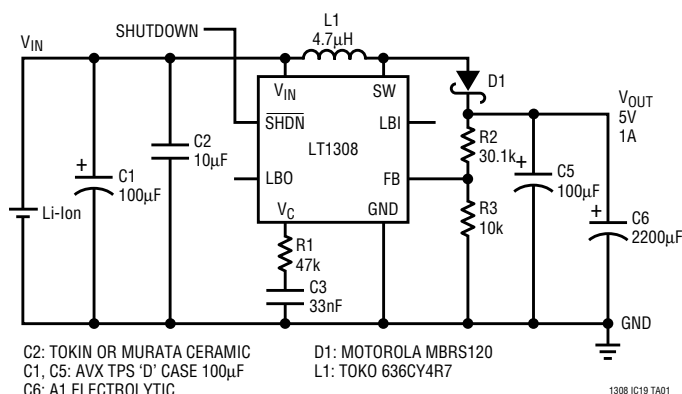
Burst Mode is a trademark of Linear Technology Corporation.

High Efficiency Boost Converter Selection Guide

Characteristics	LT1302	LT1304	LT1307	LT1373	LT1377	LT1308	LT1316
Min Input Voltage	1.8V	1.65V	1V	2.7V	2.7V	1V	1.65V
Max Input Voltage	10V	8V	12V	30V	35V	12V	8V
Max Switch Current	2A	1A	500mA	1.5A	1.5A	2A	500mA
Switching Frequency	220kHz	300kHz	600kHz	250kHz	1MHz	600kHz	120kHz*
Key Features	High Power Boost	Best 2-Cell Part	Smallest 1-Cell Part	High Efficiency, Low Power	High Frequency, Synchronizable	Highest Power 1-Cell Part	Adjustable Peak Current Limit
Packages	8-Lead SO	8-Lead SO	8-Lead SO/MSOP	8-Lead PDIP, 8-Lead SO	8-Lead SO	8-Lead SO	8-Lead SO/MSOP
Data Sheet	95DB 4-264	96DB 4-144	96DB 4-160	95DB 4-322	95DB 4-310	NEW	NEW

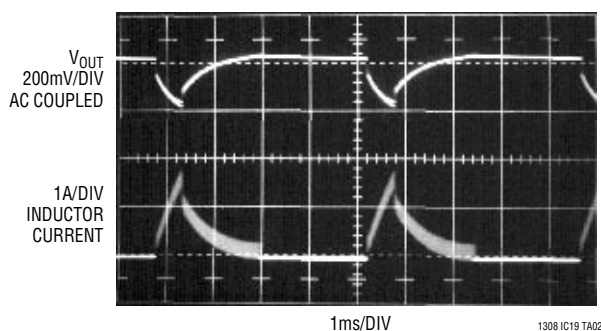
*Constant off/variable on time

$V_{IN} = 3V$, $V_{OUT} = 5V$, $C_{OUT} = 2200\mu F$, 0A to 1A Load Step Pulse
Width = 577 μs , 1:8 Duty Cycle



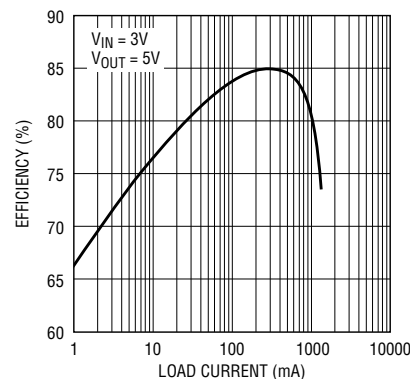
1308 IC19 TA01

GSM Transient Response



1308 IC19 TA02

Efficiency



IC19 1308 TA03

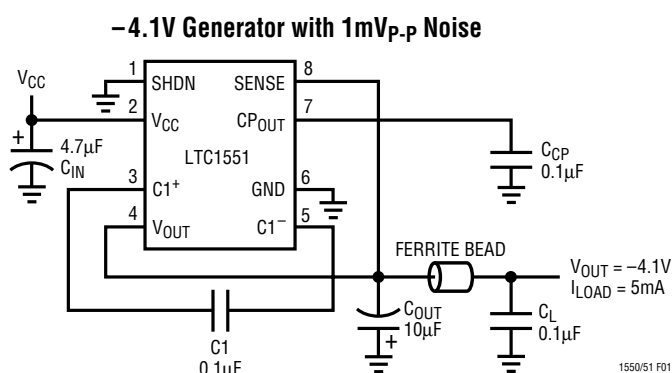
GaAs FET Bias

LTC1550/LTC1551: Low Noise Switched Capacitor Negative Bias Generators

- Regulated Negative Voltage from a Single Positive Supply
- Low Output Ripple: Less Than 1mV_{p-p} Typ
- High Charge Pump Frequency: 900kHz Typ
- Small Charge Pump Capacitors: 0.1μF
- Requires Only Four External Capacitors
- Fixed -4.1V Output
- Adjustable Output Now Available (LTC1550CGN)
- Shutdown Mode Drops Supply Current to 1μA
- High Output Current: Up to 10mA, V_{CC} = 5V
- Output Regulation: 5%
- Available in SO-8

Linear Technology's GaAs FET Bias Generator Family

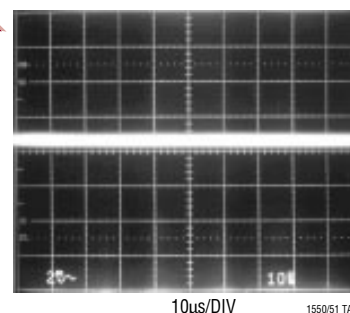
Characteristics	LTC1550/LTC1551	LTC1261	LTC1429
Min Input Voltage	4.5V	3V	3V
Quiescent Current	4.25mA	600μA	600μA
Oscillator Frequency	900kHz	550kHz	550kHz
Key Features	< 1mV Output Ripple	-4V, -4.5V or Adj Output 5V to -4.5V, Regulated Output	Charge Pump Tripler Convert 3V to -5V Regulated Output
Packages	16-Lead SSOP, 8-Lead SO	8-Lead SO	14-Lead SO
Data Sheet	96DB 4-44	95DB 4-20	95DB 4-41



< 1mV Output Ripple!

V_{OUT} Output Noise and Ripple

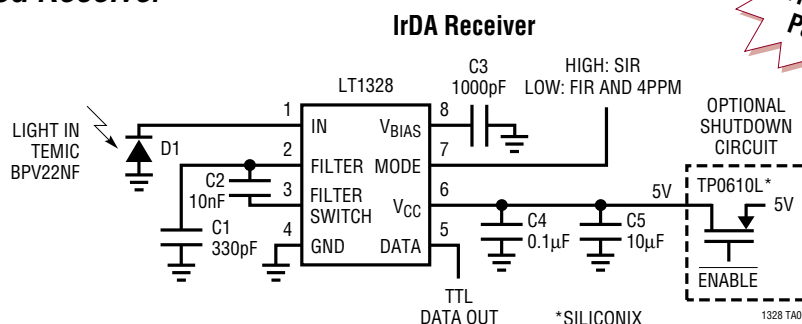
V_{OUT}
AC COUPLED
2mV/DIV



Infrared Interface

LT1328: 4Mbps IrDA® Infrared Receiver

- SIR, FIR and 4PPM Compatible
- Low Frequency Ambient Rejection Loop
- Supply Current: 2mA
- MS8 and SO-8 Packages
- 5V Single Supply Operation



Tiny MSOP Package

IrDA is a registered trademark of Infrared Data Association.