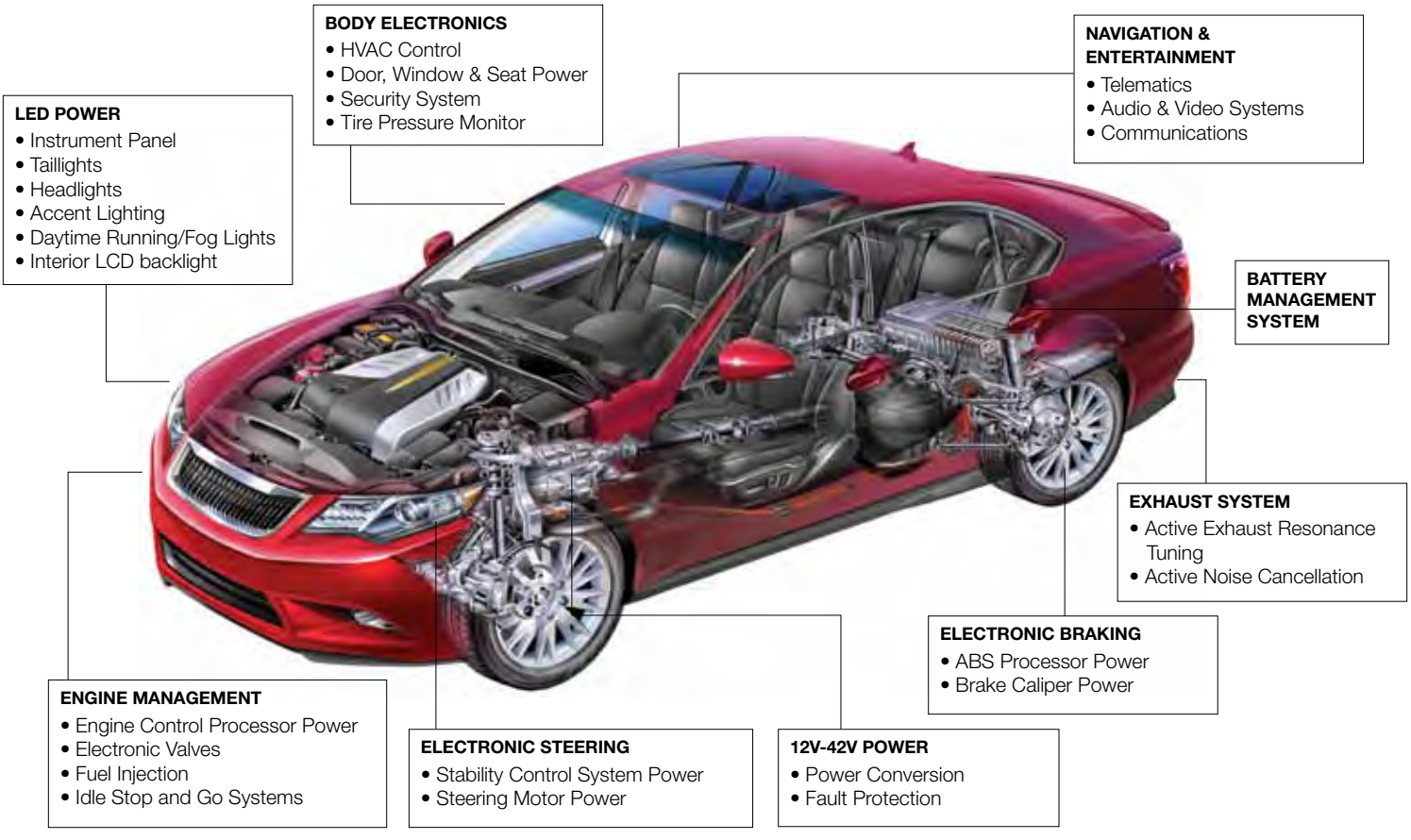
Automotive Electronics Solutions

High Performance Analog ICs

LINEAR TECHNOLOGY

Contents



Introduction

Today's automotive environment demands high input voltage capability, wide operating temperature ranges and efficient thermal management. Consumer expectations and extended warranties demand years of trouble-free operation, so rugged dependable power conversion and management, signal conditioning and data conversion solutions are essential. Linear Technology's high performance analog ICs provide efficient, compact and dependable solutions for use in all kinds of automotive systems. This selection guide features recommended Linear Technology solutions for a wide range of functions commonly used in today's automobiles, including telematics and infotainment systems, body electronics, battery management systems, and engine management, safety systems and GPS/navigation systems. For information on our latest product releases for the continuously evolving automotive market, visit www.linear.com.

Automotive Quality Focus

Linear Technology is a supplier to major OEM and tier 1 automotive customers worldwide. Our commitment to the automotive industry is underscored by our dedication to quality, reliability and customer service.

- We were among the first semiconductor companies to become certified to the TS16949-2002 standard, a distinction we have maintained since 2003.
- We qualify our automotive products in accordance with Automotive Electronics Council's AEC-Q100 standard.
- We have demonstrated an average outgoing quality (AOQ) level of less than 2 defective parts per million (DPPM) and are committed to the goal of zero defects as required by automotive customers.
- We have developed proprietary automotive process flows that have enabled us to achieve less than 1 DPPM at major automotive customers. To learn more about our unique automotive flows, please contact the Linear sales office in your area: www.linear.com/contact
- We offer best-in-class product reliability at 0.1FITs or less.

The cornerstone of Linear Technology's Quality, Reliability, and Service Program is to achieve 100% customer satisfaction by producing the most technically advanced product with the best quality, on-time delivery, and service. Management is fully committed to this goal, but to achieve this goal requires the involvement and dedication of every employee.

Linear Technology's quality standard is error-free products and error-free performance. This standard commits all Linear Technology employees to a philosophy of continuous improvement and to a Quality, Reliability and Service policy that takes precedence over all other considerations and leaves no room for error or failure. Our goal is zero defects.

Please visit: www.linear.com/designtools/quality for more information.

Linear Technology Quality Awards

Advantest: 2005

Autoliv Electronics: 2008

Boeing: 2009, 2011

Cisco: 2007

Delphi: 2002, 2003

Fluke: 2007

Harman-Becker: 2004, 2005

Huawei: 2009, 2011

Johnson Controls: 2008

Northrop Grumman: 2005, 2006, 2009

Panasonic Automotive Systems Europe: 2008

Rockwell Collins: 2003, 2005, 2010

Siemens VDO Wetzler: 2005

Transtron/Isuzu: 2010

Linear Technology Quality Certifications

ISO 9001 since 1993

QS 9000 since 1998

ISO 14001 since 2002

TS 16949 since 2003

Surge Stoppers

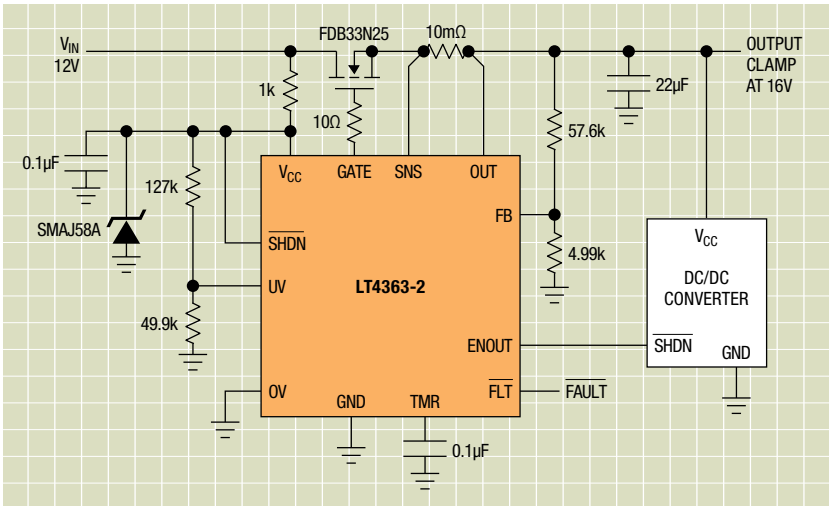
Features:

- Stops High Voltage Surges (>100V)
- Replaces Bulky TVS, LC Filter, Fuses
- Adjustable Output Clamp Voltage
- Overcurrent, Reverse Battery Protection
- Adjustable Ride-Through Fault Timer
- Undervoltage, Overvoltage Monitoring
- Latchoff, Auto-Retry Options

Applications:

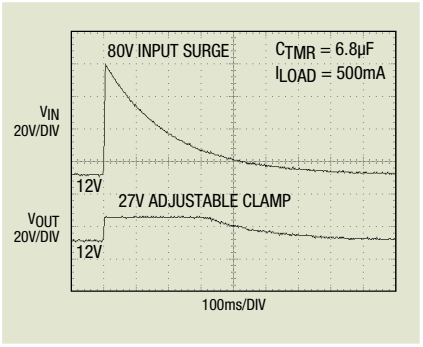
- Automotive Surge Protection
- Engine Control Unit
- Car Infotainment System
- GPS

4A, 12V Overvoltage Output Regulator with 150V Surge Protection



Part Number	V_{IN} Range (V)	Surge Max (V)	I_Q (µA)	I_{SD} (µA)	Reverse Battery	Current Limit	Fault Timer	Ideal Diode	Reverse Output	Maximum Ambient Temperature	Package
LT4356	4 to 80	100+	1000	7	–60V	<100V	●			125°C	4x3 DFN-12, MSOP-10, SO-16
LT4363	4 to 80	100+	700	7	–60V	●	●			85°C	4x3 DFN-12, MSOP-12, SO-16
LTC4364	4 to 80	100+	370	10	–40V	●	●	●	–20V	125°C	4x3 DFN-14, MSOP-16, SO-16
LTC4365	2.5 to 34	60	125	10	–40V					125°C	3x2 DFN-8, TSOT-8
LTC4366	9 to 500+	500+	160+	8	External		●			125°C	3x2 DFN-8, TSOT-8
LTC4361	2.5 to 5.5	80	220	1.5	External	●				125°C	2x2 DFN-8, TSOT-8

Overvoltage Protector Regulates Output at 27V During Transient



Ideal Diode Controllers

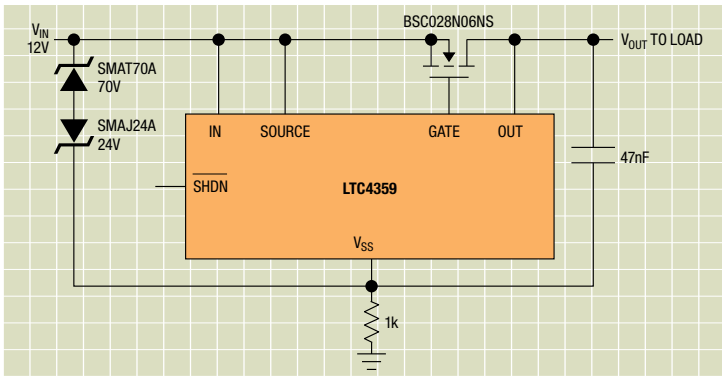
Features:

- Replaces Power Schottky Diode
- Supply ORing or Holdup
- Saves Power, Voltage, Board Area
- Smooth Switchover without Oscillation
- No Reverse DC Current

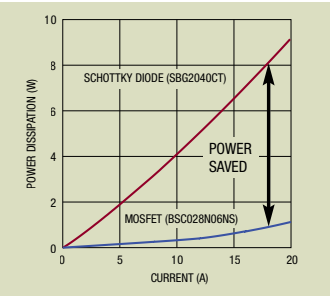
Applications:

- Reverse Battery Protection
- Supply Holdup
- Diode-OR for Redundancy
- Engine Stop-Start
- Body Electronics

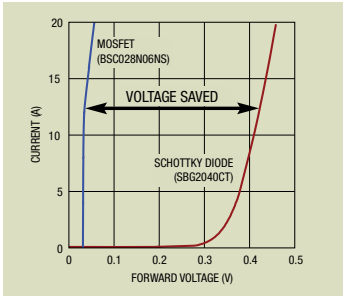
12V, 20A Automotive Reverse Battery Protection



Power Dissipation vs Load Current



Forward Voltage Drop Comparison Between MOSFET and Schottky Diode



Part Number	V_{IN} Range (V)	Supplies	Internal FET	I_Q (mA)	I_{SD} (µA)	Reverse Battery	Diode On/Off Control	Monitors	Maximum Ambient Temperature	Package
LTC4352	0 to 18	1		1.4			●	V_{IN}, FET On/Drop	150°C	3x3 DFN-12, MSOP-12
LTC4353	0 to 18	2		1.5	75			FET On	85°C	4x3 DFN-16, MSOP-16
LTC4354	–4.5 to –80	2 (OR)		1.2				FET Drop	85°C	3x2 DFN-8, SO-8
LTC4355	9 to 80	2 (OR)		2.0				V_{IN}, Fuse, FET Drop	85°C	4x3 DFN-14, MSOP-16, SO-16
LTC4357	9 to 80	1		0.5					125°C	2x3 DFN-6, MSOP-8
LTC4358	9 to 26.5	1	●	0.6					85°C	4x3 DFN-14, TSSOP-16
LTC4359	4 to 80	1		0.15	13	–40V	●		125°C	2x3 DFN-6, MSOP-8

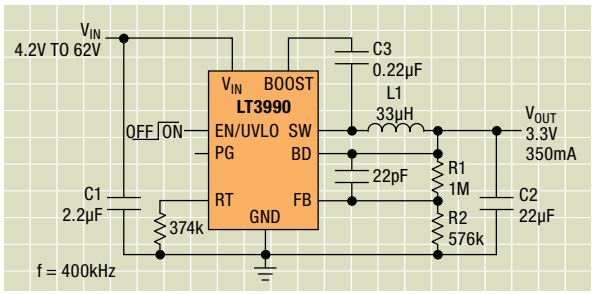
60V, High Efficiency Monolithic Step-Down DC/DC Converters

LT®3990: 62V Step-Down DC/DC Converter with Ultralow Quiescent Current

Features:

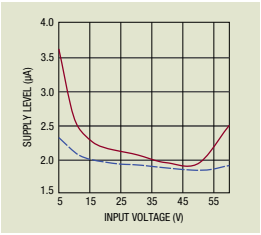
- Up to 350mA of Output Current
- Low Ripple (< 5mV$_{P-P}$) Burst Mode® Operation: 2.5µA I_Q at 12V$_{IN}$ to 3.3V$_{OUT}$
- Wide Input Voltage Range: 4.2V to 62V Operating
- Adjustable Switching Frequency: 200kHz to 2.2MHz
- Integrated Boost and Catch Diodes

3.3 V Step-Down Converter

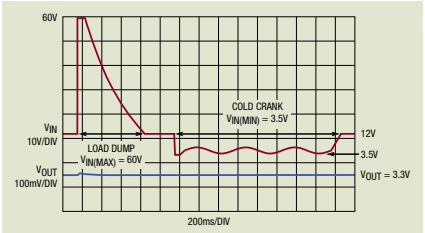


LT3990
Actual Size
Demo Board

Supply Current vs Input Voltage



LT3990 Regulation through 60V$_{MAX}$ Load Cump & 3.5V$_{MIN}$ Cold Crank



60V, Ultralow Quiescent Current Synchronous Monolithic Step-Down DC/DC Converters

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT8620	Synchronous Step-Down	3.4 to 60	2.0	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.0	1	150	MSOP-16E
LT8621	Synchronous Step-Down	3.4 to 60	2.0	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.0	1	150	3x5 QFN-24

60V, Ultralow Quiescent Current Monolithic Step-Down DC/DC Converters

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3990	Step-Down	4.2 to 62	0.35	1.21	200kHz to 2MHz	250kHz to 2MHz	2.5	1	150	3x3 DFN-10, MSOP-16E
LT3991	Step-Down	4.3 to 55	1.20	1.19	200kHz to 2MHz	250kHz to 2MHz	2.8	1	125	3x3 DFN-10, MSOP-10E
LT3995	Step-Down	4.3 to 60	2.50	1.2	200kHz to 2MHz	200kHz to 2MHz	2.7	1	150	MSOP-16E

60V, Low Quiescent Current Monolithic Step-Down DC/DC Converters

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3437	Step-Down	3.3 to 80	0.40	1.25	200kHz	240kHz to 700kHz	100	1	140	3x3 DFN-10, TSSOP-16E
LT3433	Buck-Boost	4.0 to 60	0.40	3.3	200kHz	n/a	100	10	125	TSSOP-16E
LTC3630	Synchronous Step-Down	4.0 to 65	0.50	0.8	Hster	n/a	12	1	150	3x5 DFN-16, MSOP-16E
LT1976/-1	Step-Down	3.3 to 60	1.25	1.2	200/100kHz	230kHz to 600kHz	100	1	140	TSSOP-16E
LT1977	Step-Down	3.3 to 60	1.25	1.2	500kHz	575kHz to 700kHz	100	1	140	TSSOP-16E
LT3980	Step-Down	3.6 to 58, 80 Max	2.00	0.79	100kHz to 2.4MHz	100kHz to 2.4MHz	85	1	150	3x4 DFN-16, MSOP-16E
LT3434	Step-Down	3.3 to 60	2.50	1.2	200kHz	230kHz to 500kHz	100	1	125	TSSOP-16E
LT3435	Step-Down	3.3 to 60	2.50	1.2	500kHz	575kHz to 700kHz	100	1	125	TSSOP-16E

60V Monolithic Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(mA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT1676	Step-Down	7.4 to 60	0.44	1.24	100kHz	130kHz to 250kHz	3.2	30	125	N8/SO-8
LT1956/-5	Step-Down	5.5 to 60	1.2	1.20	500kHz	580kHz to 700kHz	2.5	25	125	TSSOP-16/E
LT1766/-5	Step-Down	5.5 to 60	1.2	1.20	200kHz	228kHz to 700kHz	2.5	25	140	TSSOP-16/E
LT3988	Dual Step-Down	4.0 to 60, 80 Max	2x1.0	0.75	250kHz to 2.5MHz	250kHz to 2.5MHz	2.0	1	150	MSOP-16E
LT3431	Step-Down	5.5 to 60	2.5	1.20	500kHz	580kHz to 700kHz	2.5	30	125	TSSOP-16E
LT3430/-1	Step-Down	5.5 to 60	2.5	1.20	200/100kHz	228kHz to 700kHz	2.5	30	125	TSSOP-16E
LT3992	Dual Step-Down	3.0 to 60	3 x 2	0.80	250kHz to 2MHz	250kHz to 2MHz	4.7	6	150	5x5 QFN-32, TSSOP-38E
LT8300	Flyback Converter	6.0 to 100	0.5	1.22	Variable	N/A	330mA	70	150	TSOT-23

60V/100V Input DC/DC Controllers

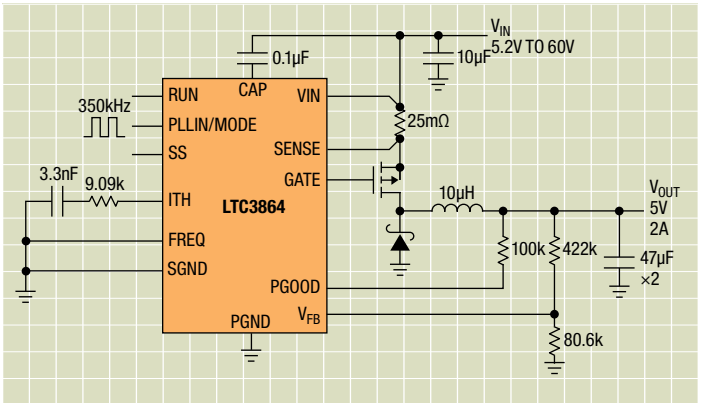
LTC®3864: 60V Synchronous Step-Down Controller with Low I_Q and 100% Duty Cycle Operation

Features:

- Wide Operating V_{IN} Range: 3.5V to 60V
- Wide V_{OUT} Range: 0.8V to V_{IN}
- Low Operating I_Q = 40µA
- Very Low Dropout Operation: 100% Duty Cycle
- Strong High Voltage MOSFET Gate Driver
- Constant Frequency Current Mode Architecture
- Verified FMEA for Adjacent Pin Open/Short

LTC3864
Actual Size
Demo Board

5.2V to 60V Input, 5V/2A Output



60V Input, Low Quiescent Current DC/DC Controllers

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)*	$V_{OUT(MIN)}$ (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LTC3864	Step-Down	3.5 to 60	5	0.8	50 to 850	75 to 750	40	7	125	DFN-12
LTC3824	Step-Down	4 to 60	5	0.8	200 to 600	230 to 600	40	25	125	MSOP-10E
LT3724	Step-Down	4 to 60	5	1.23	200	n/a	100	10	125	TSSOP-16E
LT3844	Step-Down	4 to 60	5	1.23	100 to 600	100 to 600	120	10	125	TSSOP-16E
LTC3891	Synchronous Step-Down	4 to 60	20	0.8	50 to 900	75 to 750	50	14	150	QFN-20, TSSOP-20
LT3800	Synchronous Step-Down	4 to 60	20	1.23	200	n/a	100	10	125	TSSOP-16E
LT3845A	Synchronous Step-Down	4 to 60	20	1.23	100 to 600	100 to 600	120	10	125	TSSOP-16E
LTC3890/-1	Synchronous Step-Down	4 to 60	2 X 20	0.8	50 to 900	75 to 850	50 (1)	14	150	QFN-32

* Dependent on External FET

60V/100V Input DC/DC Controllers

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)*	$V_{OUT(MIN)}$ (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LT3748	Flyback	5 to 100	5	1.22	variable	n/a	1-3mA	1	150	MSOP-16 (12)
LTC3803/-3/-5	Flyback	5/9.2 to 75	5	0.8	200/300	n/a	240	40	150	ThinSOT
LTC3805/-5	Flyback	4.7/8.8 to 75	5	0.8	70 to 700	50 to 930	360	40	125	DFN-10/MSOP-10
LTC3814-5	Synchronous Step-Up	4.5 to 50	10	7	100 to 1MHz	n/a	3mA	240	125	TSSOP-16E
LTC3813	Synchronous Step-Up	7.0 to 90	10	8	100 to 1MHz	100 to 1MHz	3mA	240	125	SSOP-28
LTC3703/-5	Synchronous Step-Down/Step-Up	4/9.3 to 100	10	0.8	100 to 600	100 to 600	1.7mA	50	150	SSOP-16, TSSOP-28
LT3796	Buck, Boost, Buck-Boost	6.0 to 100	10	1.25	100 to 1MHz	100 to 1MHz	2.5mA	1	125	TSSOP-28E
LT3791/-1	Synchronous Buck-Boost	4.7 to 60	20	0 to 60	200 to 700	200 to 700	3mA	1	150	TSSOP-38E
LTC3812-5	Synchronous Step-Down	4.2 to 60	20	0.8	100 to 1MHz	n/a	3mA	230	125	TSSOP-16E
LTC3810-5	Synchronous Step-Down	4.2 to 60	20	0.8	100 to 1MHz	100 to 1MHz	3mA	240	150	QFN-32
LTC3810	Synchronous Step-Down	6.2 to 100	20	0.8	100 to 1MHz	100 to 1MHz	3mA	240	125	TSSOP-16E

* Dependent on External FET

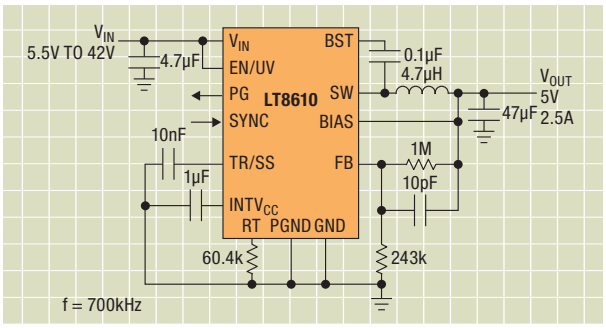
40V, Low Quiescent Current Monolithic Switching Regulators

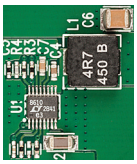
LT8610: 42V, 2.5A (I_{OUT}) Synchronous Step-Down Converter with Ultralow I_Q

Features:

- Wide Input Voltage Range: 3.4V to 42V
- Ultralow Burst Mode® Operation: 2.5µA I_Q Regulating $12V_{IN}$ to $3.3V_{OUT}$
- Burst Mode Output Ripple < $10mV_{P-P}$
- High Efficiency Synchronous Operation:
  - 96% Efficiency at 1A, $5V_{OUT}$ from $12V_{IN}$
  - 94% Efficiency at 1A, $3.3V_{OUT}$ from $12V_{IN}$
- Low Dropout Under All Conditions: 200mV at 1A
- Fast Minimum Switch-On Time: 50ns

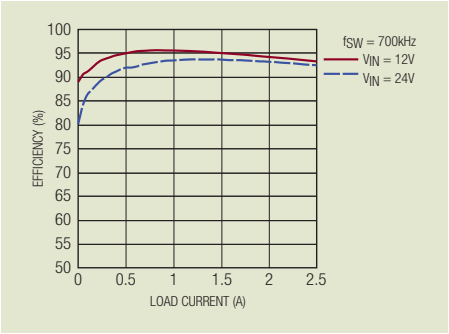
Automotive Input to 5V, 2.5A Synchronous Step-Down Converter



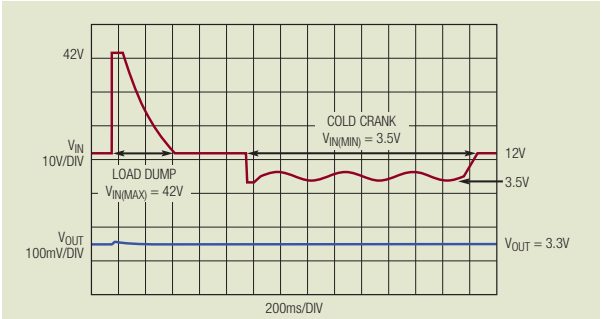


LT8610
Actual Size
Demo Board

$12V_{IN}$ to $5V_{OUT}$ Efficiency



LT8610 Regulation Through $42V_{MAX}$ Load Dump and $3.5V_{MIN}$ Cold Crank



42V, Ultralow Quiescent Current (<4µA) Synchronous Monolithic Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LTC3646/-1	Synchronous Step-Down	4 to 40	1.0	0.6V	200kHz to 3MHz	200kHz to 2.2MHz	140	1	150	3x4 DFN-14, MSOP-16E
LT8610	Synchronous Step-Down	3.4 to 42	2.5	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.5	1	150	MSOP-16E
LT8611	Synchronous Step-Down	3.4 to 42	2.5	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.5	1	150	3x5 QFN-24
LT8697	Synchronous Step-Down with Cable Comp	3.4 to 42	2.5	5V	300kHz to 2.2MHz	300kHz to 2.2MHz	3.6	1	150	3x5 QFN-24
LT3690	Synchronous Step-Down	3.9 to 36, 60 Max	4.0	0.8	170kHz to 1.5MHz	170kHz to 1.5MHz	70	1	150	4x6 QFN-26
LT8612	Synchronous Step-Down	3.4 to 42	5.0	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.5	1	150	3x6 QFN
LT8614	Synchronous Step-Down	3.4 to 42	4.0	0.985	200kHz to 2.2MHz	200kHz to 2.2MHz	2.5	1	150	3x4 QFN

40V, Ultralow Quiescent Current (<4µA) Monolithic Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3970	Step-Down	4.2 to 42	0.35	1.25	200kHz to 2.2MHz	200kHz to 2.2MHz	2.5	1	150	2x3 DFN-10, MSOP-10
LT3973	Step-Down	4.3 to 42	0.75	1.21	200kHz to 2.2MHz	250kHz to 2.2MHz	2.5	1	150	3x3 DFN-10, MSOP-10E
LT3971	Step-Down	4.3 to 38	1.20	1.19	200kHz to 2.2MHz	200kHz to 2.2MHz	2.8	1	125	3x3 DFN-10, MSOP-10E/16E
LT3975	Step-Down	4.3 to 42	2.50	1.20	200kHz to 2MHz	200kHz to 2MHz	2.7	1	150	MSOP-16E
LT3976	Step-Down	4.3 to 40	5.00	1.20	200kHz to 2MHz	200kHz to 2MHz	3.3	1	150	MSOP-16E

40V, Low Quiescent Current Monolithic Switching Regulators (continued)

40V, Low Quiescent Current (<100µA) Monolithic Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LT3470	Step-Down	4.0 to 40	0.33	1.25	hystr.	n/a	26	1	150	ThinSOT
LT1934/-1	Step-Down	3.3 to 34	0.40	1.25	COT*	n/a	12	1	125	2x3 DFN-6,ThinSOT™
LT3667	Step-Down with Dual LDOs	4.3 to 40	0.40	0.80	250kHz to 2.2MHz	300kHz to 2.2MHz	45	1	150	3x5 QFN-24, MSOP-16E
LT3689	Step-Down with POR	3.6 to 36, 60 Max	0.70	0.80	350kHz to 2.2MHz	350kHz to 2.2MHz	85	1	150	3x3 QFN-16, MSOP-16E
LT3973	Step-Down	4.3 to 42	0.75	1.21	200kHz to 2.2MHz	250kHz to 2.2MHz	2.5	1	150	3x3 DFN-10, MSOP-10E
LT3695	Step-Down with Fault Protection	3.6 to 36, 60 Max	1.00	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	75	1	150	MSOP-16E
LT3682	Step-Down	3.6 to 36, 60 Max	1.00	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	75	1	125	3x3 DFN-12
LT3480	Step-Down	3.6 to 38, 60 Max	2.00	0.79	200kHz to 2.4MHz	250kHz to 2MHz	70	1	150	3x3 DFN-10, MSOP-10E
LT3481	Step-Down	3.6 to 34, 36 Max	2.00	1.26	300kHz to 2.8MHz	n/a	50	1	150	3x3 DFN-10, MSOP-10E
LT3681	Step-Down	3.6 to 34, 36 Max	2.00	1.26	300kHz to 2.8MHz	n/a	50	1	125	3x4 DFN-14
LT3972	Step-Down	3.6 to 33, 62 Max	3.50	0.79	200kHz to 2.4MHz	250kHz to 2MHz	75	1	150	MSOP-10E
LT3680	Step-Down	3.6 to 36	3.50	0.79	200kHz to 2.4MHz	250kHz to 2MHz	75	1	150	3x3 DFN-10, MSOP-10E

40V Monolithic Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(mA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LT3502/A	Step-Down	3.4 to 40	0.33	0.70	1.1/2.2MHz	n/a	1.5	1	125	2x2 DFN-8
LT3645	Step-Down + LDO Controller	3.6 to 36, 55 Max	0.50	0.80	750kHz	n/a	1.7	1	150	MSOP-12E
LT1933	Step-Down	3.6 to 36	0.60	0.75	500kHz	n/a	1.6	1	150	ThinSOT™, 2x3DFN-6
LT1776	Step-Down	7.4 to 40	0.70	1.25	200kHz	250kHz to 400kHz	3.2	30	125	SO-8
LT3686/A	Step-Down	3.6 to 37, 60 Max	1.20	0.80	300kHz to 2.5MHz	300kHz to 2.5MHz	1.1	1	150	3x3 DFN-10, MSOP-10E
LT3493/A	Step-Down	3.6 to 36	1.20	0.78	750kHz	n/a	1.9	2	125	2x3 DFN-6
LT3505	Step-Down	3.6 to 36	1.20	0.78	300kHz to 2.8MHz	n/a	1.9	2	125	3x3 DFN-8, MSOP-8E
LT3663	Step-Down with Current Limiting	7.5 to 36, 60 Max	1.20	3.30	1.5MHz	n/a	2.4	1	150	2x3 DFN-8, MSOP-8
LT3509	Dual Step-Down	3.6 to 36, 60 Max	2x0.70	0.80	300kHz to 2.2MHz	300kHz to 2.2MHz	1.9	1	150	3x4 DFN-14,MSOP-16E
LT3688	Dual Step-Down w/POR/Watchdog	3.6 to 36	2x0.80	0.80	350kHz to 2.5MHz	350kHz to 2.5MHz	115µA	1	150	4x4 QFN-24,TSSOP-24E
LT3640	Dual Step-Down	4.0 to 35, 55 Max	1.3 + 1.1	0.60	350kHz to 2.5MHz	350kHz to 2.5MHz	290µA	1	125	4x5 QFN-28,TSSOP-28E
LT3641	Dual Step-Down	4.0 to 42, 55 Max	1.3 + 1.1	0.60	350kHz to 2.5MHz	350kHz to 2.5MHz	290µA	1	150	4x5 QFN-28,TSSOP-28E
LT1936	Step-Down	3.6 to 36	1.40	1.20	500kHz	n/a	1.9	1	150	MSOP-8E
LT3508	Dual Step-Down	3.7 to 36	2x1.40	0.80	250kHz to 2.5MHz	250kHz to 2.5MHz	4.6	1	150	4x4 QFN-24,TSSOP-16E
LT3685	Step-Down	3.6 to 38, 60 Max	2.00	0.79	200kHz to 2.4MHz	250kHz to 2MHz	0.8	1	125	3x3 DFN-10, MSOP-10E
LT3684	Step-Down	3.6 to 34, 36 Max	2.00	1.26	300kHz to 2.8MHz	n/a	0.8	1	125	3x3 DFN-10, MSOP-10E
LT1912	Step-Down	3.6 to 36	2.00	0.79	250kHz to 500kHz	n/a	0.8	1	125	3x3 DFN-10, MSOP-10E
LT3500	Step-Down + LDO Controller	3.6 to 40	2.00	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	2.5	12	150	3x3 DFN-12
LT3697	Step-Down w/ Cable Comp	5 to 40, 60 Max	2.50	5.00	200kHz to 2.2MHz	200kHz to 2.2MHz	700µA	1	150	MSOP-16E
LT3694/-1	Step-Down + Dual LDO Controller	4 to 37, 70 Max	2.60	0.75	250kHz to 2.5MHz	250kHz to 2.5MHz	1.0	1	125	4x5 QFN-28, TSSOP-20E
LT3514	Triple Step-Down + LDO Controller	3.2 to 40	2A+1A+1A +10mA	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	TBD	1	TBD	4x5 QFN-28
LT3504	Quad Step-Down	3.2 to 40	4x1.0	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	7mA	1	125	4x5 QFN-28
LT3507/A	Triple Step-Down + LDO Controller	4 to 36	2.7, 2x1.8	0.80	250kHz to 2.5MHz	250kHz to 2.5MHz	7mA	1	150	5x7 QFN-38
LT3692/A	Dual Step-Down	3 to 36, 60 Max	2x3.5	0.80	250 to 2.25MHz	250 to 2MHz	4.0	10	150	5x5 QFN-32, TSSOP-38E
LT3693	Step-Down	3.6V to 36V	3.50	0.79	200kHz to 2.4MHz	250kHz to 2MHz	1.3	1	125	3x3 DFN-10, MSOP-10E

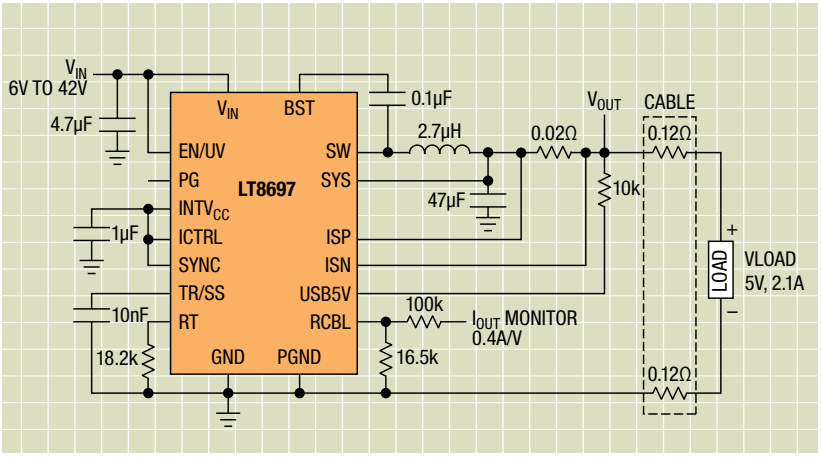
40V, Step-Down DC/DC Converters with Cable Drop Compensation for USB Applications

LT8697: 42V, 2.5A Synchronous Buck Regulator with Cable Drop Compenstation for USB Applications

Features:

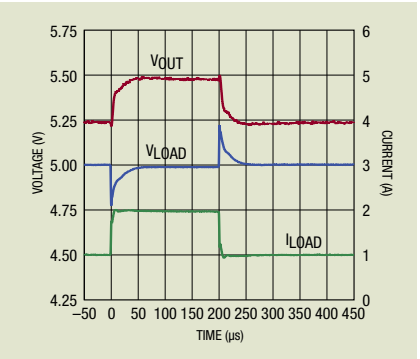
- Accurate 5V Output: ±1.4% Over Full Operating Junction Temperature Range
- Programmable Cable Drop Compensation
- Programmable Output Current Limit
- Output Current Monitor
- Dual Input Feedback Permits Regulation on Output of USB Switch
- Forced Continuous Mode for Fast Load Step Low Recovery
- Ultralow Quiescent Current Burst Mode® Operation: 3.6µA I_Q Regulation $12V_{IN}$ to $5V_{OUT}$

2MHz 5V Step-Down Converter with Cable Drop Compensation and Output Current Monitor



LT8697
Actual Size
Demo Board

Transient Response with 0.24Ω Total R_{LINE}



40V, Low Quiescent Current Monolithic Regulators with Cable Compensation

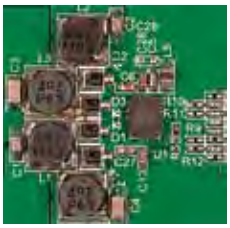
Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	$V_{OUT(MIN)}$ (V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LT3086	Low Dropout Linear Regulator	1.65 to 40	2.1	0.4	n/a	n/a	1.2mA	1	125	5x4 QFN-16, TSSOP-16E, DDPak-7, TO-220
LT8697	Synchronous Step-Down with Cable Comp	3.4 to 42	2.5	5.0	300kHz to 2.2MHz	300kHz to 2.2MHz	3.6	1	150	3x5 QFN-24
LT3697	Step-Down w/ Cable Comp	5.0 to 40, 60 Max	2.5	5.0	200kHz to 2.2MHz	200kHz to 2.2MHz	700	1	150	MSOP-16E

36V to 60V Multioutput Step-Down DC/DC Converters

LT3504: Quad 1A, 2.2MHz Step-Down DC/DC Converter with 100% Duty Cycle Opeartion

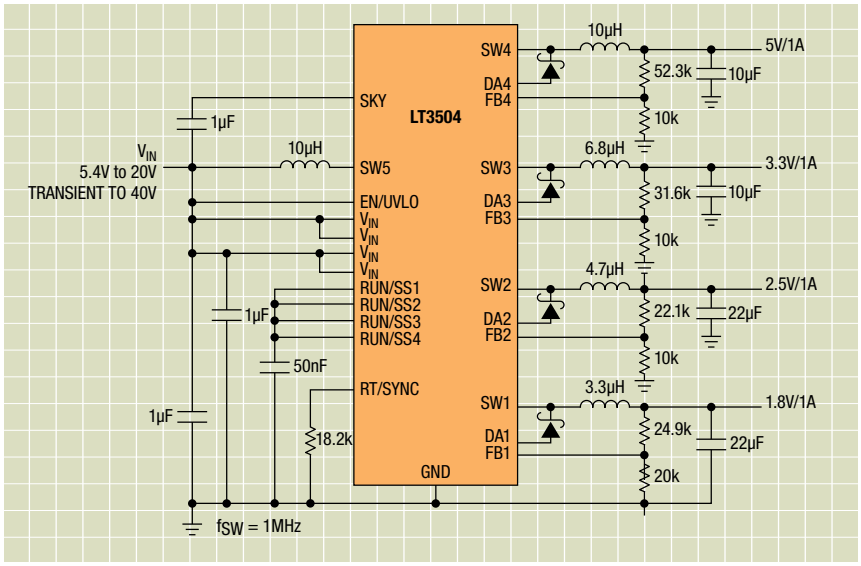
Features:

- Wide Input Range: 3.2V to 40V
- Four 1A Outputs
- 100% Duty Cycle Operation
- Resistor-Programmed Constant Frequency
- Short-Circuit Robust



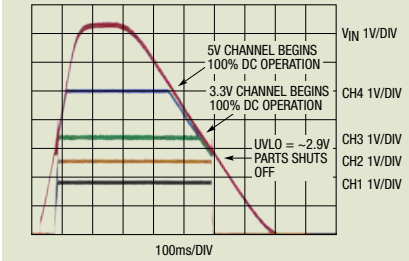
LT3504
Actual Size
Demo Board

Automotive Input to V_{OUT} = 1.8V, 2.5V, 3.3V, & 5V



LT3504 Start-Up and Shutdown Waveform

V_{IN} (Top Trace) is ramped from 0V up to 8V and then back down to 0V. The other four traces are the output voltages of all four channels.



36V to 60V Multioutput Step-Down DC/DC Converters

Part Number	Device Architecture	V_{IN} Range	I_{OUT} (A)	$V_{OUT(MIN)}$	Frequency	Ext Sync Range (MHz)	I_Q (µA)	I_{SD} (µA)	Max Junc Temp (°C)	Package
LT3667	Step-Down with Dual LDOs	4.3 to 40	0.40	0.80	250kHz to 2.2MHz	300kHz to 2.2MHz	45	1	150	3x5 QFN-24, MSOP-16E
LT3645	Step-Down + LDO Controller	3.6 to 36, 55 Max	0.50	0.80	750kHz	n/a	1.7mA	1	150	MSOP-12E
LT3509	Dual Step-Down	3.6 to 36, 60 Max	2 x0.70	0.80	300kHz to 2.2MHz	300kHz to 2.2MHz	1.9mA	1	150	3x4 DFN-14,MSOP-16E
LT3688	Dual Step-Downw/POR, Watchdog Timer	3.6 to 36	2 x0.80	0.80	350kHz to 2.5MHz	350kHz to 2.5MHz	115	1	150	4x4 QFN-24,TSSOP-24E
LT3988	Dual Step-Down	4 to 60, 80 Max	2x1.0	0.75	250kHz to 2.5MHz	250kHz to 2.5MHz	2.0mA	1	150	MSOP-16E
LT3508	Dual Step-Down	3.7 to 36	2x1.40	0.80	250kHz to 2.5MHz	250kHz to 2.5MHz	4.6mA	1	150	4x4 QFN-24, TSSOP-16E
LT3640	Dual Step-Down	4 to 35, 55 Max	1.3 + 1.1	0.60	350kHz to 2.5MHz	350kHz to 2.5MHz	290	1	125	4x5 QFN-28,TSSOP-28E
LT3641	Dual Step-Down	4 to 42, 55 Max	1.3 + 1.1	0.60	350kHz to 2.5MHz	350kHz to 2.5MHz	290	1	150	4x5 QFN-28,TSSOP-28E
LT3500	Step-Down + LDO Controller	3.6 to 40	2.00	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	2.5mA	12	150	3x3 DFN-12
LT3507/A	Triple Step-Down + LDO Controller	4 to 40	2.4, 2x1.5	0.80	250kHz to 2.5MHz	250kHz to 2.5MHz	2mA	1	150	5x7 QFN-38
LT3694/-1	Step-Down + Dual LDO Controller	4 to 37, 70 Max	2.60	0.75	250kHz to 2.5MHz	250kHz to 2.5MHz	1.0mA	1	125	4x5 QFN-28, TSSOP-20E
LT3514	Triple Step-Down + LDO Controller	3.2 to 40	2A+1A+1A+10mA	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	TBD	1	TBD	4x5 QFN-28
LT3504	Quad Step-Down	3.2 to 40	4 x 1.0	0.80	250kHz to 2.2MHz	250kHz to 2.2MHz	7mA	1	125	4x5 QFN-28
LT3507/A	Triple Step-Down + LDO Controller	4 to 36	2.7, 2x1.8	0.80	250kHz to 2.5MHz	250kHz to 2.5MHz	7mA	1	150	5x7 QFN-38
LT3692/A	Dual Step-Down	3 to 36, 60 Max	2x3.5	0.80	250kHz to 2.25MHz	250kHz to 2MHz	4.0mA	10	150	5x5 QFN-32, TSSOP-38E
LT3992	Dual Step-Down	3 to 60	0.80	3 x 2	250kHz to 2MHz	250kHz to 2MHz	4.7mA	6	150	5x5 QFN-32, TSSOP-38E

36V Input Low Quiescent Current Synchronous DC/DC Controllers

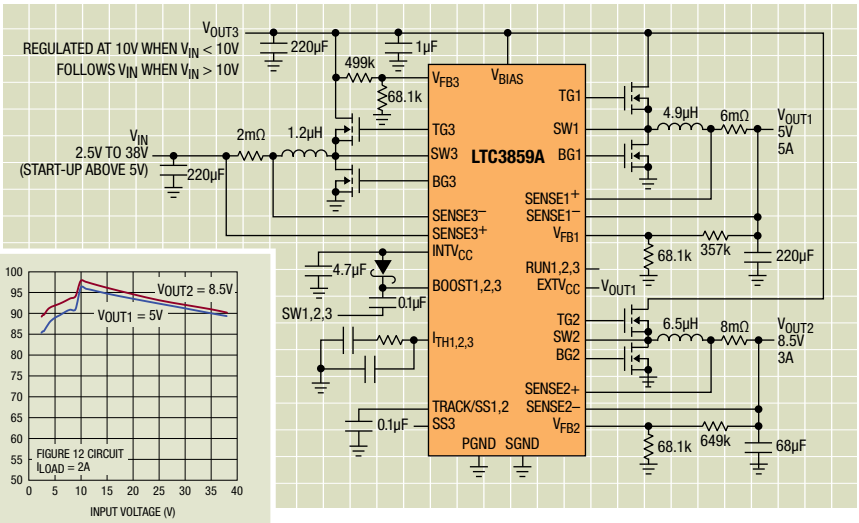
LTC3859A: Buck/Buck/Boost Synchronous Controller with Burst Mode Operation

Features:

- Dual Buck Plus Single Boost Synchronous Controllers
- Outputs Remain in Regulation Through Cold Crank Down to 2.5V
- Low Operating IQ: 55µA (One Channel On)
- Wide Bias Input Voltage Range: 4.5V to 38V
- Buck Output Voltage Range: 0.8V ≤ V_{OUT} ≤ 24V
- Boost Output Voltage Up to 60V

LTC3859A
Actual Size
Demo Board

Automotive Input to V_{OUT} = 5V & 8.5V



Efficiency vs Input Voltage

36V Input Low Quiescent Current Synchronous DC/DC Controllers

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)*	$V_{OUT(MIN)}$ (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q (µA)	I_{SD} (µA)	Max Junc Temp (°C)	Package
LTC3834/-1	Synchronous Step-Down	4.0 to 36	20	0.8	140 to 650	140 to 650	30	14	125	DFN-16, SSOP-16, QFN-20, TSSOP-20
LTC3835/-1	Synchronous Step-Down	4.0 to 36	20	0.8	140 to 650	140 to 650	80	10	125	DFN-16, SSOP-16, QFN-20, TSSOP-20
LTC3826/-1	Dual Synchronous Step-Down	4.0 to 36	20/20	0.8	140 to 650	140 to 650	30	4	125	QFN-32, SSOP-28
LTC3857/-1	Dual Synchronous Step-Down	4.0 to 38	20/20	0.8	140 to 650	50 to 900	50	8	125	QFN-32, SSOP-28
LTC3858/-1	Dual Synchronous Step-Down	4.0 to 38	20/20	0.8	140 to 650	50 to 900	170	8	125	QFN-32, QFN-28/SSOP-28
LTC3859A	Buck/Buck/Boost	4.5 to 38	10/10/10	0.8	50 to 900	75 to 850	55	14	150	QFN-38, TSSOP-38
LTC3786	Synchronous Step-Up	2.5 to 38	10	5.0	50 to 900	75 to 850	55	8	125	QFN-16, MSOP-16
LTC3787	Synchronous Step-Up	2.5 to 38	20	5.0	50 to 900	75 to 850	135	8	150	QFN-28, SSOP-28
LTC3788	Synchronous Step-Up	2.5 to 38	10/10	5.0	50 to 900	75 to 850	125	8	125	QFN-32

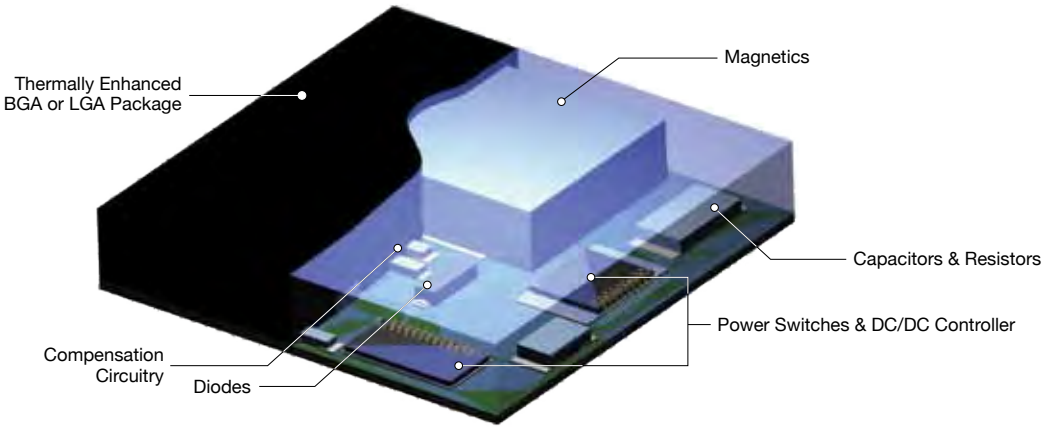
36V/40V Input DC/DC Controllers

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)*	$V_{OUT(MIN)}$ (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q (mA)	I_{SD} (µA)	Max Junc Temp (°C)	Package
LTC3851A/-1	Synchronous Step-Down	4 to 40	25	0.8	250 to 750	250 to 750	1	15	125	QFN-16, SSOP-16
LTC3878	Synchronous Step-Down	4 to 38	25	0.8	Constant On-time	n/a	1.5	18	125	SSOP-16
LTC3879	Synchronous Step-Down	4 to 38	25	0.6	Constant On-time	n/a	1.5	18	125	QFN-16, MSOP-16
LTC3854	Synchronous Step-Down	4.5 to 38	25	0.8	400kHz	n/a	2	15	125	MSOP-12, DFN-12
LTC3866	Synchronous Step-Down	4.5 to 36	25	0.6	250 to 770	250 to 770	3.2	30	125	4x4 QFN-24, TSSOP-24
LTC3775	Synchronous Step-Down	4.5 to 38	25	0.6	250 to 1MHz	250 to 1MHz	3.5	14	125	MSOP-16, QFN-16
LTC3833	Synchronous Step-Down	4.5 to 38	25	0.6	200 to 2MHz	200 to 2MHz	2	15	125	QFN-20. TSSOP-20
LTC3839	2-Phase Synchronous Step-Down	4.5 to 38	50	0.6	200 to 2MHz	200 to 2MHz	3	15	125	QFN-32
LTC3850	Dual Synchronous Step-Down	4 to 30	20/20	0.8	250 to 780	250 to 780	850µA	30	125	QFN-32, SSOP-28
LTC3855	Dual Synchronous Step-Down	4.5 to 38	25/25	0.6	250 to 770	250 to 770	3.5	30	125	6x6 QFN-40, SSOP-38
LTC3865/-1	Dual Synchronous Step-Down	4.5 to 38	25/25	0.6	250 to 770	250 to 770	3	30	125	QFN-32, TSSOP-38
LTC3869/-2	Dual Synchronous Step-Down	4 to 38	25/25	0.6	250 to 780	250 to 780	3	30	125	QFN-28, TSSOP-28
LTC3731	3-Phase Synchronous Step-Down	4 to 36	60	0.6	250 to 600	250 to 600	2.3	50	140	QFN-32, SSOP-36
LTC3862/-1/-2	2-Phase Step-Up	4 to 36	30	*	50 to 650	50 to 650	1.8	30	150	QFN-24, SSOP-24, TSSOP-24
LT3782A	2-Phase Step-Up	4 to 40	30	7.0	150 to 500	180 to 715	11	40	125	SSOP-28
LT3757	Boost, SEPIC, Flyback and Inverter	2.9 to 40	5	1.6	100 to 1MHz	100 to 1MHz	1.6	1	150	DFN-10, MSOP-10
LT3789	Synchronous Buck-Boost	4 to 36	10	0.8	200 to 600	200 to 600	3	40	125	SSOP-24, 5x5 QFN-32
LT3759	Boost, SEPIC, Inverter	1.6 to 42	5	1.6	100 to 1MHz	100 to 1MHz	350µA	1	150	MSOP-12

* Dependent on External FET

µModule Power Products

Resembling a surface mount IC, our family of µModule (micromodule) power products includes complete system-in-a-package solutions for DC/DC point-of-load conversion, and LED illumination. The necessary components are integrated into a compact thermally enhanced package. The –40ºC to 150ºC tested LTM®8008 is targeted for use in engine control units, and –40ºC to 125ºC tested products power the latest electronics in the dashboard, console, body and interior lighting. The high level of integration enables specific µModule products to be certified compliant with the EN55022 class B industry EMI standard.



Packages (mm)	Isolated	EN55022 Class B	LED Driver	Step-Up & Down	Step-Down
15 x 15		•		•	•
11.25 x 15		•			•
9 x 15		•	•		•
9 x 11.25	•				•
6.25 x 11.25		•			•
6.25 x 6.25		•			•

–40°C to 150°C Tested Products

	Input Voltage		Output Voltage					
	Min	Max	Min	Max	Output Channels & Current	Adjustable Switching Frequency Range	Part Number	Package Dimensions (mm)
 Step-Up & Down	3	72	3.3	5	1 x 500mA, 1 x 300mA, 4 x 150mA	100kHz to 1MHz	LTM8008	15x15x2.8 LGA

–40°C to 125°C Tested Products

	Input Voltage		Output Voltage					EN55022 Class B		
	Min	Max	Min	Max	Output Current (A)	Output Channels	Parallelable Outputs	EN55022B Certified	Part Number	Package Dimensions (mm)
 Step-Down	4.5	20	0.6	5.0	15	1	•		LTM4627	15x15x4.3 LGA, 15x15x4.9 BGA
	4.5	26.5	0.8	5.0	6	1	•		LTM4618	9x15x4.3 LGA
	4.5	26.5	0.8	5.0	4	2	•		LTM4619	15x15x2.8 LGA
	4.5	26.5	0.6	5.5	8	2	•		LTM4628	15x15x4.3 LGA, 15x15x4.9 BGA
	4.5	28	0.6	5.0	6	1	•	•	LTM4606	15x15x2.8 LGA
	3.0	36	0.8	5.0	0.5	1		•	LTM8021	6.25x11.25x2.8 LGA
	4.5	36	1.2	18	0.6	1			LTM8029	6.25x11.25x3.4 BGA
	3.6	36	0.8	10	1	1	•		LTM8022	9x11.25x2.8 LGA
	3.6	36	0.8	10	2	1	•		LTM8023	9x11.25x2.8 LGA
	3.6	36	0.8	10	2	1	•	•	LTM8032	9x15x2.8 LGA, 9x15x3.4 BGA
	3.6	36	0.8	24	3	1	•	•	LTM8033	11.25x15x4.3 LGA
	6.0	36	1.2	24	5	1	•		LTM8026	11.25x15x2.8 LGA
	5.0	36	3.3	15	5	1	•	•	LTM4612	15x15x2.8 LGA
	5.0	36	3.3	15	8	1	•	•	LTM4613	15x15x4.3 LGA
	4.5	60	2.5	24	4	1			LTM8027	15x15x4.3 LGA

	Input Voltage		Output Voltage						
	Min	Max	Min	Max	Output Current (A)	Output Channels	Parallelable Outputs	Part Number	Package Dimensions (mm)
 Step-Up & Down	4.5	36	0.8	16	5	1	•	LTM4605	15x15x2.8 LGA
	4.5	36	0.8	24	4	1	•	LTM4607	15x15x2.8 LGA
	4.5	36	0.8	34	4	1	•	LTM4609	15x15x2.8 LGA, 15x15x3.4 BGA

	Input Voltage		Output Voltage						
	Min	Max	Min	Max	LED Current (A)	Output Channels	Supported Dimming Method	Part Number	Package Dimensions (mm)
 LED Driver	3	30	2	32	0.35	1	Analog & PWM	LTM8042-1	9x15x2.8 LGA
	3	30	2	32	1	1	Analog & PWM	LTM8042	9x15x2.8 LGA

	Input Voltage		Output Voltage							
	Min	Max	Min	Max	Output Power (W)	Output Channels	Isolation Voltage	Output Ripple	Part Number	Package Dimensions (mm)
 Isolated	3.1	32	2.5	12	1.5	1	725V DC	35mVp-p	LTM8047	9x11.25x4.9 BGA
	3.1	32	1.2	12	1.5	2	725V DC	1mVp-p	LTM8048	9x11.25x4.9 BGA

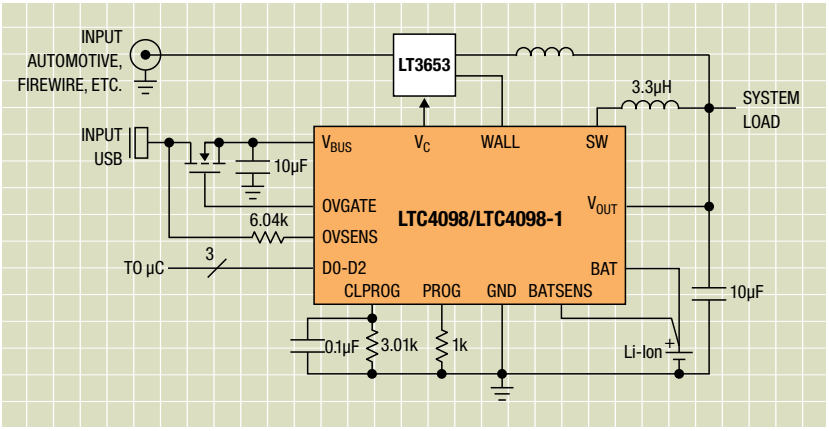
High Voltage Power Managers and Battery Chargers

LTC4098: USB Compatible Switching Power Manager/ Li-Ion Charger with Overvoltage Protection

Features:

- Switching Regulator with Bat-Track™ Adaptive Output Control Makes Optimal Use of Limited Power Available from USB Port to Charge Battery and Power Application
- Overvoltage Protection Guards Against Damage
- Bat-Track External Step-Down Switching Regulator Control Maximizes Efficiency from Automotive, Firewire and Other High Voltage Sources
- 180mΩ Internal Ideal Diode Plus External Ideal Diode Controller Seamlessly Provide Low Loss PowerPath™ when Input Power is Limited or Unavailable
- Full Featured Li-Ion/Polymer Battery Charger
- 1.5A Maximum Charge Current with Thermal Limiting
- Low Profile (0.75mm) 20-Lead 3mm × 4mm QFN

High Efficiency USB/Automotive Battery Charger with Overvoltage Protection



High Voltage Battery Chargers and Power Managers

Part Number	Max Charge Current Wall (A)	# of Battery Cells (Series)	Max Charge Current USB (mA)	Power Manager Topology	Input Voltage (V)	Standby Current (µA)	I_{BAT} Drain Current (µA)	Charge	$R_{DS(ON)}$ Ideal Diode	Package
LTC4089*	1.2	1	500	Linear	4.35V to 5.5V USB, 6V to 36V, 40V max adapter	50	2.5	Timer + C/10	215mΩ <50mΩ (opt.)	3x6 DFN-22
LTC4089-5	1.2	1	500	Linear	4.35V to 5.5V USB, 6V to 36V, 40V max adapter	50	2.5	Timer + C/10	215mΩ <50mΩ (opt.)	3x6 DFN-22
LTC4089-1*†	1.2	1	500	Linear	4.35V to 5.5V USB, 6V to 36V, 40V max adapter	50	2.5	Timer + C/10	215mΩ <50mΩ (opt.)	3x6 DFN-22
LTC4090	1.2	1	500	Linear	4.35V to 5.5V USB, 6V to 38V, 60V max adapter	50	2.5	Timer + C/10	215mΩ <50mΩ (opt.)	3x6 DFN-22
LTC4098*	1.5	1	700	Switching	4.35V to 5.5V USB, 6V to 38V & 60V transient adapter, 66V OVP	25	3.5	Timer + C/10	180mΩ <50mΩ (opt.)	3x4 QFN-20
LT3650-4.2/8.4	2.0	1-2	n/a	n/a	4.35V to 36V, 40V abs max	85	15	Timer + C/10	n/a	3x3 DFN-12, TSSOP-16
LT3652/HV	2.0	3.3V to 14.4/18V	n/a	n/a	4.9V to 32/36V, 40/40V abs max	85	15	Timer or C/10	n/a	3x3 DFN-12, MSOP-12E
LTC4000 **	>20A	3V to 60V	n/a	n/a	3V to 60V	400	20	Timer or C/x	external	4x5 QFN-28, SSOP-28

* Bat-Track adaptive output control
** Battery charging controller - works in conjunction with externally compensated switching regulator
† 4.1V cell voltage
For a more detailed review of Linear's extensive portfolio of battery chargers, see the Battery Charger Solutions brochure.

36V to 80V Synchronous Buck-Boost Switching Regulators

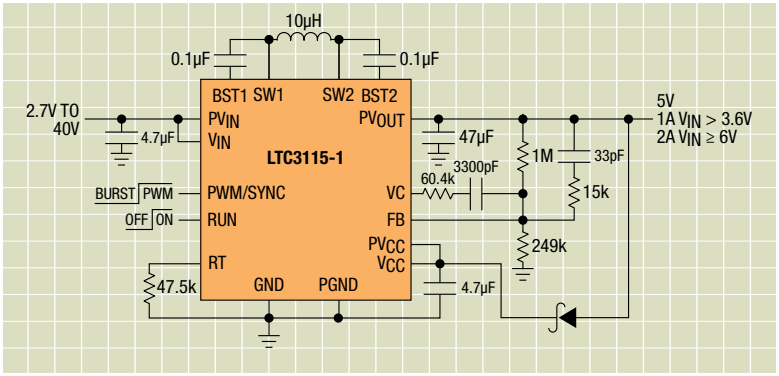
LTC3115-1: 40V, 2A Synchronous Buck Boost DC/DC Converter

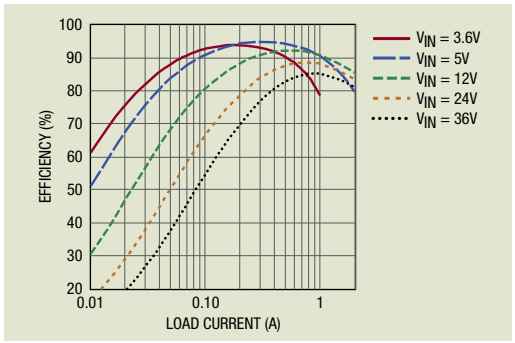
Features:

- Wide V_{IN} Range: 2.7V to 40V
- Wide V_{OUT} Range: 2.7V to 40V
- 1A Output Current for $V_{IN} \geq 3.6V$, $V_{OUT} = 5V$
- 2A Output Current in Step-Down Operation for $V_{IN} \geq 6V$

LTC3115-1
Actual Size
Demo Board

Automotive Input to $5V_{OUT}$





Efficiency vs Output Current

36V to 80V Synchronous Buck-Boost Switching Regulators

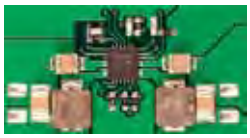
Part Number	Device Architecture	V_{IN} Range(V)	I_{OUT} (A)	V_{OUT} Range(V)	Frequency (MHz)	Ext Sync Range (MHz)	I_Q(uA)	IS_D(µA)	Max Junc Temp (˚C)	Package
LT3433	Non-Synchronous Buck-Boost Regulator	4.0 to 60	0.4	3.3 to 20	200kHz	n/a	100	10	125	TSSOP-16E
LTC3115	Synchronous Buck-Boost Regulator	2.7 to 40	2.0	2.7 to 40	100kHz to 2MHz	100kHz to 2MHz	30	1	125	4x5 DFN-20, TSSOP-20E
LTC3780	Synchronous Buck-Boost Controller	4.0 to 36	10	0.8 to 30	200kHz to 400kHz	200kHz to 400kHz	1.5mA	55	125	SSOP-24, 5x5 QFN-32
LTC3789	Synchronous Buck-Boost Controller	4.0 to 40	10	0.8 to 38	200kHz to 400kHz	200kHz to 400kHz	3mA	40	125	SSOP-24, 4x5 QFN-28
LT3791-1	Synchronous Buck-Boost Controller	4.7 to 60	20.00	0 to 60	200kHz to 700kHz	200kHz to 700kHz	3mA	1	150	TSSOP-38E
LT8705	Synchronous Buck-Boost Controller	2.8 to 80	20.00	1.3 to 80	100kHz to 400kHz	100kHz to 400kHz	2.7mA	1	125	5x7 QFN-38, TSSOP-38E

Low Voltage (<6V) Point-of-Load Synchronous Step-Down Switching Regulators

LTC3615: Dual 4MHz, 3A Synchronous Step-Down DC/DC Converter

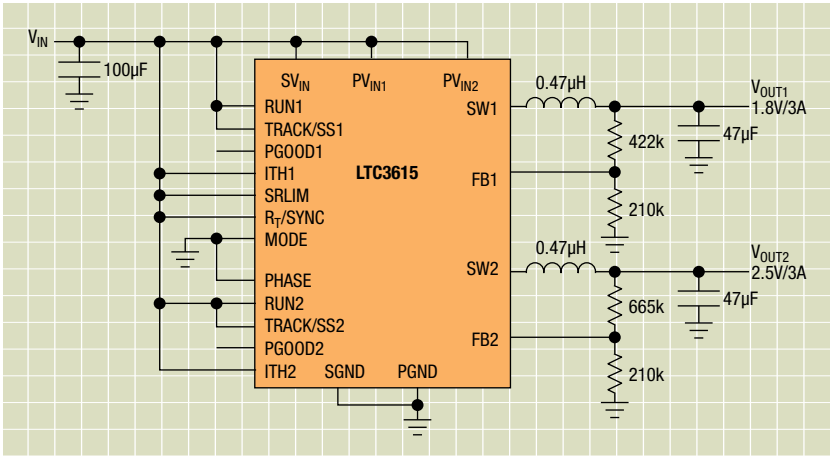
Features:

- High Efficiency: Up to 94%
- Dual Outputs with 2 × 3A Output Current Capability
- Low Output Ripple Burst Mode® Operation: I_Q = 130µA
- 2.25V to 5.5V Input Voltage Range
- ±1% Output Voltage Accuracy



LTC3615
Actual Size
Demo Board

5V_{IN} Dual Output Synchronous Step-Down Converter



Low Voltage (<6V) Point-of-Load Synchronous Step-Down Switching Regulators

Part Number	Device Architecture	V_{IN} Range(V)	$V_{OUT(MIN)}$ (V)	I_{OUT} (A)*	Frequency (MHz)	Ext Sync Range	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LTC3410/B	Synchronous	2.5 to 5.5	0.8	0.3	2.25	n/a	26	1	125	SC70
LTC3542	Synchronous	2.5 to 5.5	0.6	0.5	2.25	1MHz to 3MHz	26	1	125	2x2 DFN-6, ThinSOT
LTC3547/B	Dual Synch	2.5 to 5.5	0.6	0.3/0.3	2.25	n/a	40	1	125	2x3 DFN-8
LTC3406A/AB	Synchronous	2.5 to 5.5	0.6	0.6	1.50	n/a	20	1	125	ThinSOT
LTC3406AB-2	Synchronous	2.5 to 5.5	0.6	0.6	2.25	n/a	200	1	125	ThinSOT
LTC3448	Synchronous	2.5 to 5.5	0.6	0.6	2.25	1.4MHz to 4MHz	32	1	125	MSOP-8E, DFN-8
LTC3543	Synchronous	2.5 to 5.5	0.6	0.6	2.25	1MHz to 3MHz	45	1	125	2x3 DFN-6
LTC3544/B	Quad Synch	2.25 to 5.5	0.8	0.3/0.2/0.2/0.1	2.25	n/a	80	1	125	3x3 QFN-16
LTC3560	Synchronous	2.5 to 5.5	0.6	0.8	2.25	1MHz to 3MHz	16	1	125	ThinSOT
LTC3561	Synchronous	2.6 to 5.5	0.8	1.0	850kHz to 4MHz	n/a	240	1	125	3x3 DFN-10
LTC3446	Synchronous + LDOs	2.7 to 5.5	0.4	1.0/0.3/0.3	2.25	n/a	140	1	125	4x3 DFN-14
LTC3407A	Dual Synch	2.5 to 5.5	0.6	0.6/0.6	1.50	1.5MHz	40	1	125	MSOP-10, 3x3 DFN-10
LTC3409	Dual Synch	1.6 to 5.5	0.6	0.6/0.6	1.70/2.60	1MHz to 3MHz	65	1	125	3x3 DFN-8
LTC3419	Dual Synch	2.5 to 5.5	0.6	0.6/0.6	2.25	n/a	55	1	125	MSOP-10, 3x3 DFN-10
LTC3548	Dual Synch	2.5 to 5.5	0.6	0.8/ 0.4	2.25	2.25MHz	40	1	125	MSOP-10, 3x3 DFN-10
LTC3411A	Synchronous	2.5 to 5.5	0.8	1.25	300kHz to 4.0MHz	400kHz to 4MHz	40	1	125	3x3 DFN-10, MSOP-10
LTC3407A-2	Synchronous	2.5 to 5.5	0.6	0.8/ 0.8	2.25	2.25MHz	40	1	125	MSOP-10, 3x3 DFN-10
LTC3568	Synchronous	2.5 to 5.5	0.8	1.8	850kHz to 4MHz	400kHz to 4MHz	60	1	125	3x3 DFN-10,
LTC3417A-2	Dual Synch	2.25 to 5.5	0.8	1.5/1.0	2.25	2.25MHz	125	1	125	TSSOP-20E, 3x5 DFN-20
LTC3545	Triple Synch	2.25 to 5.5	0.6	0.8/0.8/0.8	2.25	1MHz to 3MHz	58	1	125	3x3 QFN-16
LTC3612	Synchronous	2.25 to 5.5	0.6	3.0	300kHz to 4.0MHz	300kHz to 4.0MHz	70	1	125	TSSOP-20E, 3x4 QFN-20
LTC3412A	Synchronous	2.25 to 5.5	0.8	3.0	300kHz to 4.0MHz	300kHz to 4.0MHz	64	1	125	TSSOP-16E, QFN
LTC3414	Synchronous	2.25 to 5.5	0.8	4.0	300kHz to 4.0MHz	300kHz to 4.0MHz	64	1	125	TSSOP-20E
LTC3614	Synchronous	2.25 to 5.5	0.6	4.0	300kHz to 4.0MHz	300kHz to 4.0MHz	75	1	125	3x5 QFN-24
LTC3416	Synchronous	2.25 to 5.5	0.8	4.0	300kHz to 4.0MHz	n/a	300	1	125	TSSOP-20E
LTC3615	Dual Synchronous	2.25 to 5.5	0.6	3.0 x 2	300kHz to 4.0MHz	400kHz to 4.0MHz	130	1	125	TSSOP-24E, 4x4 QFN-24
LTC3616	Dual Synchronous	2.25 to 5.5	0.6	6.0	300kHz to 4.0MHz	300kHz to 4.0MHz	75	1	125	3x5 QFN-24
LTC3418	Synchronous	2.25 to 5.5	0.8	8.0	300kHz to 4.0MHz	300kHz to 4.0MHz	300	1	125	5x7 QFN-38

* Dependent on External FET

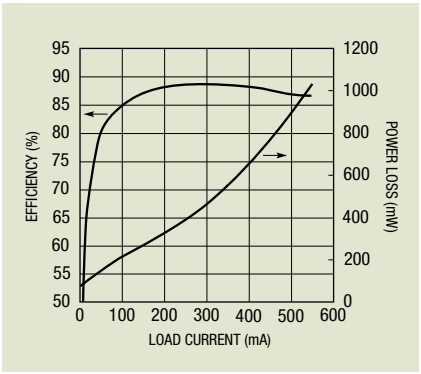
Monolithic Step-Up DC/DC Converters

LT3580: Boost/Inverting DC/DC Converter with 2A Switch, Soft Start and Synchronization

Features:

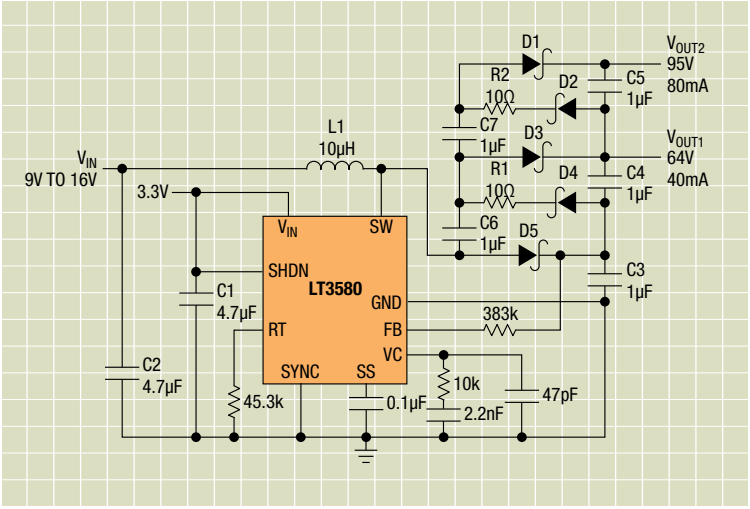
- 2A Internal Power Switch
- Adjustable Switching Frequency
- Single Feedback Resistor Sets V_{OUT}
- Synchronizable to External Clock

LT3580
Actual Size
Demo Board



Efficiency and Power Loss vs Load Current

VFD (Vacuum Flourescent Display) Power Supply
Switches at 15 2MHz to Avoid AM Band
Danger High Voltage! Operation by High Voltage Trained Personnel Only



High Voltage—Outputs to 84V

Part Number	Device Architecture	V_{IN} Range (V)	V_{OUT} Max (V)	I_{SW} (A)	Frequency (MHz)	I_Q(mA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3461/A	Boost	2.5 to 16	38	0.30	1.3/3MHz	2.8	1	125	ThinSOT
LT3460	Boost	2.5 to 16	36	0.32	1.3MHz	2.0	1	125	SC70, ThinSOT
LT1945	Boost	1.0 to 15	36	0.35	COT	20µA	1	125	MSOP-10
LT3495/B/B-1	Boost	2.3 to 16	40	0.65/0.35	LNAPC	60µA	1	125	2x3 DFN-10
LT1930/A	Boost	2.6 to 16	36	1.00	1.2/2.2MHz	4.2/5.5	1	125	ThinSOT
LT3467	Boost	2.4 to 16	40	1.10	1.3MHz	1.0	1	125	ThinSOT
LT1946/A	Boost	2.45 to 16	35	1.50	2.7MHz	3.6	1	125	MSOP-8E
LT1618	Boost	1.6 to 18	36	1.50	1.4MHz	1.8	1	125	MSOP-10
LT3580	Boost	2.5 to 32	42	2.00	200kHz to 2.5MHz	1.0	1	150	3x3 DFN-8, MSOP-8
LT8582	Boost	2.5 to 22, 40 Max	42	3.00	200kHz to 2.5MHz	2.1	1	125	4x7 QFN-24
LT3581	Boost	2.5 to 22, 40 Max	42	3.30	200kHz to 2.5MHz	1.9	1	125	3x4DFN-14, MSOP-16E
LT3956	Boost	4.5 to 80	84	3.30	100KHz to 1MHz	1.6	1	125	5x6 QFN-36
LT3958/A	Boost	5.0 to 80	84	3.30	100KHz to 1MHz	1.6	1	125	5x6 QFN-36
LT3957/A	Boost	3.0 to 40	40	5.00	100KHz to 1MHz	1.7	1	125	5x6 QFN-36
LT3579/-1	Boost	2.5 to 16, 40 Max	42	6.00	200kHz to 2.5MHz	1.9	1	125	4x5 QFN-20, TSSOP-20E

Low Voltage—Outputs to 10V

Part Number	Device Architecture	V_{IN} Range (V)	V_{OUT} Max (V)	I_{SW} (A)	Frequency (MHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LTC3459	Synch Boost	1.5 to 5.5	10	0.75	COT	10	1	85	ThinSOT
LTC3526/B	Synch Boost	0.85 to 5	5.25	0.50	1.0MHz	9	1	85	2x2 DFN-6
LTC3528/B	Synch Boost	0.7 to 5.5	5.25	1.00	1MHz	12	1	85	2x3 DFN-8
LTC3527	Synch Boost	0.7 to 5.5	5.25	0.8 & 0.40	1.2/2.2MHz	12	1	85	3x3 QFN-16
LTC3458	Synch Boost	1.5 to 6	7.50	1.40	400kHz to 1.5MHz	15	1	85	3x4 DFN-12
LTC3422	Synch Boost	1.0 to 4.5	5.25	1.50	100kHz to 3MHz	25	1	85	3x3 DFN-10
LTC3426	Boost	1.6 to 5.25	5.00	2.00	1.2MHz	600	1	85	ThinSOT
LTC3421	Synch Boost	0.5 to 5	5.25	3.00	3MHz	12	1	85	4x4 QFN-24
LTC3425	Synch Boost	0.5 to 4.5	5.25	5.00	8MHz	12	1	85	5x5 QFN-32

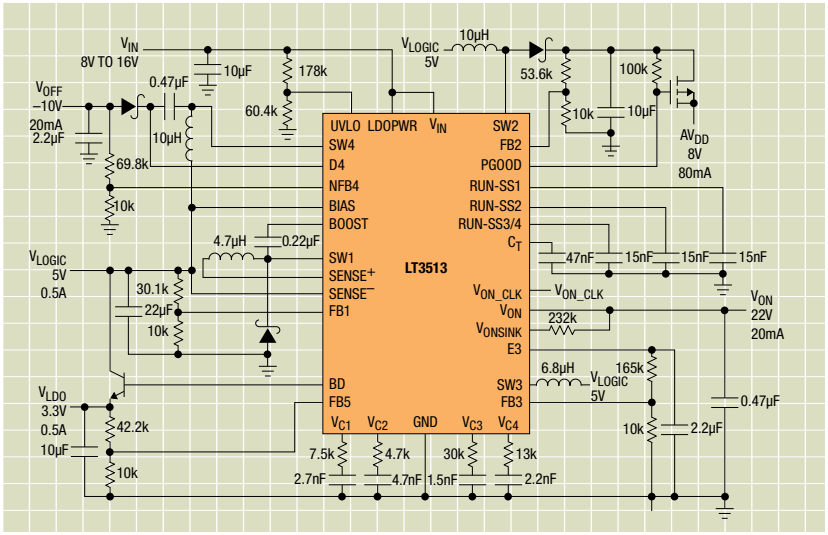
LCD and OLED Biasing—Boost and Inverting Monolithic DC/DC Converters

LT3513: Quad Power Converter for TFT Displays

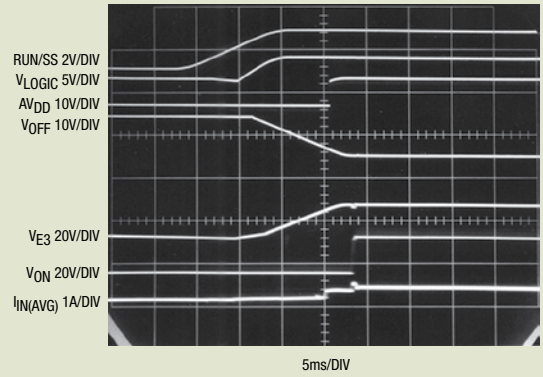
Features:

- Four Integrated Switches: 3A Buck, 2.5A Boost
- 0.35A Boost, 0.35A Inverter (Guaranteed Minimum Current Limit)
- External NPN LDO Driver
- Fixed Frequency, Low Noise Outputs

Quad Output Converter for TFT Displays



Start-Up Waveforms



LT3513
Actual Size
Demo Board

LCD and OLED Biasing DC/DC Converters

Part Number	Device Architecture	V_{IN} Range (V)	V_{OUT} Max (V)	I_{SW} (A)	Frequency (MHz)	I_Q(mA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3472/A	Dual-Boost/Inverter	2.20 to 16	±34	0.25/0.30	1.1MHz	2.8	1	125	3x3 DFN-10
LT1946/A	Boost	2.45 to 16	35	1.50	2.7MHz	3.6	1	125	MSOP-8E
LT3487	Dual-Boost/Inverter	2.30 to 16	±28	0.75/0.90	2MHz	3.7	5.3	125	3x3 DFN-10
LT3580	Boost	2.50 to 32	42	2.00	200kHz to 2.5MHz	1.0	1	150	3x3 DFN-8, MSOP-8
LT3471	Dual-Boost/Inverter	2.40 to 16	±40	1.3/1.3	1.2MHz	2.5	1	125	3x3 DFN-10
LT8582	Boost/Inverter	2.50 to 22, 40 Max	42	3.00	200kHz to 2.5MHz	2.1	1	125	4x7 QFN-24
LT3513	Quad-Buck, Boost, Boost/Inverter + LDO Controller	4.50 to 36	±40	3.0/2.5/0.35/0.35	1.8MHz	10	1	125	5x7 QFN-38

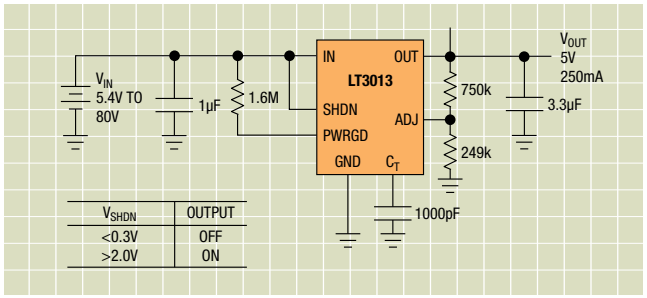
Low Noise LDOs

LT3013/H: 250/200mA, 4V to 80V Low Dropout Micropower LDO with Power Good

Features:

- Wide Input Voltage Range: 4V to 80V
- Low Quiescent Current: 65µA
- Low Dropout Voltage: 400mV
- H-Grade: 140°C Operation, 200mA I_{OUT}
- Adjustable Output from 1.24V to 60V

Automotive Input to 5V with Shutdown



Low Noise LDOs: Positive Regulators

Part Number	Device Architecture	V_{IN} Range(V)	$V_{OUT\ (MIN)}$ (V)	I_{OUT} (A)	Dropout Voltage (V)	Noise (μV_{RMS})	I_Q(µA)	I_{SD}(µA)	Output Voltage (V)	Max Junc Temp (°C)	Package
LT3014/HV	Single	3.0 to 80	1.22	20mA	0.35	115	7	<1	Adj (1.22 to 60)	125	3x3 DFN-8, ThinSOT
LT3008	Single	2.0 to 45	0.60	20mA	0.28	92	3	<1	Adj, 1.2, 1.5, 1.8, 2.5, 3.3, 5	125	2x2 DFN-6,ThinSOT
LT3010/-5H	Single	3.0 to 80	1.275	50mA	0.30	100	30	<1	Adj, 5	140	ThinSOT
LT3011/H	Single	3.0 to 81	1.24	50mA	0.30	100	45	<1	Adj	140	3x3 DFN-10, MSOP-12E
LT1761	Single	1.8 to 20	1.22	100mA	0.30	20	20	1	Adj, 1.5, 1.8, 2, 2.5, 2.8, 3, 3.3, 5	125	ThinSOT
LT3050	Single	2.0 to 45	0.60	100mA	0.30	30	50	<1	Adj, 3.3, 5	125	2x3 DFN-12, MSOP-12E
LT3060/H	Single	1.7 to 45	0.60	100mA	0.30	30	40	<1	Adj, 1.2, 1.5, 1.8, 2.5, 3.3, 5	150	2x2 DFN-8,ThinSOT
LT3023	Dual	1.8 to 20	1.22	2x100mA	0.30	20	40	1	Adj (1.22 to 20)	125	3x3 DFN-10, MSOP-10E
LT3027	Dual	1.8 to 20	1.22	2x100mA	0.30	20	40	1	Adj (1.22 to 20)	125	3x3 DFN-10, MSOP-10E
LT1762	Single	1.8 to 20	1.22	150mA	0.30	20	25	1	Adj, 2.5, 3, 3.3, 5	125	MSOP-8
LT3082	Single	1.2 to 40	0	200mA	1.30	33	500	n/a	Adj (0 to 38.5)	125	3x3 DFN-8, ThinSOT, SOT-223
LT3012	Single	4.0 to 80	1.24	250mA	0.40	100	40	1	Adj (1.24 to 60)	125	3x4 DFN-12, TSSOP-16E
LT3013	Single	4.0 to 80	1.24	250mA	0.40	100	65	1	Adj (1.24 to 60)	125	3x4 DFN-12, TSSOP-16E
LT3012H	Single	4.0 to 80	1.24	200mA	0.40	100	40	1	Adj (1.24 to 60)	140	TSSOP-16E
LT3013H	Single	4.0 to 80	1.24	200mA	0.40	100	65	1	Adj (1.24 to 60)	140	TSSOP-16E
LT1962	Single	1.8 to 20	1.22	300mA	0.27	20	30	1	Adj, 1.5, 1.8, 2.5,, 3, 3.3, 5	125	MSOP-8
LT1763	Single	1.8 to 20	1.22	500mA	0.30	20	30	1	Adj, 1.5, 1.8, 2.5,, 3, 3.3, 5	125	SO-8
LT3085	Single	1.2 to 36	0	500mA	0.275	33	1mA	n/a	Adj (0 to 35.7)	125	2x3 DFN-6, MSOP-8E
LT3024	Dual	1.8 to 20	1.22	100/500mA	0.30	20	60	1	Adj (1.22 to 20)	125	3x4 DFN-12, TSSOP-16E
LT3028	Dual	1.8 to 20	1.22	100/500mA	0.30	20	60	1	Adj (1.22 to 20)	125	3x5 DFN-16, TSSOP-16E
LT3029/H	Dual	1.8 to 20	1.215	500/500mA	0.30	20	55/55	<1	Adj (1.215 to 19.5)	150	3x4 DFN-16, MSOP-16E
LT3030/H	Dual	1.8 to 20	1.215	750/250mA	0.30	20	110/70	<1	Adj (1.215 to 19.5)	150	4x5 QFN-28,TSSOP-20E
LT1965	Single	1.8 to 20	1.20	1.1	0.29	40	500	1	Adj (1.20 to 20)	125	3x3 DFN-8, MSOP-8E, TO-220-5, DDPak-5
LT3080	Single	1.2 to 36, 40 Max	0	1.1	0.3 **	40	1mA	1	Adj (0 to 36) ***	125	3x3 DFN-8,MSOP-8E, TO-220-5, SOT-223
LT1963/A	Single	2.1 to 20	1.21	1.5	0.34	40	1mA	1	Adj, 1.5, 1.8, 2.5, 3.3	125	DDPak-5, TO-220-5, SOT-223, SO-8
LT3081	Single	1.2 to 40	0	1.5	1.20	30	1.1mA	n/a	Adj (0 to 38.8)	125	4x4 DFN-12, TSSOP-16, TO-220-7, DDPak-7
LT3086	Single	1.55 to 36	0.4	2.1	1.20	35	330	<1	Adj (0.4 to 32)	125	4x5 DFN-16, TSSOP-16, TO-220-7, DDPak-7
LT3083	Single	1.2 to 8/18 *	0	3	1.45	40	1mA	n/a	Adj (0 to 7.5 or 0 to 17.5 *)	125	4x4 DFN-12, TSSOP-16E, TO-220, DDPak-5
LT1764/A	Single	2.7 to 20	1.21	3	0.34	40	1mA	1	Adj, 1.8, 2.5, 3.3	125	DDPak-5, TO-220-5

* DD-Pak and TO-220 packages
** in two supply operation
*** single resistor V_{OUT} set

Low Noise LDOs: Negative Regulators

Part Number	Device Architecture	V_{IN} Range(V)	$V_{OUT(MIN)}$ (V)	I_{OUT} (A)	Dropout Voltage (V)	Noise (µVRMS)	I_Q(µA)	I_{SD}(µA)	Output Voltage (V)	Max Junc Temp (°C)	Package
LT1964	Single	–1.9 to –20	–1.21	200mA	0.34	30	30	3	Adj, –5	125	ThinSOT
LT3032	Dual	±1.9 to ±20	±1.22	150mA x 2	0.30/0.34	20/30	55	<1	Adj, ±5	125	3x4 DFN-14
LT1175	Single	–4.3 to –20	–3.80	500mA	0.50	n/a	45	10	Adj, –5	125	DD, SOT-223, SO-8, PDIP8
LT3015	Single	–1.9 to –30	–1.22	1.5A	0.34	60	1.2mA	<1	Adj	125	3x3 DFN-8, MSOP-12E, DD-Pak, TO-220
LT1185	Single	–4.3 to –35	–2.40	3A	0.80	n/a	2.5mA	1	Adj	125	T5

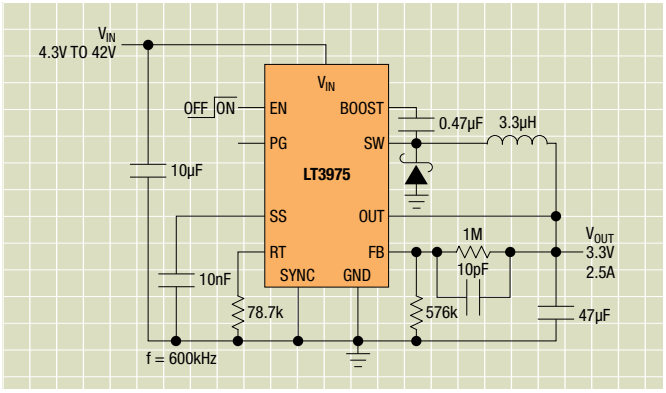
H-Grade (150°C Maximum Junction Temperature) Power Products

LT3975: 42V, 2.5A, 2MHz Step-Down DC/DC Converter with Ultralow Quiescent Current

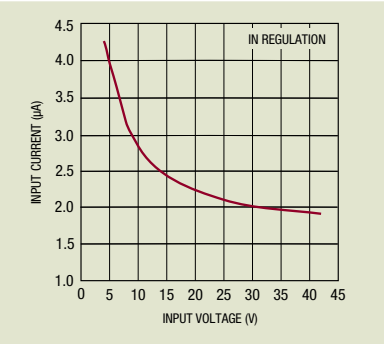
Features:

- Ultralow Quiescent Current: 2.7µA I_Q at 12V_{IN} to 3.3V_{OUT}
- Low Ripple (< 15mV_{P-P}) Burst Mode® Operation
- Wide Input Range: Operation from 4.3V to 42V
- 2.5A Maximum Output Current
- Excellent Start-Up and Dropout Performance

42V Monolithic Step-Down Converter



Supply Current vs Input Voltage



LT3975
Actual Size
Demo Board

H-Grade Power Products

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)	V_{OUT} Max/ Min (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (°C)	Package
LT3010/-5H	LDO	1.5 to 80	0.05	1.275	n/a	n/a	30	1	140	MSOP-8E
LT3011H	LDO	3.0 to 80	0.05	1.24	n/a	n/a	45	<1	140	3x3 DFN-10, MSOP-12E
LT3060H	LDO	1.7 to 45	0.10	0.60	n/a	n/a	40	<1	150	2x2 DFN-8,ThinSOT
LT3029H	LDO	1.8 to 20	0.5 / 0.5	1.215	n/a	n/a	55/55	<1	150	3x4 DFN-16, MSOP-16E
LT3030H	LDO	1.8 to 20	0.75 / 0.25	1.215	n/a	n/a	110/70	<1	150	4x5 QFN-28,TSSOP-20E
LT3012H	LDO	4.0 to 80	0.20	1.24	n/a	n/a	40	1	140	TSSOP-16E
LT3013H	LDO	4.0 to 80	0.20	1.24	n/a	n/a	65	1	140	TSSOP-16E
LT3470H	Step-Down	4.0 to 40	0.20	1.25	Hysteretic	n/a	26	1	150	2x3 DFN-8, ThinSOT
LT3970H	Step-Down	4.2 to 42	0.35	1.25	200 to 2.2MHz	200 to 2.2MHz	2.5	1	150	2x3 DFN-10, MSOP-10
LT3990H	Step-Down	4.2 to 62	0.35	1.21	200 to 2MHz	250 to 2MHz	2.5	1	150	3x3 DFN-10, MSOP-16E
LT3437H	Step-Down	3.3 to 60	0.40	1.25	200	240 to 700	100	1	140	TSSOP-16E
LT3645H	Step-Down + LDO Controller	3.6 to 36, 55 Max	0.50	0.80	750	n/a	1.7mA	1	150	MSOP-12E
LTC3630H	Synchronous Step-Down	4.0 to 65	0.50	0.80	Hysteretic	n/a	12	1	150	3x5 DFN-16, MSOP-16E
LT1933H	Step-Down	3.6 to 36	0.60	1.25	500	n/a	1.2mA	2	150	ThinSOT, 2x3 DFN-6
LT3689H	Step-Down with POR	3.6 to 36, 60 Max	0.70	0.80	350 to 2.2MHz	350 to 2.2MHz	85	1	150	3x3 QFN-16, MSOP-16E
LT3973H	Step-Down	4.3 to 42	0.75	1.21	200 to 2.2MHz	250 to 2.2MHz	2.5	1	150	3x3 DFN-10, MSOP-10E
LT3695H	Step-Down with Fault Protection	3.6 to 36, 60 Max	1.00	0.80	250 to 2.2MHz	250 to 2.2MHz	75	1	150	MSOP-16E
LT3686/AH	Step-Down	3.6 to 37, 60 Max	1.20	0.80	300 to 2.5MHz	300 to 2.5MHz	1.1mA	1	150	3x3 DFN-10, MSOP-10E
LT1766H	Step-Down	5.5 to 60	1.20	1.20	200	228 to 700	2.5mA	25	140	TSSOP-16E
LT1976H	Step-Down	3.3 to 60	1.20	1.20	200	230 to 600	100	1	140	TSSOP-16E
LT3663H	Step-Down with Current Limiting	7.5 to 36, 60 Max	1.20	3.30	1.5MHz	n/a	2.4mA	1	150	2x3 DFN-8, MSOP-8
LT1936H	Switching Regulator	3.6 to 36	1.40	1.20	500	n/a	1.9mA	1	150	MSOP-8E
LT3509H	Dual Step-Down	3.6 to 36, 60 Max	2 x0.70	0.80	300 to 2.2MHz	300 to 2.2MHz	1.9mA	1	150	3x4 DFN-14,MSOP-16E
LT3688H	Dual Step-Down w/POR/Watchdog	3.6 to 36	2 x0.80	0.80	350 to 2.5MHz	350 to 2.5MHz	115	1	150	4x4 QFN-24,TSSOP-24E
LT3480H	Step-Down	3.6 to 38, 60 Max	2.00	0.80	200 to 2.4MHz	250 to 2MHz	70	1	150	3x3 DFN-10, MSOP-10E
LT3481H	Step-Down	3.6 to 34, 36 Max	2.00	1.26	300 to 2.8MHz	n/a	50	1	150	3x3 DFN-10, MSOP-10E
LT3500H	Step-Down + LDO Controller	3.6 to 40V	2.00	0.80	250 to 2.5MHz	250 to 2.5MHz	2.5mA	12	150	3x3 DFN-12
LT3580H	Boost	2.5 to 32	42	2.00	200 to 2.5MHz	200 to 2.5MHz	1.0mA	1	150	3x3 DFN-8, MSOP-8

H-Grade Power Products (continued)

Part Number	Device Architecture	V_{IN} Range (V)	I_{OUT} (A)	V_{OUT} Max/ Min (V)	Frequency (kHz)	Ext Sync Range (kHz)	I_Q(µA)	I_{SD}(µA)	Max Junc Temp (˚C)	Package
LT3988H	Dual Step-Down	4.0 to 60, 80 Max	2x1.0	0.75	250 to 2.5MHz	250 to 2.5MHz	2.0mA	1	150	MSOP-16E
LT3641H	Dual Step-Down	4.0 to 42, 55 Max	1.3 + 1.1	0.60	350 to 2.5MHz	350 to 2.5MHz	290	1	150	4x5 QFN-28,TSSOP-28E
LT8610H	Synchronous Step-Down	3.4 to 42	2.5	0.985	200 to 2.2MHz	200 to 2.2MHz	2.5	1	150	MSOP-16E
LT8611H	Synchronous Step-Down	3.4 to 42	2.5	0.985	200 to 2.2MHz	200 to 2.2MHz	2.5	1	150	3x5 QFN-24
LT3975	Step-Down	4.3 to 42	2.5	1.20	200 to 2MHz	200 to 2MHz	2.7	1	150	MSOP-16E
LT3508H	Dual Step-Down	3.7 to 36	1.4 x 2	0.80	250 to 2.5MHz	250 to 2.5MHz	4.6mA	1	150	4x4 QFN-24, TSSOP-16E
LT3507/AH	Triple Step-Down Regulator + LDO Controller	4.0 to 36	2.7, 2x1.8	0.80	250 to 2.5MHz	250 to 2.5MHz	7mA	1	150	5x7 QFN-38
LT3680H	Step-Down	3.6 to 36	3.5	0.79	200 to 2.4MHz	250 to 2MHz	75	1	150	3x3 DFN-10, MSOP-10E
LT3972H	Step-Down	3.6 to 33, 62 Max	3.5	0.79	200 to 2.4MHz	250 to 2MHz	75	1	150	MSOP-10E
LT3690H	Synchronous Step-Down	3.9 to 36, 60 Max	4.0	0.80	170 to 1.5MHz	170 to 1.5MHz	70	1	150	4x6 QFN-26
LT3976	Step-Down	4.3 to 40	5.0	1.2	200 to 2MHz	200 to 2MHz	3.3	1	150	MSOP-16E
LT3692/AH	Dual Step-Down	3.0 to 36, 60 Max	2x3.5	0.80	250 to 2.25MHz	250 to 2MHz	4.0mA	10	150	5x5 QFN-32, TSSOP-38E
LT3992H	Dual Step-Down	3.0 to 60	3 x 2	0.80	250 to 2MHz	250 to 2MHz	4.7mA	6	150	5x5 QFN-32, TSSOP-38E
LT3517H	Buck, Boost, Buck/Boost LED Driver	3.0 to 30, 40 Max	1.5	45	250 to 2.5MHz	250 to 2.5MHz	6.0mA	1	150	4x4 QFN-16,TSSOP-16E
LT3518H	Buck, Boost, Buck/Boost LED Driver	3.0 to 30, 40 Max	2.3	45	250 to 2.5MHz	250 to 2.5MHz	6.0mA	1	150	4x4 QFN-16,TSSOP-16E
LT3599H	4-Channel Boost LED Driver	3.0 to 30, 36 Max	2.0	44	200 to 2.5MHz	200 to 2.5MHz	2.0mA	1	150	5x5 QFN-32, TSSOP-28E
LT3496H	3-Channel Boost LED Driver	3.0 to 30, 40 Max	3 x 0.75	45	330 to 2.1MHz	330 to 2.1MHz	11mA	1	150	4x4 QFN-28
LT3755H	Buck, Boost, Buck/Boost LED Driver	4.5 to 40	Ext FET	Limited by ext. FET	100 to 1MHz	100 to 1MHz	1.4mA	1	150	3x3 QFN-16, MSOP-16E
LT3756H	100V LED Controller	6.0 to 100	Ext FET	Limited by ext. FET	100 to 1MHz	100 to 1MHz	1.4mA	1	150	3x3 QFN-16, MSOP-16E
LT3796H	Buck, Boost, Buck/Boost LED Driver	6.0 to 100	Ext FET	Limited by ext. FET	100 to 1MHz	100 to 1MHz	2.5mA	1	150	TSSOP-28E
LT3791/-1H	Synchronous Buck-Boost LED Driver	4.2 to 60	Ext FET	60	200 to 700	200 to 700	3mA	1	150	TSSOP-38E
LTC3803/-5/-3H	Controller	4.0 & Higher*	Ext FETs	0.8	200	n/a	240	1	150	ThinSOT-6
LTC1772H	Controller	2.5 to 9.8	Ext FETs	0.8	550	n/a	270	22	140	ThinSOT-6
LTC1871H	Boost, Flyback & SEPIC Controller	2.5 to 36	Ext FETs	1.23	50 to 1MHz	65 to 1.3MHz	550	20	150	MSOP-10
LTC3589H	Eight (1A) Channel Synchronous Buck	2.7 to 5.5	8 x 1A	0.75	1.12 to 2.25MHz	n/a	19	8	150	6x6 QFN-40
LTC3859AH	Buck/Buck/Boost Synchronous Controller	2.5 to 38	Ext FETs	0.8	50 to 900	75 to 850	55	14	150	QFN-38, TSSOP-38
LTC3703H	Synchronous Controller	9.3 to 100	Ext FETs	0.8	100 to 600	100 to 600	1.70mA	50	150	SSOP-16, TSSOP-28
LTC3731H	Synchronous Controller	4.0 to 36	Ext FETs	0.6	250 to 600	250 to 600	2.30mA	100	140	SSOP-36
LTC3851AH/-1	Synchronous Step-Down Controller	4.0 to 38	25		250 to 750	250 to 750	1.20mA	20	150	QFN-16, SSOP-16, TSSOP-16
LTC3824	Low IQ Step-Down Controller	4.0 to 60	5.0		200 to 600	230 to 600	40	9	150	MSOP-10
LTC3891H	LowIQ Synchronous Step-Down Controller	4.0 to 60	20		50 to 900	75 to 750	50	14	150	QFN-29, TSSOP-20
LTC3890H	Dual Low IQ Synchronous Step-Down Controller	4.0 to 60	2x20		50 to 900	75 to 750	50	14	150	QFN-32
LTC3810H-5	Synchronous Step-Down Controller	4.2 to 60	20		100 to 1MHz	100 to 1MHz	3.0mA	240	150	QFN-32
LTC3872	No Rsense Boost Controller	2.75 to 9.8	5.0		550	n/a	250	8	150	TSOT-23, DFN-8
LT3757AH	Boost, Flyback, SEPIC and Inverting Controller	2.9 to 40	5.0		100 to 1MHz	100 to 1MHz	1.60mA	1	150	DFN-10, MSOP-10
LT3758AH	Boost, Flyback, SEPIC and Inverting Controller	5.5 to 100	5.0		100 to 1MHz	100 to 1MHz	1.75mA	1	150	DFN-10, MSOP-10
LT3759H	Boost, SEPIC and Inverting Controller	1.6 to 42	5.0		100 to 1MHz	100 to 1MHz	350	1	150	MSOP-12
LTC3787H	Multiphase Synchronous Boost Controller	4.5 to 38	20		50 to 900	75 to 850	135	8	150	QFN-28, SSOP-28
LTC3862/-1	Multiphase Boost Controller	4/8.5 to 36	10		50 to 650	75 to 500	1.80mA	30	150	QFN-24, TSSOP-24, SSOP-24
LT3748H	500V Flyback	5.0 to 100	5.0		Variable	n/a	1.30mA	1	150	MSOP-16(12)
LT8300H	100V Flyback Converter	6.0 to 100	0.5		Variable	n/a	33	70	150	TSOT-23
LTC3765H	Active Clamp Forward Controller	8.0 & Higher*	50		75 to 430	75 to 430	1.70mA	n/a	150	MSOP-16
LTC3766H	Secondary-Side Synchronous Forward Controller	8.0 & Higher*	50		75 to 550	75 to 550	5.0mA	210	150	QFN-28, SSOP-28
LTC3900H	Forward Synchronous Rectifier Driver Controller	4.5 to 11	50		100 to 500	100 to 500	500	1	150	SO-8

*Limited by external components.

High Efficiency LED Drivers

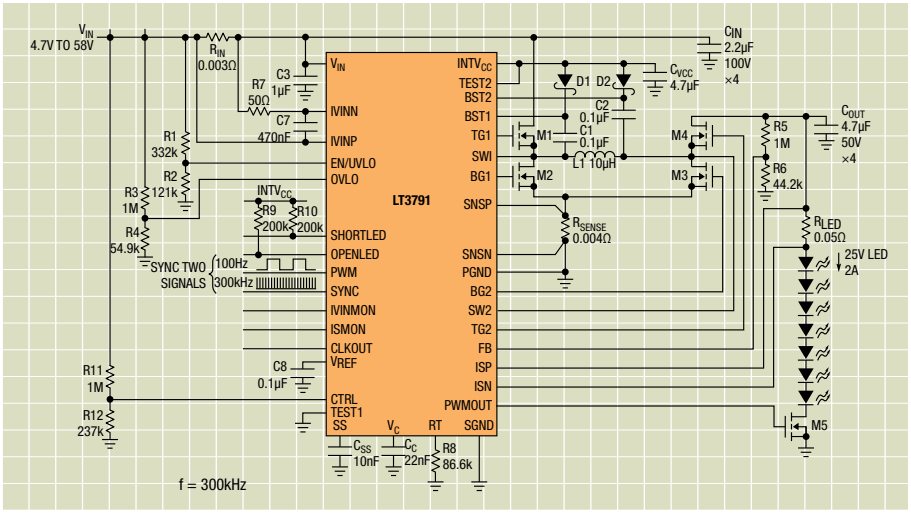
LT3791: 60V, 4-Switch Synchronous Buck-Boost LED Driver

Features:

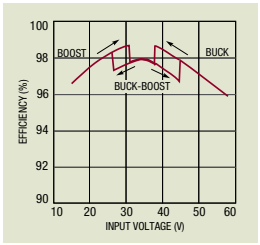
- 4-Switch Single Inductor Architecture Allows V_{IN} Above, Below or Equal to V_{OUT}
- Wide V_{IN} Range: 4.7V to 60V
- Wide V_{OUT} Range: 0V to 60V (55V LED)
- ±2% Output Voltage Accuracy

LT3791
Actual Size
Demo Board

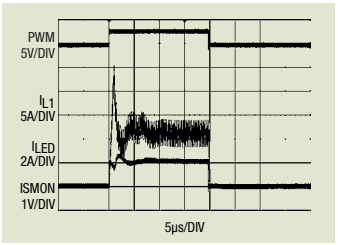
Automotive Input Synchronous Buck-Boost 50W LED Driver



Efficiency vs Input Voltage



PWM Dimming



High Efficiency LED Drivers

Part Number	Topology	Dimming Type	Max # of LEDs X ILED from 12 V_{IN}	LED Configuration	Input Voltage Range (V)	Max. Output Voltage (V)	I_{SW} (A)	Frequency (MHz)	Over Voltage Protection	Max Junc Temp (°C)	Package
LT3517	Buck, Boost, Buck/Boost	5000:1 PWM, 20:1 Analog	4x 300mA	Series	3 to 30, 40 Max	45	1.3	250kHz to 2.5MHz	Yes	150	4x4 QFN-16, TSSOP-16E
LT3474/-1	Buck Mode	400:1 PWM	2 x 1A	Series	4 to 36	9/34	1.6	200kHz to 2MHz	Yes	125	TSSOP-16E
LT3496	Buck, Boost, Buck/Boost	3,000:1 PWM	3 x 10 x 100mA	Triple Parallel Strings	3 to 30, 40 Max	45	3 x 0.75	330kHz to 2.1MHz	Yes	150	4x4 QFN-28
LT3598	6-Channel Boost	3000:1 PWM, 20:1 Analog	6 x 10 x 30mA	Six Parallel Strings	3 to 30	44	1.5	200kHz to 2.5MHz	Yes	125	4x4 QFN-24
LT3599	4-Channel Boost	3000:1 PWM, 20:1 Analog	4 x 10 x 100mA	Four Parallel Strings	3 to 30	44	2.0	200kHz to 2.5MHz	Yes	150	5x5 QFN-32, TSSOP-28E
LT3518	Buck, Boost, Buck/Boost	5000:1 PWM, 20:1 Analog	8x 300mA	Series	3 to 30, 40 Max	45	2.3	250kHz to 2.5MHz	Yes	150	4x4 QFN-16, TSSOP-16E
LT3475/-1	Dual Buck Mode	3,000:1 PWM	4 x 1.5A	Dual Parallel Strings	4 to 36, 40 Max	9/34	2x2.3	200kHz to 2MHz	Yes	125	TSSOP-20E
LT3478/-1	Buck, Boost, Buck/Boost	3000:1 PWM	6 x 1A	Series	2.8 to 36, 40 Max	40	4.5	200kHz to 2.25MHz	Yes	125	TSSOP-16E
LT3476	Buck, Boost, Buck/Boost Quad	1000:1 PWM	4 x 8 x 350mA	4 x Mutiple Series String	2.8 to 16	36	4 x 1.5	200kHz to 2MHz	Yes	125	5x7 QFN-38
LT3760	8-Channel Boost	3000:1 PWM, 25:1 Analog	8 x 10 x 100mA	Eight Parallel Strings	6 to 40	45	Ext FET	100kHz to 1MHz	Yes	125	TSSOP-28E
LT3754	16-Channel Boost	3000:1 PWM, 25:1 Analog	16 x 10 x 50mA	Sixteen Parallel Strings	6 to 40	45	Ext FET	100kHz to 1MHz	Yes	125	5x5 QFN-28
LT3761	Buck, Boost, Buck/Boost LED Driver w/PWM	3000:1 PWM, 20:1 Analog	14 x 1A	Series	4.5 to 60	80	Ext FET	100kHz to 1MHz	Yes	125	MSOP-16E
LT3797	Triple Buck, Boost, Buck/Boost	3000:1 PWM, 20:1 Analog	3 x 14 x 1A	Series	2.5 to 40, 60 Max	100	Ext FET	100kHz to 1MHz	Yes	125	7x8 QFN-52
LT3795	Buck, Boost, Buck/Boost	3000:1 PWM, 20:1 Analog	14 x 1A	Series	6 to 100	100	Ext FET	100kHz to 1MHz	Yes	125	TSSOP-28E
LT3796	Buck, Boost, Buck/Boost	3000:1 PWM, 20:1 Analog	20 x 400mA	Series	6 to 100	100	Ext FET	100kHz to 1MHz	Yes	125	TSSOP-28E
LT3791/-1	Synchronous Buck-Boost	100:1 PWM, 20:1 Analog	14 x 2A	Series	4.2 to 60	60	Ext FET	200kHz to 700kHz	Yes	150	TSSOP-38E
LT3755	Buck, Boost, Buck/Boost	3000:1 PWM, 20:1 Analog	14 x 1A	Series	4.5 to 40	Limited by ext. FET	Ext FET	100kHz to 1MHz	Yes	150	3x3 QFN-16, MSOP-16E
LT3756	Buck, Boost, Buck/Boost	3000:1 PWM, 20:1 Analog	14 x 1A	Series	6 to 100	Limited by ext. FET	Ext FET	100kHz to 1MHz	Yes	150	3x3 QFN-16, MSOP-16E
LT3956	Constant Current/Constant Voltage Converter	3000:1 PWM, 20:1 Analog	18 x 0.35A	Series	4.5 to 80	80	Ext FET	100kHz to 1MHz	Yes	125	5x6 QFN-36
LT3763	High Current Synchronous Step-Down	3000:1 PWM, 20:1 Analog	4 x 20A	Series	6 to 60	55	Ext FET	200kHz to 1MHz	Yes	125	TSSOP-28E
LT3741	High Current Synchronous Step-Down	3000:1 PWM, 20:1 Analog	4 x 20A	Series	6 to 36	32	Ext FET	200kHz to 1MHz	Yes	125	4x4 QFN-20, TSSOP-20E
LT3743	High Current Synchronous Step-Down	3000:1 PWM, 20:1 Analog	4 x 20A	Series	6 to 36	32	Ext FET	200kHz to 1MHz	Yes	125	4x5 QFN-28, TSSOP-28E

Digital Power Management

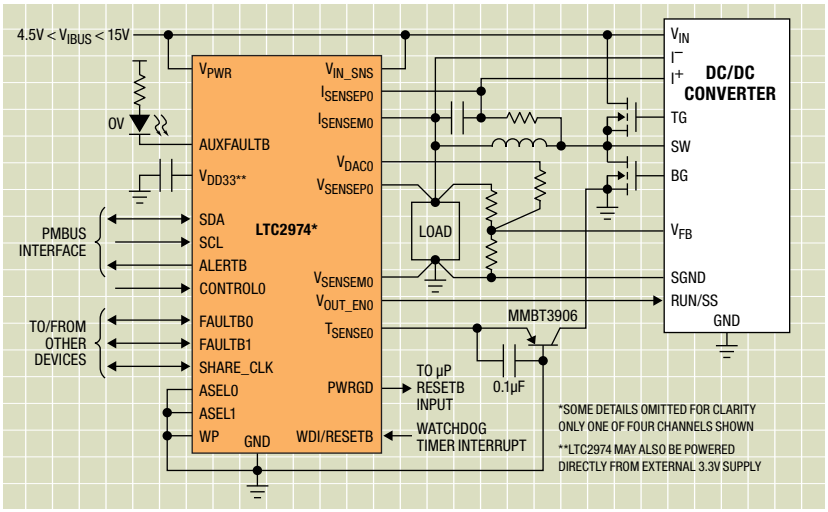
Features:

- Digitally Managed Power Supplies Provide Easier and Faster Design, Debug and Troubleshooting Capabilities for Multirail Applications
- EEPROM Provides User Configuration, Fault Logging, and Telemetry Readback for Voltage, Current and Temperature
- Up to ±0.25% Max Total Unadjusted Error Over Temperature
- I²C/SMBus Interface, PMBus Command Set
- PMBus Compliant Devices All Managed with Intuitive and Powerful LTpowerPlay™ GUI

Applications:

- Infotainment
- Battery Management

LTC2974 Quad Digital Power Supply Manager with EEPROM

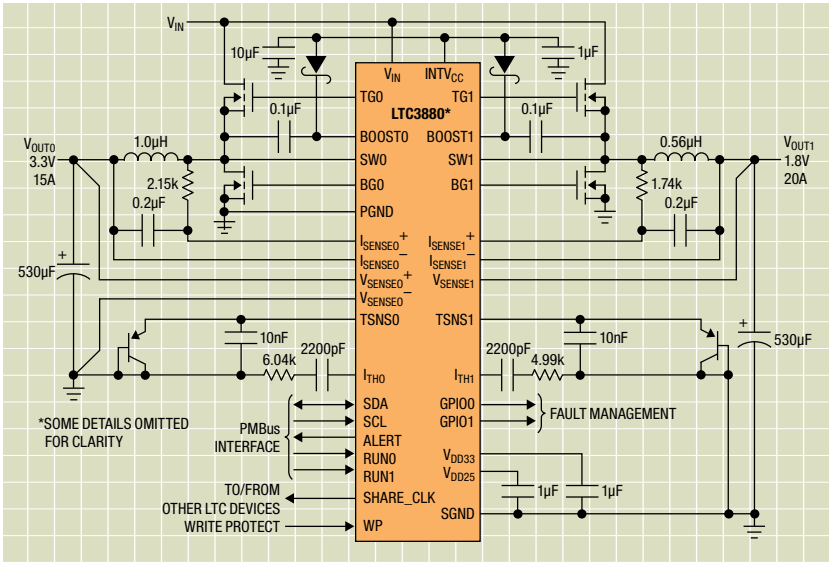


LTC3880: Dual Output PolyPhase Step-Down DC/DC Controller with Digital Power System Management

Features:

- PMBus/I²C Compliant Serial Interface
  - Telemetry Read Back Includes V_{IN}, I_{IN}, V_{OUT}, I_{OUT}, Temperature and Faults
  - Programmable Voltage, Current Limit, Digital Soft-Start/Stop, Sequencing, Margining, OV/UV and Frequency Synchronization (250kHz to 1MHz)
- ±0.5% Output Voltage Accuracy Over Temperature
- Integrated 16-Bit ADC
- Internal EEPROM and Fault Logging
- Wide V_{IN} Range: 4.5V to 24V
- V_{OUT} Range: 0.5V to 5.5V
- Analog Current Mode Control Loop
- Accurate PolyPhase® Current Sharing for Up to Six Phases

Dual Output Buck Converter with Digital Power System Management



Part Number	Function	Number of Outputs	Supply Voltage (V)	EEPROM	PMBus Compliant	Monitors	Supervises	Sequences	Margins	Maximum Ambient Temperature	Packages
LTC2978	Octal Supply Manager	8	3.3 to 15	•	•	V, I	V	•	•	85°C	9x9 QFN-64
LTC2974	Quad Supply Manager	4	3.3 to 15	•	•	V, I, T	V, I, T	•	•	85°C	9x9 QFN-64
LTC2970	Dual Supply Manager	2	5.0 to 15			V			•	85°C	4x5 QFN-24
LTC3880	Dual Step-Down Controller	2	4.5 to 24	•	•	V, I, T	V, I, T	•	•	85°C	6x6 QFN-40
LTC3883	Single Step-Down Controller	1	4.5 to 24	•	•	V, I, T	V, I, T	•	•	85°C	5x5 QFN-32

High Voltage Battery Stack Monitors for Battery Management Systems

Applications:

- Passenger Automobiles (EV, HEV)
- Electric Bicycles (Motorcycles, Scooters)
- Commercial Vehicles (Buses, Trains)
- Industrial Equipment (Forklifts, Trucks)
- Marine (Boats, Submarines)
- Mil/Aero (Planes, Satellites, Unmanned Vehicles)

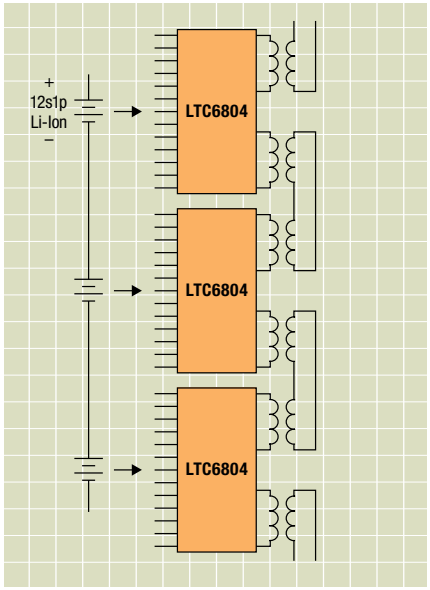
Part Number	Primary Function	Measurement Error Max	Multichip Interface	Package	Comments
LTC6804-1	12 Cell Measurements	0.10%	isoSPI, Daisy-Chain	SSOP-48	3rd Generation: High Noise Immunity High Accuracy, 240usec Conversion
LTC6804-2	12 Cell Measurements	0.10%	isoSPI, Addressable	SSOP-48	3rd Generation: High Noise Immunity High Accuracy, 240usec Conversion
LTC6803-1/3	12 Cell Measurements	0.25%	SPI, Daisy-Chain	SSOP-44	2nd Generation: High Noise Immunity, 0uA shutdown
LTC6803-2/4	12 Cell Measurements	0.25%	SPI, Addressable	SSOP-44	2nd Generation: High Noise Immunity, 0uA shutdown
LTC6802-1	12 Cell Measurements	0.25%	SPI, Daisy-Chain	SSOP-44	1st Generation: Superseded by the LTC6804 and LTC6803 for new designs
LTC6802-2	12 Cell Measurements	0.25%	SPI, Addressable	SSOP-44	1st Generation: Superseded by the LTC6804 and LTC6803 for new designs
LTC6801	12 Cell Fault Monitor	0.50%	Differential Clock Signals, Daisy-Chain	SSOP-36	Standalone Undervoltage/Overvoltage Monitor, Provides Redundancy

LTC6804: Next Generation Battery Stack Monitor

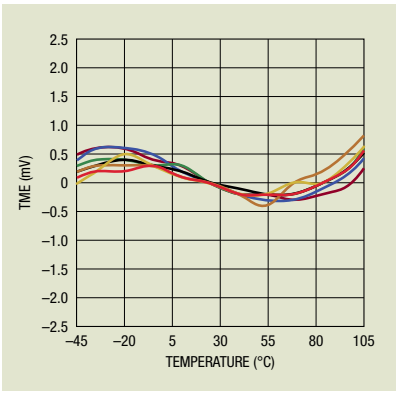
Features:

- Measures Up to 12 Battery Cells in Series
- Stackable Architecture Supports 100s of Cells
- Built-in isoSPI™ Interface
- Delta-Sigma ADC With Frequency Programmable 3rd Order Noise Filter
- 1.2mV Maximum Total Measurement Error
- 240µs to Measure All Cells in a System
- Synchronized Voltage and Current Measurement
- Engineered for ISO26262 Compliant Systems
- Passive Cell Balancing with Programmable Timer
- General Purpose I/O for Digital or Analog Inputs, also Configurable for I²C Interface
- 4µA Sleep Mode Supply Current
- 48-Lead SSOP Package

Stackable BMS Architecture



TME vs Temperature of 7 Typical Units

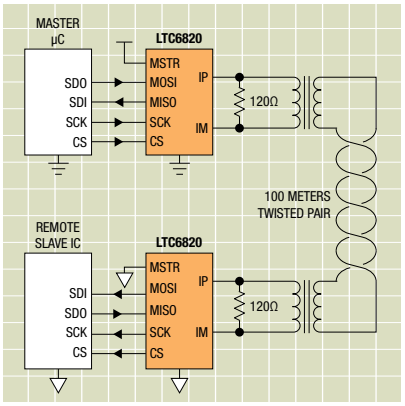


LTC6820: Noise Immune, Isolated, Bidirectional SPI Communications

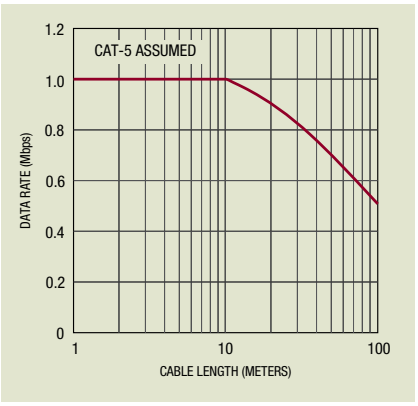
Features:

- Supports LTC6804 High Voltage Battery Monitor
- 1Mbps Isolated SPI Using Standard Transformers
- Bidirectional Interface Over a Single Twisted Pair
- Supports Cable Lengths Up to 100 Meters
- Configurable for High Noise Immunity or Low Power
- Ultralow, 2.5µA Idle Current
- Interfaces to All Logic from 1.8V to 5V
- 16-Lead QFN and MSOP Packages

Isolated 2-Wire Communication



Data Rate vs Cable Length

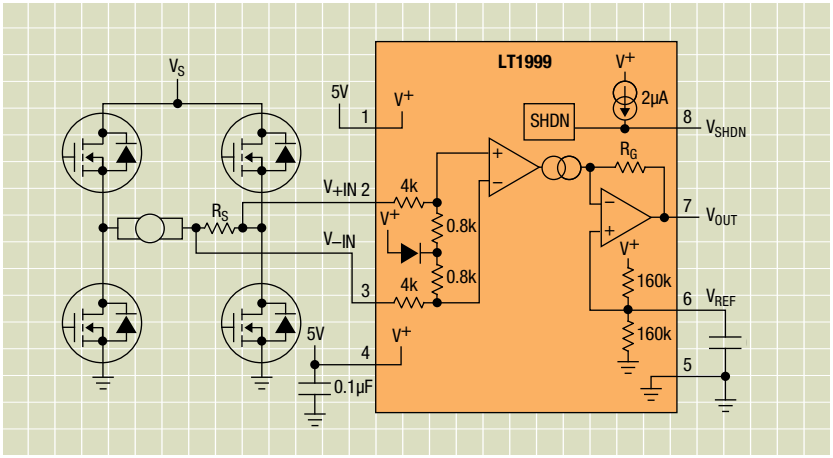


Current Sense Amplifiers

Applications:

- H-Bridge Motor Control
- Solenoid Current Sense
- PWM Control Loops
- Hydraulic Controls
- Lamp Monitoring
- Glow Plug Control
- Load Monitoring
- HEV/EV Battery Management Systems
- 12V / 24V Battery Monitoring
- High Voltage Data Acquisition
- Remote Sensing
- Overcurrent and Fault Detection
- Cable Drop Compensation
- Fuse/MOSFET Monitoring

Full Bridge Armature Current Monitor



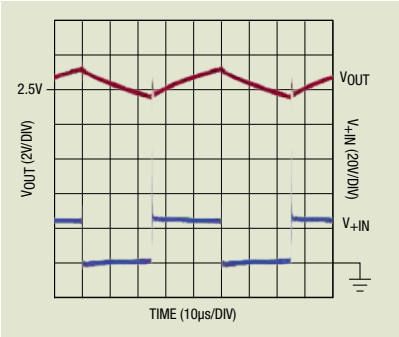
Part Number	Current Direction	Common Mode Voltage (V)	Response Time (µs)	V_{OS} Max (µV)	PSRR Min (dB)	Max Temperature Range	Comments
LT1787	Bidirectional	2.5 – 65	10	150	100	–40°C to 125°C	Buffered Output; Simple Input Filtering
LT1999	Bidirectional	–5 to 80	2.5	750	80	–55°C to 150°C	High Speed AC Monitor
LT6100	Unidirectional	4.1 to 48	40	300	95	–40°C to 125°C	Buffered Output with 5 Gain Settings
LTC6101	Unidirectional	4.0 to 105	1	300	115	–40°C to 125°C	Fast, High Voltage Monitor
LTC6102	Unidirectional	4.0 to 105	1	10	115	–40°C to 125°C	Zero–Drift, Highest Precision
LTC6103	Unidirectional	4.0 to 70	1	450	106	–40°C to 125°C	Dual Precision Amplifiers
LTC6104	Bidirectional	4.0 to 70	1	450	105	–40°C to 125°C	Each Direction Gain Configurable
LT6105	Unidirectional	–0.3 to 44	3.5	300	94	–40°C to 125°C	Monitors Voltages Down to GND
LT6106	Unidirectional	2.7 to 44	3.5	250	106	–40°C to 125°C	Lowest Cost, Simple
LT6107	Unidirectional	2.7 – 44	3.5	350	106	–55°C to 150°C	Fully Tested at –55°C, 25°C, 150°C
LT6108	Unidirectional	2.7 to 60	3	350	120	–40°C to 125°C	Includes Comparator+Ref
LT6109	Unidirectional	2.7 to 60	3	350	120	–40°C to 125°C	Includes 2 Comparators+Ref
LT6110	Unidirectional	2.0 to 50	2	250	88	–40°C to 125°C	Line Drop Compensator

LT1999: High Voltage, Bidirectional Current Sense Amplifier

Features:

- Buffered Output with 3 Gain Options:
- Input Common Mode Voltage Range: –5V to 80V
- AC CMRR > 80dB at 100kHz
- Supply Range: 2.7V to 36V, 44V Absolute Maximum
- –3dB Bandwidth: 2MHz
- Low Offset Voltage: 1.5mV Maximum
- Smooth, Continuous Operation Over Entire Common
- 4kV HBM Tolerant and 1kV CDM Tolerant
- Specified for –55°C to 150°C
- 8-Lead MSOP and 8-Lead SO (Narrow)

High AC Common Mode Rejection



Power Supply Supervisors/Monitors

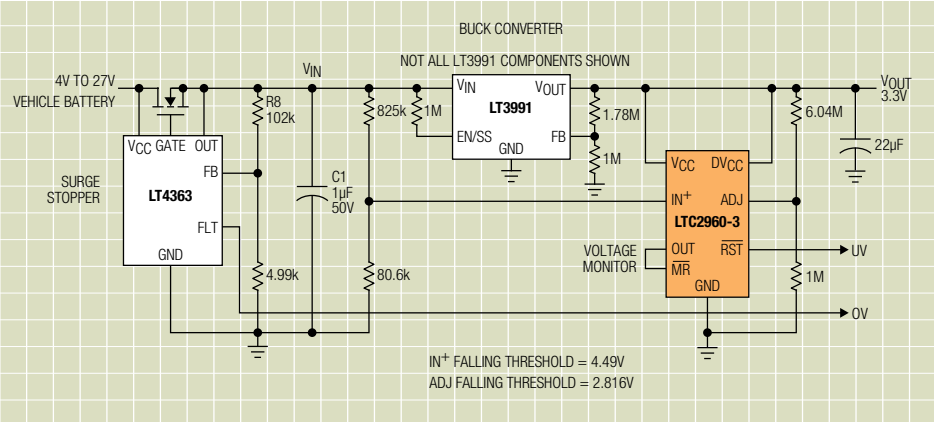
Features:

- High Operating Voltage as High as 36V
- High Threshold Accuracy Up to 1.5% Over Temperature Minimizes Supply Overdesign
- Guaranteed Valid Reset Signal as Low as V_{CC} = 0.5V
- Adjustable and Pin-Selectable Thresholds/Tolerances
- Minimized Bill of Materials
- Low Operating and Shutdown Currents Conserve Power

Applications:

- Battery Management
- Camera Systems
- Engine Control Unit
- Infotainment
- Body Electronics

36V Automotive Supervisor with High Voltage Surge Protection



Part Number	# of Supplies	$V_{supply\ Max}$ (V)	Supply Current (µA)	Overvoltage Monitoring	Negative Monitoring	Watchdog	Pushbutton Reset	Power Good Output	RESET Disable for Margining	Maximum Ambient Temperature	Package
LTC2910	8	6.6	70	•	•					125°C	SSOP-16, 5x3 DFN-16
LTC2930	6	7.0	52		•		•			125°C	3x3 DFN-12
LTC2931	6	7.0	52		•	•		•		125°C	TSSOP-20
LTC2932	6	7.0	52		•			•	•	125°C	TSSOP-20
LTC2914	4	6.6	70	•	•					125°C	SSOP-16, 5x3 DFN-16
LTC2900	4	7.0	43		•		•			85°C	MSOP-10, 3x3 DFN-10
LTC2901	4	7.0	43		•	•		•		85°C	SSOP-16
LTC2903	4	6.5	20		•					85°C	SOT-23-6
LTC1726	3	7.0	20			•				85°C	SO-8, MSOP-8
LTC1727	3	7.0	15					•		85°C	SO-8, MSOP-8
LTC1728	3	7.0	15							125°C	SOT-23-5
LTC2913	2	6.6	44	•						125°C	MSOP-10, 3x3 DFN-10
LTC2904	2	7.0	65							85°C	SOT-23-8, 3x2 DFN-8
LTC2905	2	7.0	65							85°C	SOT-23-8, 3x2 DFN-8
LTC2960	2	36	0.85	•			•			125°C	SOT-23-8, 2x2 DFN-8
LTC2915	1	6.2	30							125°C	SOT23-8, 3x2 DFN-8
LTC2916	1	6.2	30				•			125°C	SOT23-8, 3x2 DFN-8
LTC2917	1	6.2	30			•				125°C	MSOP-10, 3x2 DFN-10
LTC2918	1	6.2	30			•	•			125°C	MSOP-10, 3x2 DFN-10
LTC2912	1	6.6	40	•						125°C	SOT-23-8, 3x2 DFN-8

Power Monitors

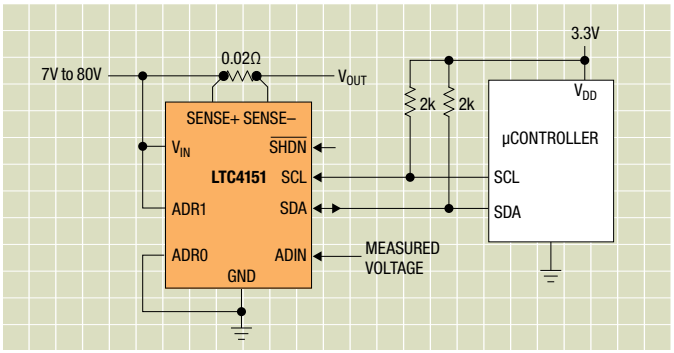
Features:

- Monitor Instantaneous or Average Power, as well as Voltage, Current and Temperature
- Up to 80V Operation
- I²C or Current-Proportortional-to-Power Interface

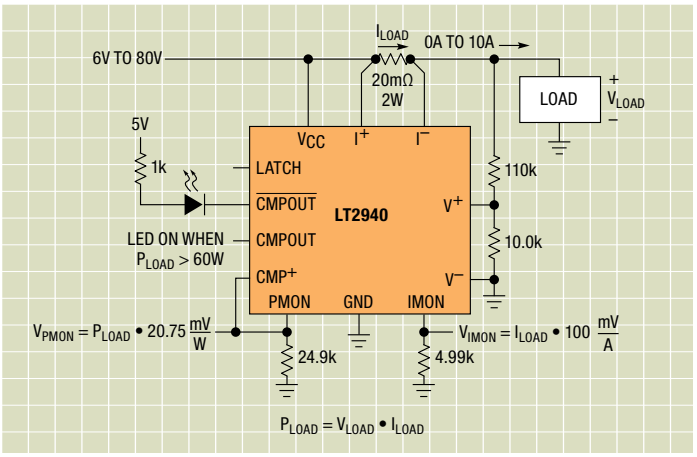
Applications:

- Battery Management
- Infotainment/GPS

High Side Power Sensing with Onboard ADC and I²C



Load Monitor Alarms Above 60W



Part Number	Number of Channels	Voltage Supply Range (V)	Resolution (Bits)	Interface	Measures Power	Measures Voltage	Measures Current	Measures Temperature	Maximum Ambient Temperature	Package
LTC2945	1	2.9 to 80	12	I²C	•	•	•		85°C	MSOP-12, 3x3 QFN-12
LTC4151	1	7.0 to 80	12	I²C		•	•		125°C	MSOP-10, 3x3 DFN-10, SO-16
LTC2990	4	2.9 to 3.6	14	I²C		•	•	•	85°C	MSOP-10
LTC2991	8	2.9 to 5.5	14	I²C		•	•	•	85°C	MSOP-16
LT2940	1	6.0 to 80	Analog	Current Output	•		•		85°C	MSOP-12, 3x3 DFN-12

Temperature Sensors

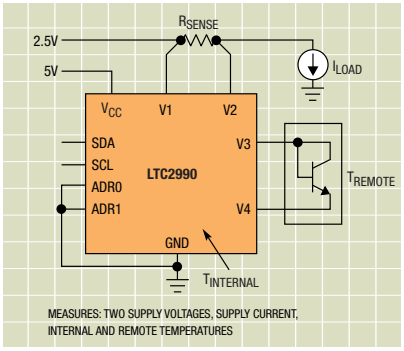
Features:

- Measure Internal or External Temperature, as well as Voltage and Current
- I²C or Voltage-Proportional-to-Absolute-Temperature (V_{PTAT}) Interface

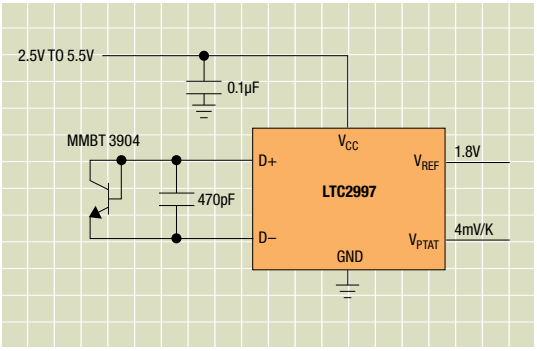
Applications:

- Infotainment
- LED Lighting

Voltage, Current, Temperature Monitor



Single Remote Temperature Sensor



Part Number	Voltage Supply Range (V)	Interface	Internal Temp Accuracy	External Temp Accuracy	Measures Voltage	Measures Current	PWM Output	Alert Outputs	Reference Output	Maximum Ambient Temperature	Package
LTC2997	2.50 to 5.5	V_{PTAT}	±0.5°C	±0.25°C					•	125°C	2x3 DFN-6
LTC2996	2.25 to 5.5	V_{PTAT}	±0.5°C	±0.25°C				•	•	125°C	3x3 DFN-10
LTC2995	2.25 to 5.5	V_{PTAT}	±0.5°C	±0.25°C	•			•	•	125°C	3x3 QFN-20
LTC2990	2.90 to 5.5	I²C	±0.5°C	±0.5°C	•	•				85°C	MSOP-10
LTC2991	2.90 to 5.5	I²C	±1°C	±0.7°C	•	•	•			85°C	MSOP-16

Coulomb Counters

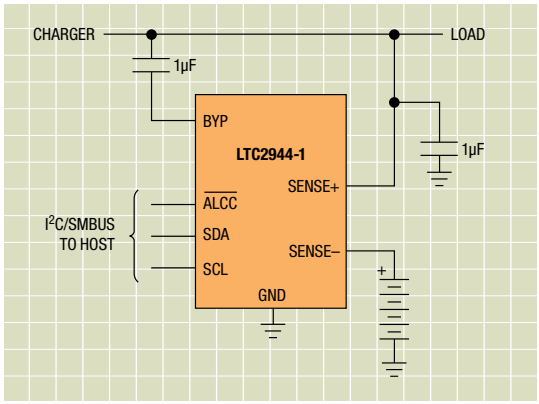
Features:

- High Accuracy Coulomb Counting (Battery Gas Gauging), and Voltage, Temperature and Current Measurements
- Multicell Application Support up to 60V
- External Sense Resistor or 50mΩ Internal Sense Resistor Options
- Low Quiescent Current down to <100µA
- Small Packages

Applications:

- Battery Management

60V Coulomb Counter with Integrated Sense Resistor



Part Number	Operating Range (V)	Interface	Integrated Sense Resistor	Measures Charge	Measures Voltage	Measures Temperature	Measures Current	Maximum Ambient Temperature	Package
LTC2941	2.7 to 5.5	I²C		•				85°C	2x3 DFN-6
LTC2941-1	2.7 to 5.5	I²C	•	•				85°C	2x3 DFN-6
LTC2942	2.7 to 5.5	I²C		•	•	•		85°C	2x3 DFN-6
LTC2942-1	2.7 to 5.5	I²C	•	•	•	•		85°C	2x3 DFN-6
LTC2943	3.5 to 20	I²C		•	•	•	•	85°C	3x3 DFN-8
LTC2943-1	3.5 to 20	I²C	•	•	•	•	•	85°C	3x3 DFN-8
LTC2944	3.5 to 60	I²C		•	•	•	•	85°C	3x3 DFN-8
LTC2944-1	3.5 to 60	I²C	•	•	•	•	•	85°C	3x3 DFN-8
LTC4150	2.7 to 8.5	Interrupt		•				85°C	MSOP-10

Pushbutton Controllers

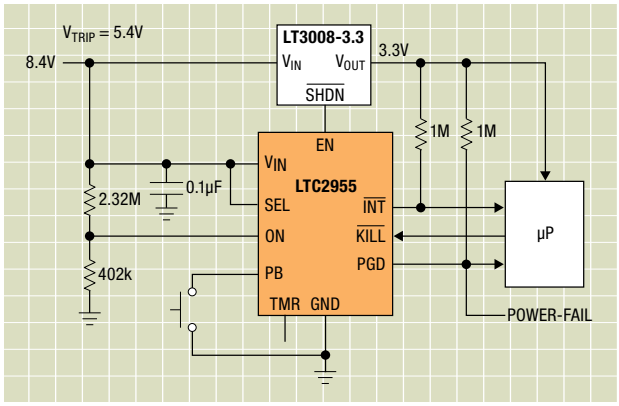
Features:

- Provide Switch Debounce Protection, Power Supply Control & Optional Processor Interfacing
- High Operating Voltage up to 36V
- Adjustable On/Off Timing
- No Coding Required
- High ESD up to ±25kV HBM

Applications:

- Infotainment/GPS

DC/DC On/Off Control via Pushbutton or Presence/Absence of a Supply

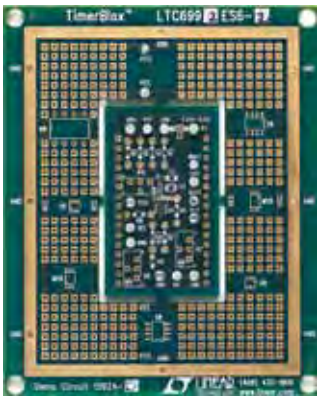


Part Number	Description	Supply Voltage (V)	Supply Current (µA)	Turn ON Debounce Time (ms)	System OK Response Time (ms)	Interrupt Debounce Time (ms)	Turn OFF Debounce Time (ms)	Kill Turn OFF Delay (ms)	HBM ESD (kV)	Maximum Ambient Temperature	Package
LTC2950	Basic Pushbutton Controller	2.7 to 26	6.0	Adj	512	Adj	n/a	1024	±10	85°C	TSOT-8, 3x2 DFN-8
LTC2951	Basic Pushbutton Controller	2.7 to 26	6.0	128	512	Adj	n/a	Adj	±10	85°C	TSOT-8, 3x2 DFN-8
LTC2952	Pushbutton Controller with PowerPath Controller	2.7 to 28	25	Adj	400	26	n/a	Adj	±8	85°C	TSSOP-20, 4x4 QFN-20
LTC2953	Pushbutton Controller with Supply Monitor, UVLO and Power Fail Comparators for Supervisory Applications	2.7 to 27	12	32	512	32	Adj	n/a	±10	85°C	3x3 DFN-12
LTC2954	Pushbutton Controller with Interrupt Logic for Menu Driven Applications	2.7 to 26	6.0	Adj	512	32	Adj	n/a	±10	85°C	TSOT-8, 3x2 DFN-8
LTC2955	Pushbutton Controller with Automatic Turn-On and Interrupt Logic for Menu Driven Applications	1.5 to 36	1.2	32	512	32	Adj	n/a	±25	85°C	TSOT-8, 3x2 DFN-10

TimerBlox Products

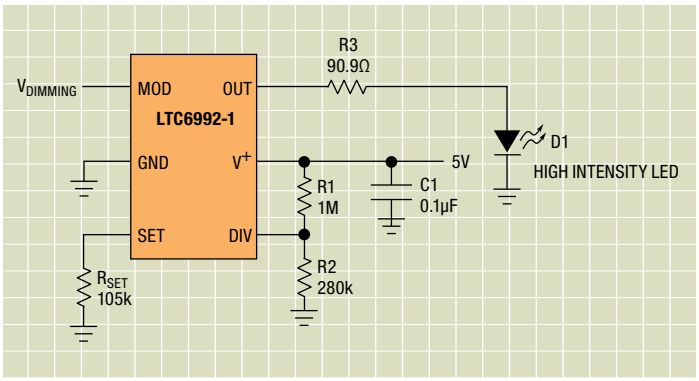
Features:

- Dedicated Timing Devices
  - Includes Internal Silicon Oscillator
  - Easily Programmed with Resistors
- ±20mA Output Current
- 60µA to 250µA Supply Current
- Low Power
- Small Size
- Fast Start-Up
- Immune to Shock & Vibration
- Specified from –55°C to 125°C

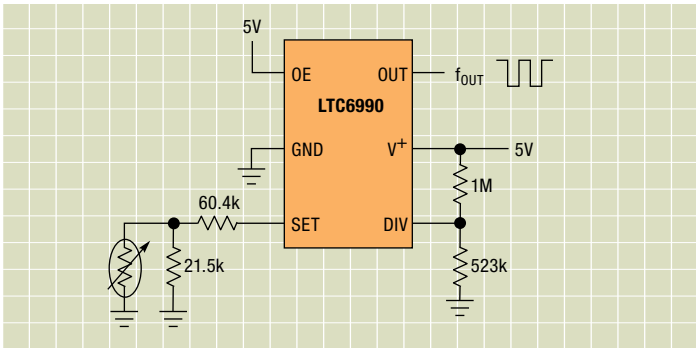


TimerBlox Board
50% Size Demo Board

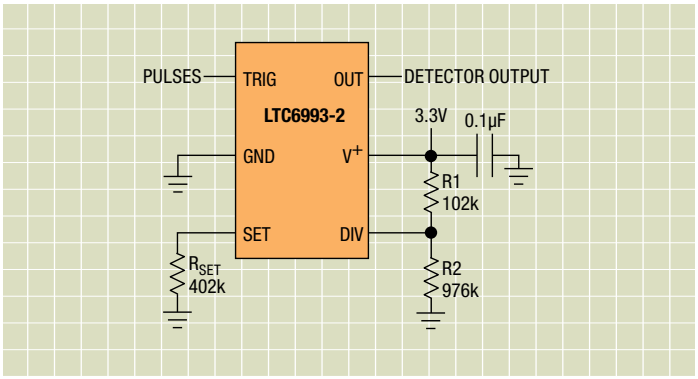
LED Dimming via Direct PWM Control



Temperature to Frequency Converter



Missing Pulse Detector



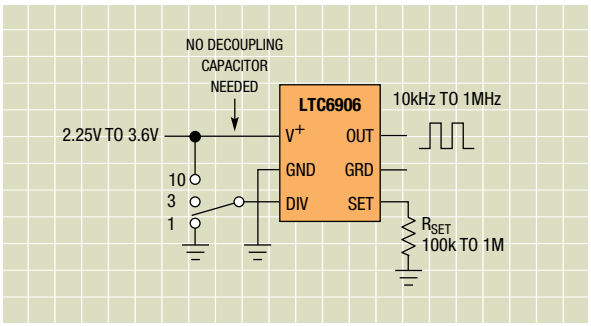
Part Number	Function	Operating Range	Package	Details
LTC6990	Voltage-Controlled Oscillator (VCO)	488Hz to 1MHz	SOT-23, DFN	Simple and Flexible Control
LTC6991	Low Frequency Clock	29µHz to 488Hz	SOT-23, DFN	Period from 2msec Up to 9.5 Hrs
LTC6992-1	Pulse-Width Modulation (PWM)	3.8Hz to 1MHz	SOT-23, DFN	0% to 100% Pulse Width Control
LTC6992-2	Pulse-Width Modulation (PWM)	3.8Hz to 1MHz	SOT-23, DFN	5% to 95% Pulse Width Control
LTC6992-3	Pulse-Width Modulation (PWM)	3.8Hz to 1MHz	SOT-23, DFN	0% to 95% Pulse Width Control
LTC6992-4	Pulse-Width Modulation (PWM)	3.8Hz to 1MHz	SOT-23, DFN	5% to 100% Pulse Width Control
LTC6993-1	One-Shot Circuit	1usec to 34sec	SOT-23, DFN	Rising Edge Trigger
LTC6993-2	One-Shot Circuit	1usec to 34sec	SOT-23, DFN	Rising Edge Trigger, Retriggerable
LTC6993-3	One-Shot Circuit	1usec to 34sec	SOT-23, DFN	Falling Edge Trigger
LTC6993-4	One-Shot Circuit	1usec to 34sec	SOT-23, DFN	Falling Edge Trigger, Retriggerable
LTC6994-1	Delay Block	1usec to 34sec	SOT-23, DFN	Rising or Falling Edge Trigger
LTC6994-2	Delay Block	1usec to 34sec	SOT-23, DFN	Rising & Falling Edge Trigger

Silicon Oscillators

Features:

- Simple Square Wave Oscillators
  - No Crystal
  - 1kHz to 170MHz Output Frequencies
- On-the-Fly Frequency Programmability
- Accuracy from 0.1% to 1.5%
- Low Power
- Small Size
- Fast Start-Up
- Immune to Shock & Vibration
- Specified from –55°C to 125°C

LTC6906 Micropower Clock Generator



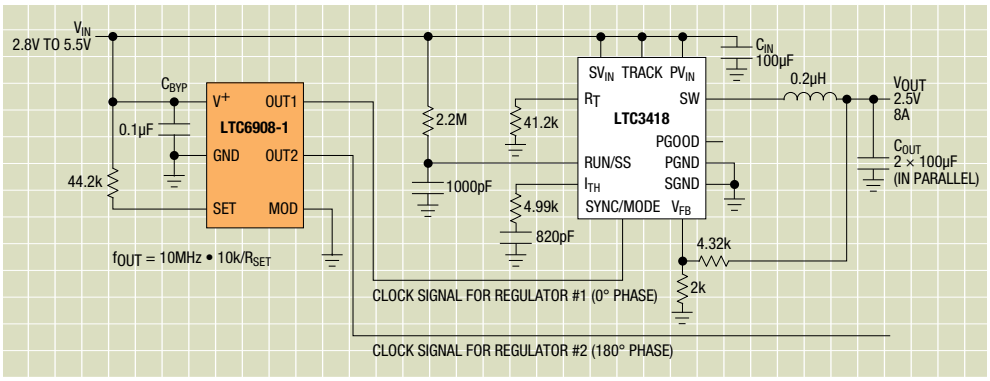
Part Number	Frequency Output	Max Error (%)	Supply Current	Package	Features
LTC1799	1kHz to 33MHz	0.0150	1mA @ 3MHz	SOT-23	Frequency Set via 1 Resistor
LTC6903	1kHz to 68MHz	0.0110	1.7mA @ 3MHz	MSOP-8	Frequency Set via SPI Interface
LTC6904	1kHz to 68MHz	0.0110	1.7mA @ 3MHz	MSOP-8	Frequency Set via I²C Interface
LTC6905	17MHz to 170MHz	0.0140	7mA @ 170MHz	SOT-23	Frequency Set via 1 Resistor, 100usec Startup
LTC6905-xx	20MHz to 133MHz	0.0100	10mA @ 133MHz	SOT-23	Pin Selectable Frequency
LTC6906	10kHz to 1MHz	0.0050	60µA @ 1MHz	SOT-23	Frequency Set via 1 Resistor, Very Low Power
LTC6907	40kHz to 4MHz	0.0050	275µA @ 4MHz	SOT-23	Frequency Set via 1 Resistor, Very Low Power
LTC6908	50kHz to 10MHz	0.0150	400µA @ 50kHz	SOT-23	2 Phase Output with Spread Spectrum Capability
LTC6909	50kHz to 10MHz	0.0150	400µA @ 50kHz	SOT-23	8 Phase Output with Spread Spectrum Capability
LTC6930	32.768kHz to 8.192MHz	0.0009	400µA @ 50kHz	MS8, DFN	High Accuracy, Pin Selectable Frequency

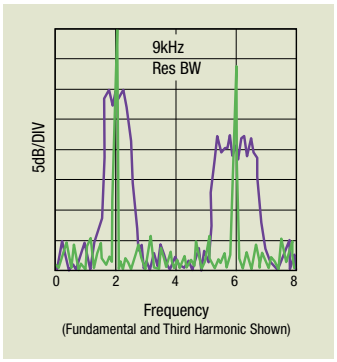
LTC6908: Dual Output Oscillator for Switching Regulators

Features:

- 2 Options: Outputs Complementary (0°/180°) or Quadrature (0°/90°)
- Ideal for Switching Regulator Phase Synchronization
- 50kHz to 10MHz Frequency Range
- One External Resistor Sets the Frequency
- Optional Spread Spectrum Modulation for Improved EMC
- 400µA Supply Current
- 260µsec Start-Up Time
- Outputs Muted Until Stable
- Operates from a Single 2.7V to 5.5V Supply
- Available in Low Profile (1mm) ThinSOT and DFN (2mm x 3mm) Packages

Dual Phase Clocking for 2 Switching Regulators





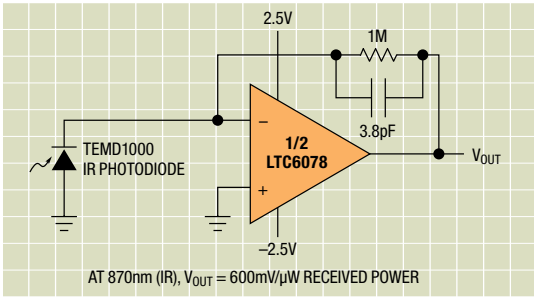
Spread Spectrum Frequency Modulation

Precision Operational Amplifiers

Features:

- High Precision Over Temperature:
  - H-Grade: –40°C to 125°C
  - I-Grade: –40°C to 85°C
- Over-The-Top® (OTT) Inputs Allow Operation with Input Voltages above V+

Photodiode Amplifier



Single Part Number	Dual Part Number	Quad Part Number	V_{OS} Max 25°C (µV)	TCV_{OS} Max (µV/°C)	I_B Max 25°C (nA)	GBW Typ 25°C (MHz)	e_n Typ 25°C (nV/√Hz)	I_S Max 25°C (mA)	V_S Range (V)	Rail-to-Rail I/O	Temperature Range
LTC2054	LTC2055		3	0.03	0.15	0.5		0.15	2.7 to 7	Out	H
LTC2050	LTC2051	LTC2052	3	0.03	0.075	3		1.2	2.7 to 7	Out	H
LTC1050	LTC1051		5	0.05	0.03	2.5	90	1.5	4.75 to 18	Out	H
	LTC6078	LTC6079	25	0.7	0.001	0.75	18	0.072	2.7 to 6	Yes	H
LT1028			40	0.8	90	75	0.85	9.5	8 to 44		I
	LT6016	LT6017	50	0.75 Typ	5	3.2	18	0.335	3 to 50	OTT	H
	LT1881	LT1882	50	0.8	0.2	1	14	0.9	2.4 to 40	Out	H
	LT1884	LT1885	50	0.8	0.4	2	9.5	0.9	2.4 to 40	Out	I
LT6010	LT6011	LT6012	60	0.8	0.3	0.33	14	0.15	2.7 to 40	Out	I
	LTC6081	LTC6082	70	0.8	0.001	3.6	13	0.425	2.7 to 5.5	Yes	H
	LT1468	LT1469	75	2	40	90	5	5	9 to 36		I
	LT1678	LT1679	100	3	20	20	3.9	3.4	3 to 36	Yes	I
	LTC6244		100	2.5	0.075	50	8	7.4	2.8 to 7	Out	H
LTC6240	LTC6241	LTC6242	125	2.5	0.075	18	7	2.2	2.8 to 6	Out	H
	LT1013	LT1014	150	2	20	0.8	22	0.5	4 to 44	SS	I
LT1880			150	1.2	0.9	1.1	13	1.9	2.4 to 40	Out	I
LTC6360			250		30000	1000	2.3	17.5	4.75 to 5.25	Out	H
LTC6255	LTC6256	LTC6257	350	3	60	6.5	20	0.073	1.8 to 5.25	Yes	H
LT1637	LT1638	LT1639	350	3	50	1	27	0.25	1.8 to 44	OTT	H
LT6220	LT6221	LT6222	350	5	150	60	10	1	2.2 to 12.6	Yes	I
LT6233	LT6234	LT6235	350	3	3000	60	1.9	1.25	3 to 12.6	Out	I
LT1800	LT1801	LT1802	350	5	250	80	8.5	2	2.3 to 12.6	Yes	I
LT1494	LT1495	LT1496	375	2	1	0.0027	185	0.0015	2.1 to 36	OTT	H
LT1722	LT1723	LT1724	400	7	300	200	3.8	4.5	4.6 to 12.6		I
LT6003	LT6004	LT6005	500	5	0.09	0.002	325	0.001	1.6 to 16	Yes	H
LT1636	LT1490A	LT1491A	500	4	8	0.18	50	0.055	2 to 44	OTT	H
LT6202	LT6203	LT6204	500	24	7000	100	1.9	3.5	2.5 to 12.6	Yes	I
LTC6246	LTC6247	LTC6248	500		350	180	4.2	1	2.5 to 5.25	Yes	H
LT1806	LT1807		550	5	4000	325	3.5	13	2.5 to 12.6	Yes	I
LT1351	LT1352	LT1353	600	8	50	3	14	0.33	5.0 to 36		I
LT1970			600	10	600	3.6	15	13	5 to 36		I
LT1357	LT1358	LT1359	600	8	500	25	8	2.5	5 to 36		I
LT6000	LT6001	LT6002	750	5	5	0.05	75	0.016	1.8 to 18	Yes	I
	LTC6084	LTC6085	750	5	0.04	1.5	27	0.13	2.5 to 5.5	Yes	H
	LTC6087	LTC6088	750	5	0.04	14	12	1.2	2.7 to 5.5	Yes	H
LT1782			800	5	15	0.2	50	0.055	2.2 to 18	OTT	H
LT1783			800	5	80	1.25	20	0.3	2.2 to 18	OTT	H
LT1354	LT1355	LT1356	800	8	300	12	10	1.25	5 to 36		I
LTC6090			1000	4 Typ	0.05	10	14	3.9	9.5 to 140	Out	H

Notes: Some parameters vary between single/dual/quad versions • For a complete list of products and full specifications visit www.linear.com • OTT=Over-The-Top Inputs

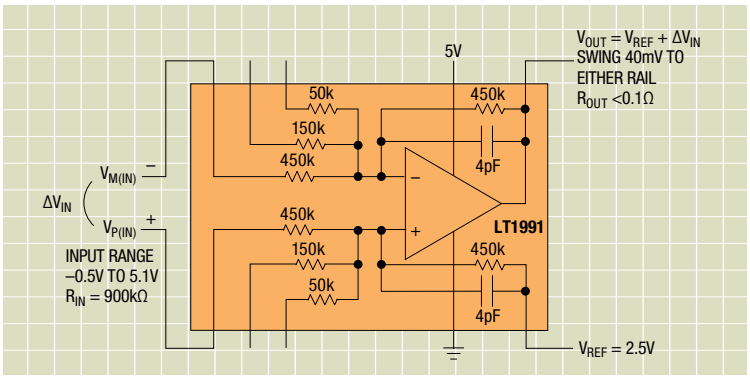
Programmable Gain and Gain Selectable Amplifiers

Features:

- High Precision Over Temperature:
  - H-Grade: –40°C to 125°C
  - I-Grade: –40°C to 85°C
- Integrated Resistors Simplify Design

LTC6915
40% Size Demo Board

Rail-to-Rail Gain: 1 Difference Amplifiers



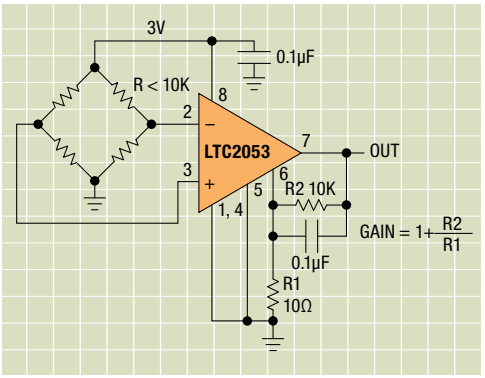
Part Number	Channels	Gain Range	GBW (MHz)	Rail-to-Rail	V_S (V)	I_S (mA)	Temperature Range	Features
LTC6910	1	0 to 100	11	In/Out	2.7 to 10.5	3	H	Programmable 3-Bit Digital Gain Control
LTC6911	2	0 to 100	11	In/Out	2.7 to 10.5	3	H	Dual, Programmable Matched Channels
LTC6912	2	0 to 100	30	In/Out	2.7 to 10.5	2.75	H	Dual, Programmable Independent Channels
LTC6915	1	0 to 4096	0.2	In/Out	2.7 to 11	1.6	H	Zero-Drift PGA Instrumentation Amp
LT1991A	1	-13 to 14	0.56	Out	2.7 to 36	0.11	H	Precision Pin-Configurable Diff Amp
LT1990A	1	1 to 10	0.1	Out	2.7 to 36	0.12	H	±250V Input Pin-Configurable Diff Amp
LT1995	1	-7 to 8	30		5 to 36	8.5	I	High Speed Pin-Configurable Diff Amp
LT1996	1	-117 to 118	0.56	Out	2.7 to 36	0.11	I	Precision Pin-Configurable Diff Amp

Instrumentation Amplifiers

Features:

- High Precision Over Temperature:
  - H-Grade: –40°C to 125°C
  - I-Grade: –40°C to 85°C
- High Impedance Differential Inputs

Differential Bridge Amplifier



Part Number	V_{OS} Max 25°C (µV)	Gain Error Max (%)	CMRR MIN (dB)	I_B Max(nA)	V_S (V)	I_S (mA)	Temperature Range	Features
LTC2053	10	0.01	105	10	2.7 to 11	1.300	H	Zero-Drift Instrumentation Amp
LT1167	40	0.02	126	0.35	4.6 to 40	1.300	I	Precision Low Bias Current In Amp
LT1168	40	0.02	126	0.25	4.6 to 40	0.530	I	Precision Power Current In Amp
LT1789	100	0.2	100	40	2.2 to 36	0.095	I	Micropower Precision In Amp
LTC6915	10	0.075	105	10	2.7 to 11	1.600	H	Zero-Drift PGA Instrumentation Amp

H-Grade (125°C) Comparators

Features:

- Fully Specified for –40°C to 125°C Operation
- High Voltage, Over-The-Top® Inputs
- High Voltage, Open Collector Outputs
- High Sink Current Output
- Ideal for Level Translation
- Combination Parts
- Combines Internal Voltage Reference
- Combines Current Sense and Internal Voltage Reference

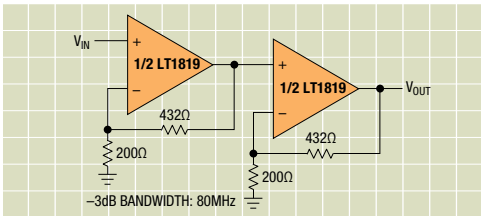
Part Number	Channels	Internal Reference	V_S (V)	Max Input Voltage (V)	Max Output Voltage (V)	I_S Max (µA)	Prop Delay (µS)	Package
LT1716	1	No	2.7 - 44	44	V_{SUPPLY}	50	9	SOT23
Comparator Combined with Voltage Reference								
LT6700	2	400m	1.4 - 18	18	18	15	18	SOT23, 2x3mm DFN
LT6700HV	2	400m	1.4 - 18	18	36	15	18	SOT23, 2x3mm DFN
LT6703	1	400m	1.4 - 18	18	18	11	18	SOT23, 2x2mm DFN
LT6703HV	1	400m	1.4 - 18	18	36	11	18	SOT23, 2x2mm DFN
Comparator Combined with High Side Current Sense and Voltage Reference								
LT6108-1	1	400m	2.7 to 60	60	60	650	3	MSOP8, 2x3mm DFN
LT6108-2	1	400m	2.7 to 60	60	60	650	3	MSOP8, 2x3mm DFN
LT6109	2	400mV	2.7 to 60	60	60	700	3	MSOP10

High Speed Amplifiers

Features:

- High Gain Bandwidth Product and Slew Rate
- Fully Specified Over Temperature:
  - H-Grade: –40°C to 125°C
  - I-Grade: –40°C to 85°C

80MHz, 20dB Gain Block



Part Number	Channels	GBW Typ 25°C (MHz)	Slew Rate Typ 25°C (V/µs)	V_{OS} Max 25°C (µV)	I_B Max 25°C (nA)	e_n Typ 25°C (nV/√Hz)	I_S Max 25°C (mA)	V_S Range (V)	Rail-to-Rail I/O	Temperature Range
LTC6360	1	1000	135	250	30000	2.3	17.5	4.75 to 5.25	Out	H
LTC6252/3/4	1/2/4	720	280	350	650	2.75	3.5	2.5 to 5.25	Yes	H
LT6553/4	3	650	650	10000	50000		11	4.5 to 13.2		I
LT6555/6	3	650	650	16000	45000		12	4.5 to 12.6		I
LT6557/8	3	500	2200	40000	70000		25	3 to 7.5		I
LT1818/9	1/2	400	2500	1500	8000	6	10	3.5 to 12.6		I
LT1395/6/7	1/2/4	400	800	12000		4.5	6.5	3 to 12.6		H
LT1806/7	1/2	325	125	550	4000	3	13	2.5 to 12.6	Yes	I
LT1398/9	2/3	300	300	10000	50000	4.5	6.5	4 to 15.5		I
LT6552	1	300	2500	20000	50000	55	13.5	3 to 12.6	Out	I
LT1815/6/7	1/2/4	220	1500	1500	8000	6	7.8	2.5 to 12.6		I
LT6230/1/2	1/2/4	215	70	500	10000	1	3.75	3 to 12.6	Out	I
LT6210/1	1/2	200	700	6000	39000	6.5	8.3	3 to 13.2	Out	I
LT6300/1	2/4	200	600	5000	4000	8	13.5	8 to 27		I
LT1722/3/4	1/2/4	200	70	400	300	3.8	4.5	4.6 to 12.6		I
LT1468-2/9-2	2/4	200	30	75	40	5	5	9 to 36		I
LTC6246/7/8	1/2/4	180	90	500	350	4.2	1	2.5 to 5.25	Yes	H
LT6200/1	1/2	165	50	1000	40000	0.95	23	2.5 to 12.6	Yes	I
LT1809/10	1/2	160	300	2500	8000	16	17	2.5 to 12.6	Yes	I
LT6550/1	3/4	110	340	70000	65000	12	11	3 to 12.6	Out	I
LT1812/3/4	1/2/4	100	750	1500	4000	8	3.6	2.5 to 12.6		I
LT6205/6/7	1/2/4	100	600	4500	30000	9	5.6	3 to 12.6	Out	H
LT6202/3/4	1/2/4	100	25	500	7000	1.9	3.5	2.5 to 12.6	Yes	I

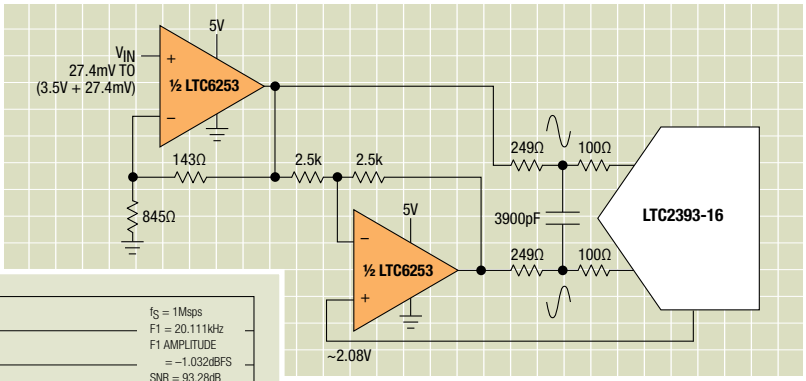
Notes: Some parameters vary between single/dual/quad version • For a complete list of products and full specifications visit www.linear.com

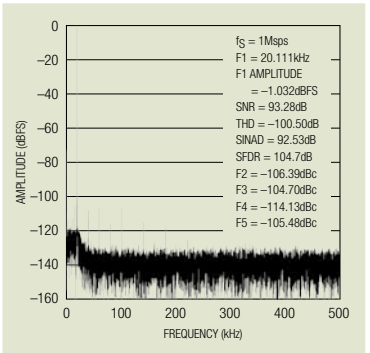
LTC6253: 720MHz, 3.5mA Power Efficient RRIO Op Amp

Features:

- Gain Bandwidth Product: 720MHz
- –3dB Frequency (AV = 1): 400MHz
- Low Quiescent Current: 3.5mA Max
- High Slew Rate: 280V/µs
- Input Common Mode Range Includes Both Rails
- Output Swings Rail-to-Rail
- Low Broadband Voltage Noise: 2.75nV/√Hz
- Power-Down Mode: 42µA
- Fast Output Recovery
- Supply Voltage Range: 2.5V to 5.25V
- Input Offset Voltage: 350µV Max
- Large Output Current: 90mA

5V Single-Supply 16-Bit ADC Driver





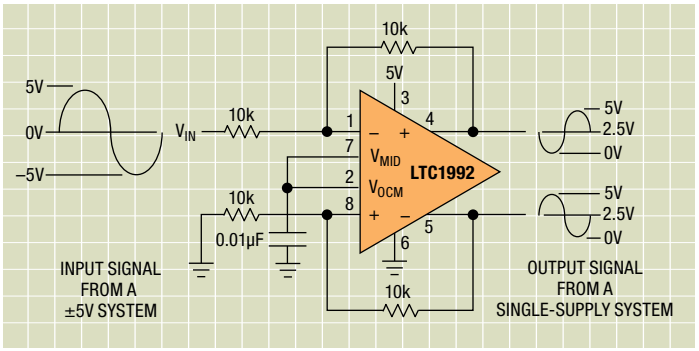
LTC6253 Driving LTC2393-16 16-Bit ADC 5V Single-Supply Performance

Differential Amplifiers/ADC Drivers

Applications:

- Pipeline ADC Drivers
- SAR ADC Drivers
- Differential Driver/Receiver
- Single-Ended to Differential Conversion

Single-Ended to Differential Conversion



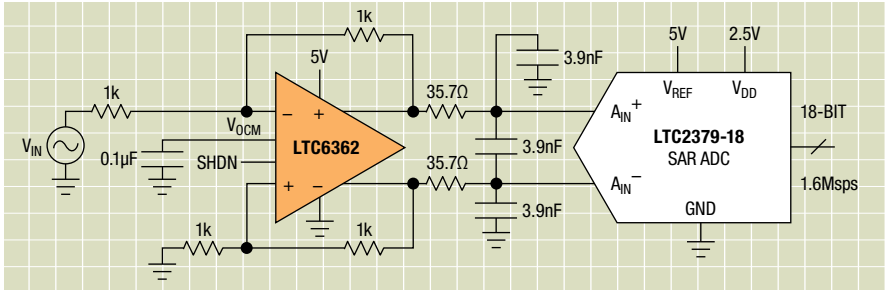
Part Number	Input Frequency (MHz)	Gain	–72dB HD2/HD3 (MHz)	–84dB HD2/HD3 (MHz)	Input-Referred Noise (nV/√Hz)	Settling Time (ns)	V_S (V)	I_S Max (mA)	Temperature Range	Comments
LTC6417	DC to 700	0dB	140	30	1.5	0.8 (1%)	4.75 to 5.25	140	I	Can drive 50Ω
LTC6409	DC to 600	Resistor Set	120	100	1.1	1.9 (1%)	2.7 to 5.25	56	H	Input Common Mode range includes Ground
LTC6404-1	DC to 100	Resistor Set	25	11	1.5	17 (0.01%)	2.7 to 5.25	35.5	H	Rail-to-Rail Out, AV≥1
LTC6404-2	DC to 100	Resistor Set	40	30	1.5	15 (0.01%)	2.7 to 5.25	38	H	Rail-to-Rail Out, AV≥2
LTC6404-4	DC to 100	Resistor Set	50	20	1.5	14 (0.01%)	2.7 to 5.25	39	H	Rail-to-Rail Out, AV≥4
LTC6406	DC to 70	Resistor Set	40	30	1.6	11 (0.1%)	2.7 to 3.5	22	I	Rail-to-Rail In
LTC6405	DC to 70	Resistor Set	35	24	1.6	11 (0.1%)	4.5 to 5.5	23	I	Rail-to-Rail In
LTC6403	DC to 40	Resistor Set	10	7	2.8	30 (0.1%)	2.7 to 5.25	11.8	I	Rail-to-Rail Out
LTC1992	DC to 2	1, 2, 5, 10 V/V, Resistor Set	0.05	0.01	35	2000 (1%)	2.7 to 12	1.2	H	Rail-to-Rail Out
LT6350	DC to 1	6dB, Resistor configurable	1	0.4	1.9	240 (0.01%)	2.7 to 12	5.8	H	Rail-to-Rail In and Out
LTC6362	DC to 0.1	Resistor Set	0.1	0.06	3.9	180 (0.01%)	2.8 to 5.25	1.06	H	Rail-to-Rail In and Out

LTC6362: Precision Low Power RRIO Differential Op Amp

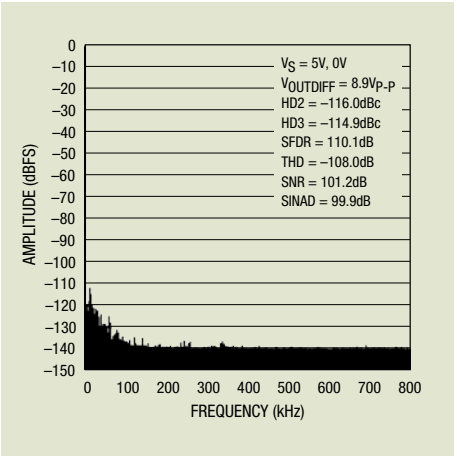
Features:

- 1mA Supply Current
- Single 2.8V to 5.25V supply
- Fully Differential Input and Output
- 200µV Max Offset Voltage
- 260nA Max Input Bias Current
- Fast Settling: 550ns to 18-Bit, $8V_{P-P}$ Output
- Low Distortion: –116dBc at 1kHz, $8V_{P-P}$
- Rail-to-Rail Inputs and Outputs
- 3.9nV/ √Hz Input-Referred Noise
- 180MHz Gain-Bandwidth Product

DC Coupled Single-Ended Input Driving Differential 18-Bit ADC



LTC6362
50% Size Demo Circuit



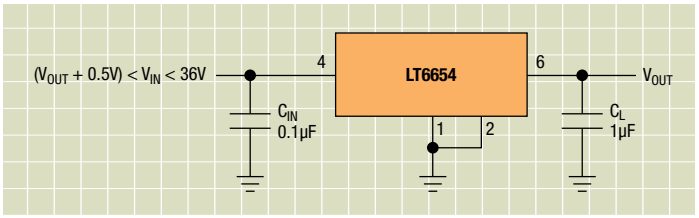
FFT: LTC6362 Driving LTC2379-18

H-Grade (125°C) Voltage References

Features:

- Fully Specified for High Temperature Operation
- Outstanding Accuracy, Drift and Noise
- Buffered Outputs for Symmetrical Drive
- Low Dropout and Low Power Shutdown
- Available in Ceramic Hermetic Packages
  - Immune from Humidity Effect
  - Excellent Long Term Stability
  - Excellent Thermal Hysteresis Performance

Precision 36V V_{IN} Voltage Reference



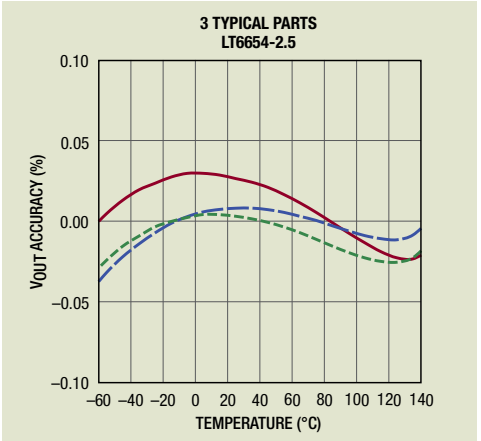
Part Number	Temperature Range	V_{OUT} (V)	Initial Accuracy	Temp Coeff Max (ppm/°C)	I_{OUT} (mA)	Package	Supply Voltage (V)	Features
LT6654A	–40°C to 125°C, –55°C to 125°C	1.25, 2.048, 2.5, 3, 3.3, 4.096, 5	±0.05%	10	±10	SOT23 Ceramic LS8	2.5 to 36	1.5ppm Noise, Excellent Load & Line Regulation
LT6654B	–40°C to 125°C, –55°C to 125°C	1.25, 2.048, 2.5, 3, 3.3, 4.096, 5	±0.1%	20	±10	SOT23 Ceramic LS8	2.5 to 36	1.5ppm Noise, Excellent Load & Line Regulation
LTC6652A	–40°C to 125°C	1.25, 2, 2.5, 3, 3.3, 4, 5	±0.05%	5	±5	MSOP8 Ceramic LS8	2.7 to 13.2	2ppm Noise, Low Dropout Shutdown <2uA
LTC6652B	–40°C to 125°C	1.25, 2, 2.5, 3, 3.3, 4, 5	±0.1%	10	±5	MSOP8 Ceramic LS8	2.7 to 13.2	2ppm Noise, Low Dropout Shutdown <2uA
LTC6655B	–40°C to 125°C	1.25, 2.048, 2.5, 3, 3.3, 4.096, 5	±0.025%	2	±5	MSOP8 Ceramic LS8	3.0 to 13.2	0.25ppm, Low Dropout Shutdown <20uA
LTC6655C	–40°C to 125°C	1.25, 2.048, 2.5, 3, 3.3, 4.096, 5	±0.05%	5	±5	MSOP8 Ceramic LS8	3.0 to 13.2	0.25ppm, Low Dropout Shutdown <20uA
LT1431MP/M	–55°C to 125°C	2.5, 5 or Adj.	±0.4%	50	1 to 100	SOP8 CERDIP	2.5 to 36	2.5V, 5V or Adjustable Shunt Regulator

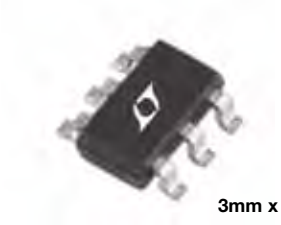
LT6654: Precision, Low Noise, Buffered, Tiny Voltage Reference

Features:

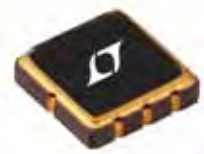
- Excellent Accuracy & Drift:
  - A-Grade (0.05% Initial Accuracy, 10ppm/°C Drift)
  - B-Grade (0.10% Initial Accuracy, 20ppm/°C Drift)
- 1.6ppmP–P Noise (0.1Hz to 10Hz)
- ±10mA Sink & Source Capability
- 100mV Dropout Voltage
- Supply Voltage up to 36V
- Fully Specified from –40°C to 125°C
- 2 Package Options
  - 6-Pin SOT23 Package
  - 6-Pin LS8 Package (2.5V Option)

Temperature Drift





3mm x 3mm SOT23



5mm x 5mm LS8
Front

5mm x 5mm LS8
Back

Delta-Sigma Analog-to-Digital Converters

Complete Easy Drive Delta-Sigma ADC Family

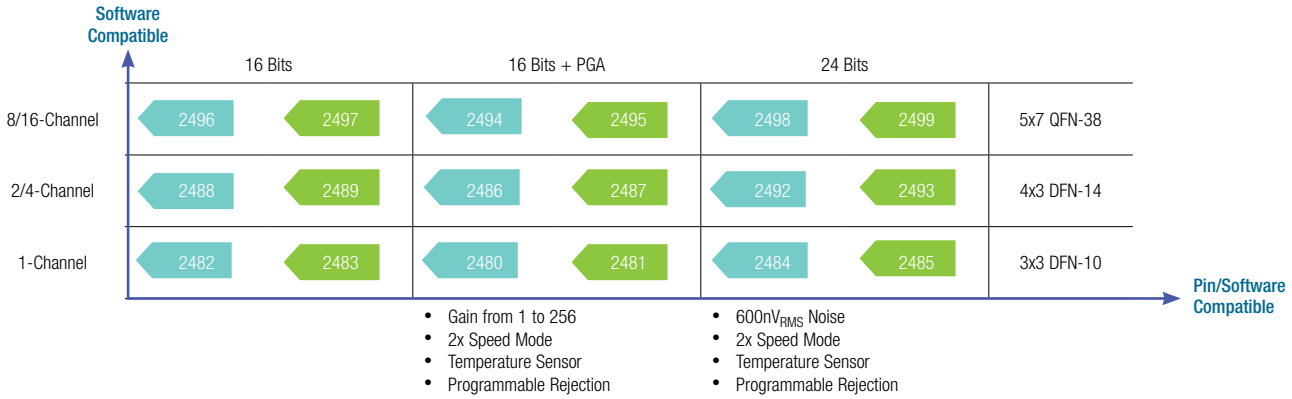
Features:

- Directly Digitizes High Impedance Sensors with Full Accuracy
- Programmable Gain from 1 to 256
- Internal Temperature Sensor
- Easy Drive™ Technology Enables Rail-to-Rail Inputs with Zero Differential Current

Complete Easy Drive Delta-Sigma ADC Family

Applications:

- Alternator Monitoring
- Battery Management System
- Exhaust System
- Temperature Measurement
- Tire Pressure Sensors



Part Number	Resolution (Bits)	Channels	Speed (sps)	RMS Noise	Total Unadjusted Error	INL (PPM)	I/O	Maximum Ambient Temperature	Package
LTC2480	16	1	15	0.6µV	0.004%	2	SPI	125°C	3x3 DFN-10
LTC2481	16	1	15	0.6µV	0.004%	2	I²C	125°C	3x3 DFN-10
LTC2494	16	8/16	15	0.6µV	0.004%	2	SPI	85°C	5x7 QFN-38
LTC2495	16	8/16	15	0.6µV	0.004%	2	I²C	85°C	5x7 QFN-38
LTC2492	24	2/4	15	0.6µV	0.004%	2	SPI	85°C	4x3 DFN-14
LTC2498	24	8/16	15	0.6µV	0.004%	2	SPI	125°C	5x7 QFN-38

Ultra Tiny 16-Bit Delta-Sigma ADC Family with I²C or SPI Interface

		30Hz/60Hz ADCs with External Reference	60Hz ADCs with 10ppm/°C Reference	Fast (250Hz/1000Hz) ADCs with 10ppm/°C Reference
SPI	Single-Ended	2450/-1	2460	2470
	Differential	2452	2462	2472
	Packages	2x2 DFN-6, 3x2 DFN-8, 8-Lead TSOT-23	3x3 DFN-12, 12-Lead MSOP	3x3 DFN-12, 12-Lead MSOP
I²C	Single-Ended	2451	2461	2471
	Differential	2453	2463	2473
	Packages	3x2 DFN-8, 8-Lead TSOT-23	3x3 DFN-12, 12-Lead MSOP	3x3 DFN-12, 12-Lead MSOP

24-Bit High Speed Delta-Sigma ADC Family

Inputs	1 Differential	4 Single-Ended/2 Differential	8 Single-Ended/4 Differential		16 Single-Ended/8 Differential
No MUXOUT	2440		2444	2446	2448
MUXOUT/ADCIN		2442	2445	2447	2449
Special Features		Dual Internal Amplifiers		5 Differential References	
Maximum Output Rate	4kHz	8kHz	8kHz		8kHz
Package	SSOP-16	SSOP-36	5x7 QFN-38		5x7 QFN-38

SAR Analog-to-Digital Converters

18-/16-Bit Pin-Compatible Fully/ Pseudo-Differential 2.5V SAR ADC Family

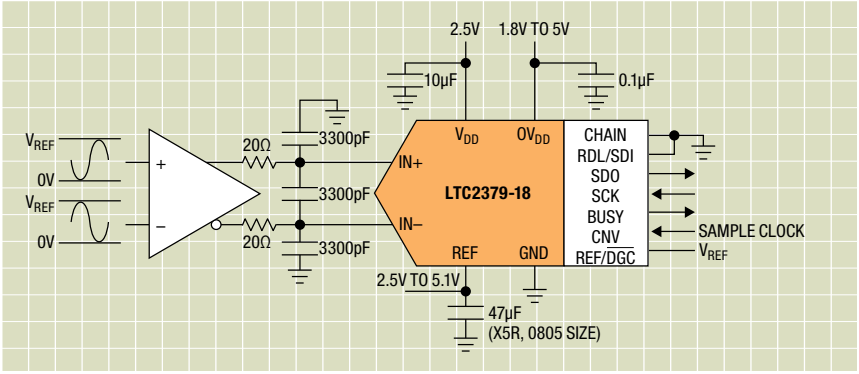
Features:

- 1.6Msps Max Throughput Rate at 18 Bits
- ±2LSB INL (Max), ±0.9LSB DNL (Max)
- 120dB THD (Typ) at f_{IN} = 2kHz
- Power-Down Mode: 2.25µW
- Digital Gain Compression
- –40°C to 125°C Maximum Ambient Temperature
- 16-Pin MSOP and 4mm × 3mm DFN Packages

Applications:

- Navigation Systems
- Entertainment Systems
- Multifunction Display Systems
- Li-Ion Battery Pack Supervision
- Gas Sensors

18-Bit 1.6Msps SAR ADC with Flexible Serial Interface



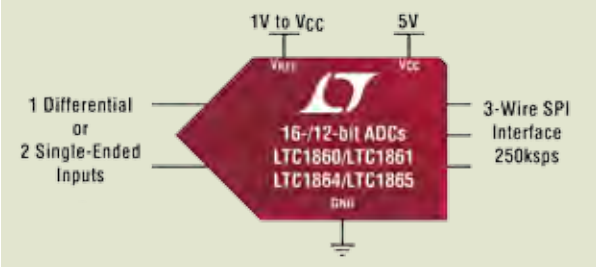
		250ksps	500ksps	1Msps	1.6Msps	2Msps
18-Bit	Fully Differential 101dB SNR	2376-18	2377-18	2378-18	2379-18	
	Pseudo-Differential 96.5dB SNR	2364-18	2367-18	2368-18	2369-18	
16-Bit	Fully Differential 96dB SNR	2376-16	2377-16	2378-16		2380-16
	Pseudo-Differential 94dB SNR	2364-16	2367-16	2368-16		2370-16
	Power Consumption	3.4mW	6.8mW	13.5mW	18mW	19mW

16-/12-Bit Serial Single/Multichannel µPower ADCs

Features:

- 16-/12-Bit Resolution SAR ADCs
- Up to 250ksps Sample Rate
- 5V or 3V (L) Single Supply Options
- Low Power Dissipation
- Differential or Single-Ended Inputs
- Serial SPI Interface

16-/12-Bit 250ksps SAR ADCs



Part Number	Resolution (Bits)	Channels	Input Range	Sample Rate		Power @ Max Sample Rate		Maximum Ambient Temperature	Package
				5V Supply	3V Supply	5V Supply	3V Supply		
LTC1864 (L)	16	1	0 to 5V, 0 to 3V (L)	250ksps	(150ksps)	4.25mW	(1.22mW)	125°C	MSOP-8
LTC1865 (L)	16	2	0 to 5V, 0 to 3V (L)	250ksps	(150ksps)	4.25mW	(1.22mW)	125°C	MSOP-10
LTC1867(L)	16	8	0V to 4.096V, ±2.048V 0 to 2.5V, ±1.25V (L)	200ksps	(175ksps)	6mW	(2.25mW)	85°C	SSOP-16
LTC1860 (L)	12	1	0 to 5V, 0 to 3V (L)	250ksps	(150ksps)	4.25mW	(1.22mW)	125°C	MSOP-8
LTC1861 (L)	12	2	0 to 5V, 0 to 3V (L)	250ksps	(150ksps)	4.25mW	(1.22mW)	125°C	MSOP-10
LTC1863 (L)	12	8	0V to 4.096V, ±2.048V 0 to 2.5V, ±1.25V (L)	200ksps	(175ksps)	6mW	(2.25mW)	85°C	SSOP-16

SAR Analog-to-Digital Converters (continued)

14-/12-Bit Single Channel and Simultaneous Sampling 3V ADCs

Part Number	Resolution (Bits)	Channels	Sample Rate	Input Range	Interface	Power @ Max Sample Rate	Maximum Ambient Temperature	Package
LTC1403A/-1	14	1	2.8Msps	0V to 2.5V / ±1.25V	SPI	14mW	125°C	MSOP-10
LTC1403/-1	12	1	2.8Msps	0V to 2.5V / ±1.25V	SPI	14mW	125°C	MSOP-10
LTC1407A/-1	14	2	3Msps	0V to 2.5V / ±1.25V	SPI	12mW	125°C	MSOP-10
LTC1407/-1	12	2	3Msps	0V to 2.5V / ±1.25V	SPI	12mW	125°C	MSOP-10
LTC2351-14	14	6	1.5Msps	0V to 2.5V, ±1.25V	SPI	16.5mW	125°C	5x5 QFN-32
LTC2351-12	12	6	1.5Msps	0V to 2.5V, ±1.25V	SPI	16.5mW	125°C	5x5 QFN-32

12-Bit 5V SAR ADCs with Serial SPI/I²C Interfaces

Part Number	Resolution (Bits)	Channels	Sample Rate	SNR	Input Range	Interface	Power @ Max Sample Rate	Maximum Ambient Temperature	Package
LTC2301	12	1	14ksps	73.5dB	0V to 4.096V, ±2.048V	I²C	11.5mW	125°C	4×3 DFN-12, MSOP-12
LTC2305	12	2	14ksps	73.5dB	0V to 4.096V, ±2.048V	I²C	11.5mW	125°C	4×3 DFN-12 , MSOP-12
LTC2309	12	8	14ksps	73.4dB	0V to 4.096V, ±2.048V	I²C	11.5mW	125°C	4×4 QFN-24, TSSOP-20
LTC2302	12	1	500ksps	73.2dB	0V to 4.096V, ±2.048V	SPI	14mW	85°C	3×3 DFN-10
LTC2306	12	2	500ksps	73.2dB	0V to 4.096V, ±2.048V	SPI	14mW	85°C	3×3 DFN-10
LTC2308	12	8	500ksps	73.4dB	0V to 4.096V, ±2.048V	SPI	17.5mW	85°C	4×4 QFN-24

Tiny 12-Bit 3V SAR ADCs with SPI Interface

Part Number	Resolution (Bits)	Channels	Sample Rate	SNR	Interface	Power @ Max Sample Rate	Maximum Ambient Temperature	Package
LTC2360	12	1	100ksps	73dB	SPI	1.5mW	125°C	TSOT23-6/8
LTC2361	12	1	250ksps	73dB	SPI	2.2mW	125°C	TSOT23-6/8
LTC2362	12	1	500ksps	73dB	SPI	3.3mW	125°C	TSOT23-6/8
LTC2365	12	1	1Msps	73dB	SPI	6mW	125°C	TSOT23-6/8
LTC2366	12	1	3Msps	73dB	SPI	7.8mW	125°C	TSOT23-6/8

±10V Bipolar Input 5V SAR ADCs

Part Number	Resolution (Bits)	Channels	Sample Rate	SNR	Input Range	Interface	Power @ Max Sample Rate	Maximum Ambient Temperature	Package
LTC1609	16	1	200ksps	87dB	±10V, ±5V, ±3.3V, 0V to 10V, 0V to 5V, 0V to 4V	SPI	65mW	85°C	SSOP-28, SW-20
LTC1856	16	8	100ksps	87dB	±10V	SPI	40mW	85°C	SSOP-28
LTC1859	16	8	100ksps	87dB	0V to 5V, 0V to 10V, ±5V or ±10V	SPI	40mW	85°C	SSOP-28

High Speed Analog-to-Digital Converters

Features:

- Lowest Power 1.8V, 3V and 5V ADCs
- 10-Bit to 16-Bit Resolutions
- Sample Rates from 10Msps to 310Msps
- Single Channel to Octal Channel ADCs
- Highest SNR and SFDR Performance
- Flexible Digital Outputs:
  - CMOS, DDR CMOS, DDR LVDS
  - Serial LVDS
  - JESD204
- Features for Reducing Digital Feedback

Applications:

- Collision Avoidance Radar
- Infotainment/GPS
- Software-Defined Radio
- Infrared Night Vision

	25Msps	40Msps	65Msps	80Msps	105Msps	125Ms0s
16-Bit 76.8dB SNR	2180	2181	2182	2183	2184	2185
Power Consumption	39mW/Ch	58mW/Ch	80mW/Ch	100mW/Ch	154mW/Ch	185mW/Ch
14-Bit 73.2dB SNR	2140-14	2141-14	2142-14	2143-14	2144-14	2145-14
12-Bit 70.6dB SNR	2140-12	2141-12	2142-12	2143-12	2144-12	2145-12
14-Bit/12-Bit Power Consumption	24mW/Ch	33mW/Ch	46mW/Ch	55mW/Ch	75mW/Ch	95mW/Ch

9x9 QFN — 1.8V Dual ADCs, CMOS, DDR CMOS or DDR LVDS

High Speed ADC Snapshot

Part Number	Channels	Resolution (Bits)	Sample Rate (Msps)	Full Power Bandwidth (MHz)	SNR (dB)	SFDR (dB)	V_{CC} (V)	Power (mW)	Digital I/O	Maximum Ambient Temperature	Package
LTC2209	1	16	160	700	77.1	100	3.3	1450	CMOS/LVDS	85°C	9x9 QFN-64
LTC2217	1	16	105	400	81.2	100	3.3	1190	CMOS/LVDS	85°C	9x9 QFN-64
LTC2269	1	16	20	200	84.1	99	1.8	87	CMOS/ DDR CMOS/ DDR LVDS	85°C	7x7 QFN-48
LTC2271	2	16	20	200	84.1	99	1.8	198	Serial LVDS	85°C	7x8 QFN-52
LTC2273	1	16	80	700	77.6	100	3.3	1110	JESD204	85°C	6x6 QFN-40
LTC2195	2	16	125	550	76.8	90	1.8	432	Serial LVDS	85°C	7x8 QFN-52
LTC2261-14	1	14	125	800	73.4	85	1.8	127	CMOS/ DDR CMOS/ DDR LVDS	85°C	6x6 QFN-40
LTC2246H	1	14	25	575	74.5	90	3.0	75	CMOS	125°C	7x7 LQFP-48
LTC2299	2	14	80	575	73	90	3.0	444	CMOS	85°C	9x9 QFN-64
LTC2268-14	2	14	125	800	73.1	88	1.8	299	Serial LVDS	85°C	6x6 QFN-40
LTC2157-14	2	14	250	1250	70	90	1.8	650	DDR LVDS	85°C	9x9 QFN-64
LTC2170-14	4	14	25	800	73.7	90	1.8	162	Serial LVDS	85°C	7x8 QFN-52
LTM9011-14	8	14	125	800	73.1	88	1.8	1120	Serial LVDS	85°C	11x9 BGA-140
LTC2226H	1	12	25	575	71.4	90	3.0	75	CMOS	125°C	7x7 LQFP-48
LTM9011-14	8	14	125	800	73.1	88	1.8	1120	Serial LVDS	85°C	11x9 BGA-140
LTC2226H	1	12	25	575	71.4	90	3.0	75	CMOS	125°C	7x7 LQFP-48

Digital-to-Analog Converters

Low Glitch 16-/14-/12-Bit Unbuffered V_{OUT} DACs

Features:

- Low 0.5nV•s Glitch Impulse
- Low 120µA Supply Current
- Fast 1µs Settling Time to 16 Bits
- ±1LSB (Max) INL, Guaranteed Monotonic
- 2.7V to 5.5V Single Supply Operation
- Unbuffered Voltage Output Directly Drives 60k Loads
- Maximum Ambient Temperature from –40°C to 85°C

Applications:

- Engine Control Unit
- Fuel Injection Control Unit
- Display Unit
- GPS Receiver
- Night Vision Camera

	Single SPI Unipolar	Single SPI Bipolar
16-Bit	2641-16	2642-16
14-Bit	2641-14	2642-14
12-Bit	2641-12	2642-12
Package	3x3 DFN-8 SO-8, MSOP-8	3x3 DFN-10 MSOP-10

Ultra-Tiny 12-/10-/8-Bit DACs with 10ppm/°C Internal Reference

Features:

- Integrated Precision Reference
  - 2.5V Full Scale 10ppm/°C (-L)
  - 4.096V Full Scale 10ppm/°C (-H)
- Maximum INL Error: ±2.5LSB (LTC2636-12)
- Maximum Ambient Temperature from –40°C to 125°C
- Low Power Operation
- Power-On Reset to Zero, Hi-Z or Mid-Scale Options

	Single			Dual		Quad		Octal	
	SPI	SPI (External Ref)	I²C	SPI	I²C	SPI	I²C	SPI	I²C
12-Bit	2630-12	2640-12	2631-12	2632-12	2633-12	2634-12	2635-12	2636-12	2637-12
10-Bit	2630-10	2640-10	2631-10	2632-10	2633-10	2634-10	2635-10	2636-10	2637-10
8-Bit	2630-8	2640-8	2631-8	2632-8	2633-8	2634-8	2635-8	2636-8	2637-8
Package	SC70-6	TSOT 23-8	TSOT 23-8	TSOT 23-8	TSOT 23-8	3x3 QFN-16 MSOP-10	3x3 QFN-16 MSOP-10	4x3 DFN-14 MSOP-16	4x3 DFN-14 MSOP-16

Micropower 16-/12-Bit DAC Family

Features:

- Precision 10ppm/°C Max Internal Reference
  - 2.5V Full-Scale (-L)
  - 4.096V Full-Scale (-H)
- Maximum INL Error: ±4LSB at 16 Bits
- 2.7V to 5.5V Supply Range
- Ultralow Crosstalk Between DACs (<1nV•s)
- Power-On Reset to Zero- or Mid-Scale
- Maximum Ambient Temperature from –40°C to 85°C

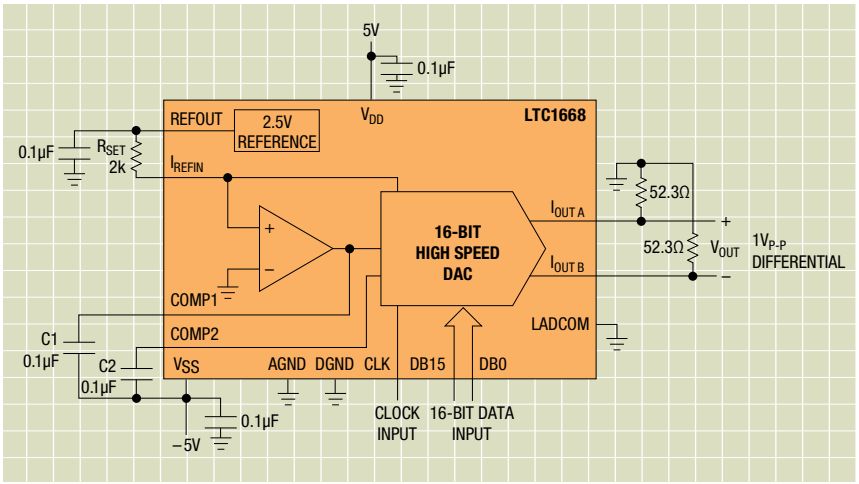
	Quad SPI	Quad I²C	Octal SPI	Octal I²C
16-Bit	2654-16	2655-16	2656-16	2657-16
12-Bit	2654-12	2655-12	2656-12	2657-12
Package	4x4 QFN-20 Nararow SSSOP-16	4x4 QFN-20 Narrow SSOP-16	4x5 QFN-20 TSSOP-20	4x5 QFN-20 TSSOP-20

High Speed DACs

Features:

- 16-Bit 50Msps V_{OUT} DAC (LTC1668)
- 87dB SFDR at 1MHz
- 5pV•s Glitch Impulse
- 20ns Settling Time
- Low Power: 180mW from ±5V Supplies
- Pin-Compatible 14-/12-Bit LTC1667/LTC1666
- Maximum Ambient Temperature from –40°C to 85°C

LTC1668, 16-Bit, 50Msps DAC

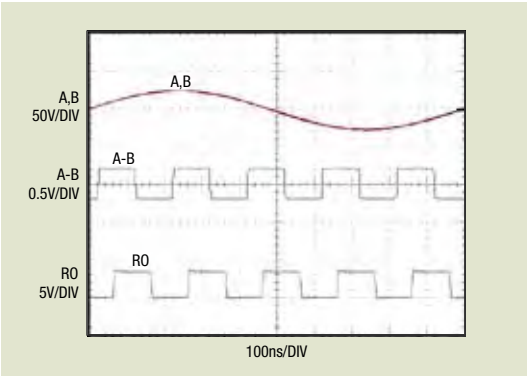


Rugged Serial Interface Transceivers

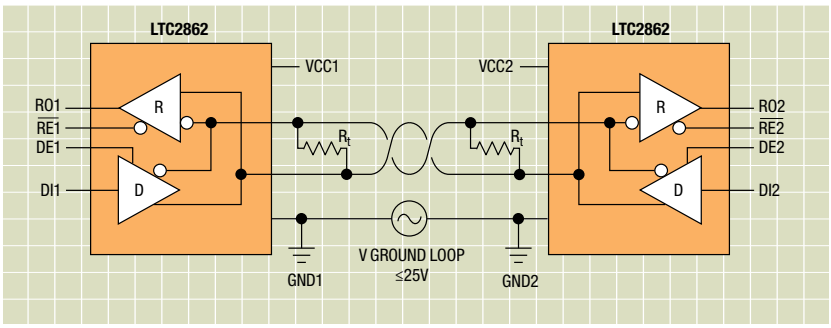
Applications:

- Fuel Management
- HVAC Control
- Door, Window and Seat Controls
- Security/Camera Systems
- Engine Control Unit

LTC2865 Receiving 10Mbps ±200mV Differential Signal with 1MHz ±25V Common Mode Sweep



RS485 Link With Large Ground Loop Voltage



Fault Protected Transceivers

Part Number	Standard	Supply Voltage (V)	Max Data Rate	Bus Voltage Protection (V)	ESD Protection (kV)	Maximum Ambient Temperature	Package	Comments
LTC2862-1/-2	RS485	3 to 5.5	20Mbps/250kbps	±60	±15	125°C	SO-8, 3x3 DFN-8	Half-Duplex, Enable Pins
LTC2863-1/-2	RS485	3 to 5.5	20Mbps/250kbps	±60	±15	125°C	SO-8, 3x3 DFN-8	Full-Duplex
LTC2864-1/-2	RS485	3 to 5.5	20Mbps/250kbps	±60	±15	125°C	SO-14, 3x3 DFN-10	Full-Duplex, Enable Pins
LTC2865	RS485	3 to 5.5	20Mbps/250kbps	±60	±15	125°C	MSOP-12, 4x3 DFN-12	Full-Duplex, Enable Pins, Logic Supply
LT1796	CAN	5	125kbps	±60	±15	125°C	SO-8, PDIP-8	Standard SO-8 Pinout

RS485/RS422 Transceivers

Part Number	Duplex	Supply Voltage (V)	Max Data Rate	Shutdown	ESD Protection (kV)	Maximum Ambient Temperature	Package	Comments
LTC2850	Half	3.3	20Mbps	yes	±15	125°C	SO-8, MSOP-8, 3x3 DFN-8	
LTC2851	Full	3.3	20Mbps		±15	125°C	SO-8, MSOP-8, 3x3 DFN-8	No RCVR/DRVR Enable Pins
LTC2852	Full	3.3	20Mbps	yes	±15	125°C	SO-14, MSOP-10, 3x3 DFN-10	
LTC2854	Half	3.3	20Mbps	yes	±25	125°C	3x3 DFN-10	Integrated Switchable Termination
LTC2855	Half	3.3	20Mbps	yes	±15	125°C	SSOP-16, 4x3 DFN-12	Integrated Switchable Termination
LTC2856-1/-2	Half	5.0	20Mbps/250kbps	yes	±15	125°C	MSOP-8, 3x3 DFN-8	
LTC2857-1/-2	Full	5.0	20Mbps/250kbps		±15	125°C	MSOP-8, 3x3 DFN-8	
LTC2858-1/-2	Full	5.0	20Mbps/250kbps	yes	±15	125°C	MSOP-10, 3x3 DFN-10	
LTC2859	Half	5.0	20Mbps/250kbps	yes	±15	125°C	3x3 DFN-10	Integrated Switchable Termination
LTC2861	Full	5.0	20Mbps/250kbps	yes	±15	85°C	SSOP-16, 4x3 DFN-12	Integrated Switchable Termination

RS232/RS562 Transceivers

Part Number	# Dri/Rec	Supply Voltage (V)	Max Data Rate	Shutdown	ESD Protection (kV)	Maximum Ambient Temperature	Package	Comments
LTC2801	1/1	1.8 to 5.0	250kbps	yes	±10	85°C	4x3 DFN-12	1µA Shutdown and 15µA Receivers-Active Modes
LTC2802	1/1	1.8 to 5.0	1Mbps	yes	±10	85°C	4x3 DFN-12	1µA Shutdown and 15µA Receivers-Active Modes
LTC2803	2/2	1.8 to 5.0	250kbps	yes	±10	85°C	SSOP-16, 5x3 DFN-16	1µA Shutdown and 15µA Receivers-Active Modes
LTC2804	2/2	1.8 to 5.0	1Mbps	yes	±10	85°C	SSOP-16, 5x3 DFN-16	1µA Shutdown and 15µA Receivers-Active Modes

Isolated µModule Transceivers

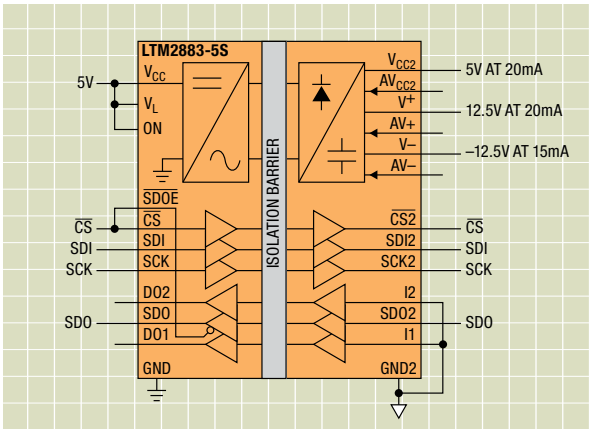
Features:

- UL Rated 2500V_{RMS} Isolation for RS485/ RS422, RS232/RS562, SPI/Digital, or I²C Protocols
- Up to 1W of Isolated Power Provided
- No External Components Required
- 5V or 3.3V Operation
- High Common Mode Transient Immunity: >30kV/µs
- Low EMI

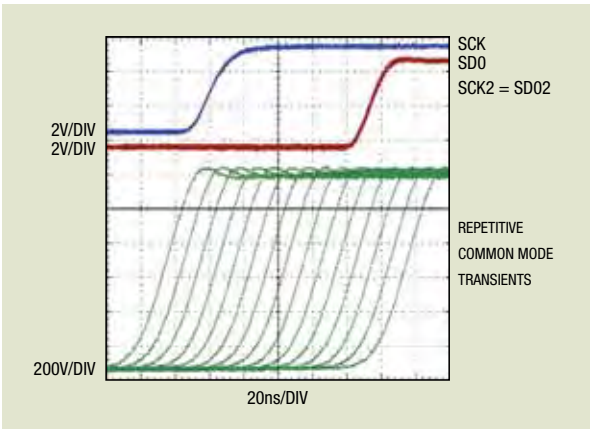
Applications:

- Battery Management
- Engine Control
- Body Electronics
- Infotainment/GPS

Isolated 4MHz SPI Interface



LTM2883 Operating Through 35kV/µs CM Transient



BGA Package
32-Pin (15mm x 11.25mm x 3.42mm)

Part Number	Protocol	Isolation (V_{RMS})	# Drivers/ Receivers	Supply Voltage (V)	Max Data Rate	Isolated Power Output(s)	Maximum Ambient Temperature	Package
LTM2881-5/3	RS485	2500	1/1	5/3.3	20Mbps/250kbps	5V (1W)	105°C	15x11 BGA-32 or LGA-32
LTM2882-5/3	RS232	2500	2/2	5/3.3	1Mbps	5V (1W)	105°C	15x11 BGA-32 or LGA-32
LTM2883-5S/3S	SPI/Digital	2500	3/3	5/3.3	10MHz	Adj. 3V-5V, Adj. ±12V (0.6W)	105°C	15x11 BGA-32
LTM2883-5I/3I	I²C	2500	3/3	5/3.3	400kHz	Adj. 3V-5V, Adj. ±12V (0.6W)	105°C	15x11 BGA-32
LTM2886-5S/3S	SPI/Digital	2500	3/3	5/3.3	10MHz	Adj. 3V-5V, Fixed ±5V (1W)	105°C	15x11 BGA-32
LTM2886-5I/3I	I²C	2500	3/3	5/3.3	400kHz	Adj. 3V-5V, Fixed ±5V (1W)	105°C	15x11 BGA-32
LTM2887-5S/3S	SPI/Digital	2500	3/3	5/3.3	10MHz	Adj. 1.8V-5V, Adj. 0.6V-5V (1W)	105°C	15x11 BGA-32
LTM2887-5I/3I	I²C	2500	3/3	5/3.3	400kHz	Adj. 1.8V-5V, Adj. 0.6V-5V (1W)	105°C	15x11 BGA-32
LTC4310	I²C	*	—	3.0 to 5.5	100kHz or 400kHz	—	85°C	3x3 DFN-10, MSOP-10
LTC6820	SPI	*	—	2.7 to 5.5	1MHz	—	125°C	3x3 QFN-16, MSOP-16

*Depends on external transformer selection

I²C Bus Buffers, Multiplexers & Rise Time Accelerators

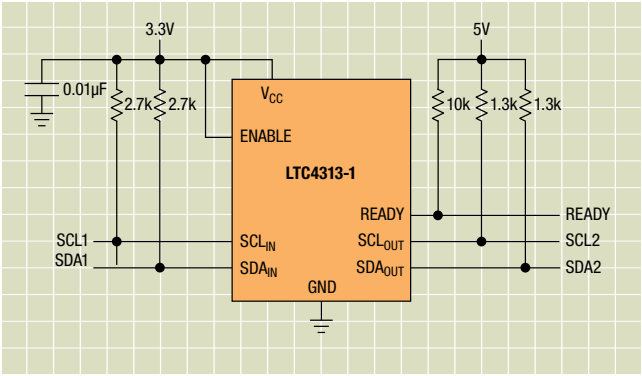
Features:

- Level Translate 1V to 5V Busses, Isolate Capacitance,
- Increase Fan-In, Fan-Out or Rise Times
- 400kHz Operation
- Stuck Bus Protection
- High ESD up to ±15kV HBM
- Small Packages

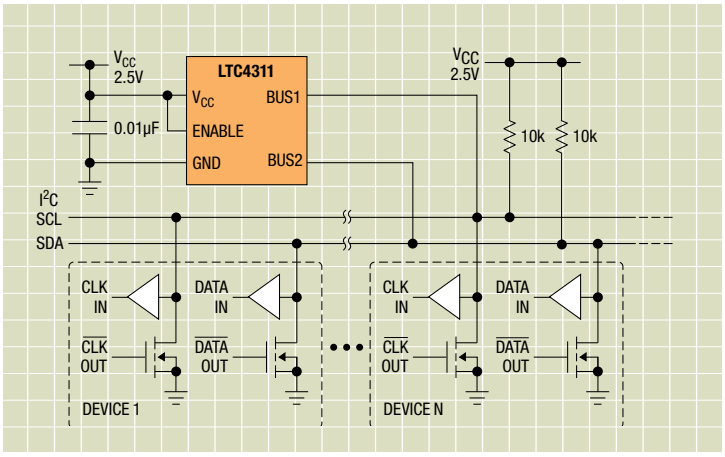
Applications:

- Infotainment/GPS
- Battery Management

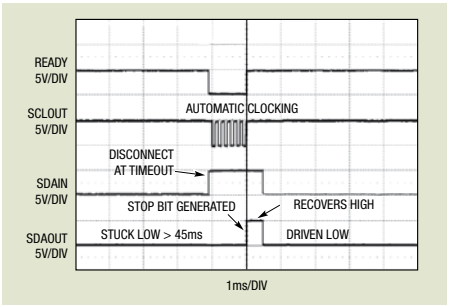
I²C Bus Buffer with High Noise Margin, V_{IL} = 0.3•V_{CC}



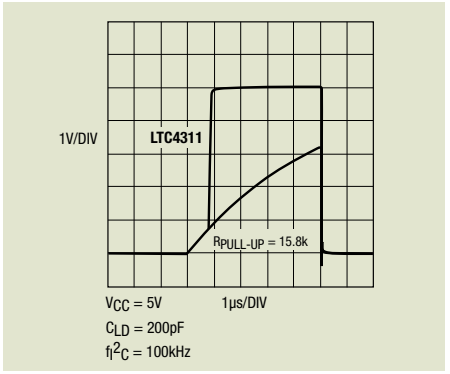
I²C Rise Time Accelerator for Heavily Loaded Busses



Stuck Bus Resolved with Automatic Clocking



Comparison of I²C Waveforms for the LTC4311 vs Resistor Pull-Up



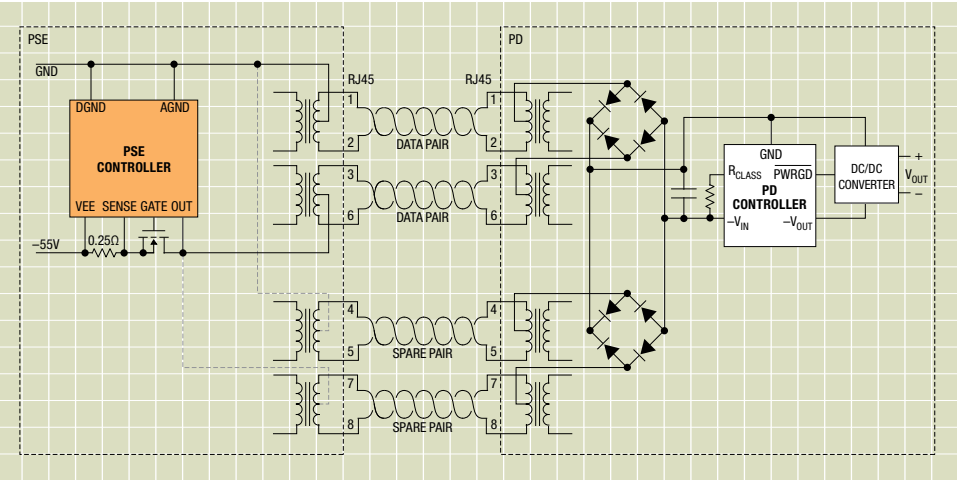
Part Number	Data Rate (kHz)	Hot Swappable	Rise Time Acceleration	Bidirectional Level Translation (V)	Stuck Bus Disconnect/ Recovery	ENABLE	READY	VCC2	GPIO or FAULT	HBM ESD (kV)	Comments	Maximum Ambient Temperature	Package
LTC4300A-1	400	•	•	2.7 to 5.5		•	•			±2		85°C	MSOP-8
LTC4301L	400	•		1.0 to 2.7/5.5		•	•			±10	Supply Independent	85°C	MSOP-8, 3x3 DFN-8
LTC4304	400	•	•	2.7 to 5.5	•	•	•		•	±15	RTA Enable	85°C	MSOP-10, 3x3 DFN-10
LTC4307	400	•	•	2.3 to 5.5	•	•	•			±5	60mV Offset Voltage	85°C	MSOP-8, 3x3 DFN-8
LTC4309	400	•	•	1.0 to 2.3/5.5	•	•	•	•	•	±6	60mV Offset Voltage, RTA Enable, Stuck Bus Disable	85°C	SSOP-16, 4x3 DFN-12
LTC4310	100 or 400	•	•	3.0 to 5.5	•	•	•			±5	Full I²C Isolation	85°C	3x3 DFN-10, MSOP-10
LTC4311	400		•			•				±8	Rise Time Accelerator only	85°C	2mm x 2mm DFN-6, SC70-6
LTC4313	400	•	•	1.5V to 5.5	•	•	•			±4	V_{IL}=0.3V_{CC}, Adj. RTA	85°C	SSOP-8, 3x3 DFN-8
LTC4314	400	•	•	1.5V to 5.5	•	•	•		•	±4	4:1 I²C Multiplexer with Bus Buffer, V_{IL}=0.3V_{CC}, Adj. RTA, Stuck Bus Disable	85°C	SSOP-8, 3x3 DFN-8

Power over Ethernet (PoE) Controllers

Features:

- LTPoE++™ (up to 90W), PoE+ (25.5W) and PoE (13W) Power Sourcing Equipment (PSE) & Powered Device (PD) Controllers
- LTPoE++ Devices: Plug-n-Play, Backward Compatible with PoE+ and PoE Equipment
- Uses Low $R_{DS(ON)}$ External Components for Lowest Heat Dissipation and Highest System Efficiency
- Extremely Robust:
  - PSE: Cable Discharge Protection, 80V Input Pins, 4-Point PD Detection
  - PD: 100V Input Pins, Overtemperature Protection

Typical PoE System



Applications:

- Body Electronics
- Infotainment/GPS
- Security/Camera Systems

Part Number	Type	# of Ports	Max Power (W)	Standard	Integrated Switcher	Integrated MOSFET	Integrated Signature Resistor	One-Event Classification	Two-Event Classification	LTPoE++ Classification	Maximum Ambient Temperature	Package
LT4275A	PD	1	90	LTPoE++			•	•	•	•	125°C	MSOP-10, 3x3 DFN-10
LTC4265	PD	1	25.5	PoE+		•	•	•	•		85°C	4x3 DFN-12
LTC4269/78	PD	1	25.5	PoE+	•	•	•	•	•		85°C	7x4 DFN-32
LT4275B	PD	1	25.5	PoE+			•	•	•		125°C	MSOP-10, 3x3 DFN-10
LTC4257-1	PD	1	13	PoE		•	•	•			85°C	SO-8, 3x3 DFN-8
LTC4267	PD	1	13	PoE	•	•	•	•			85°C	SSOP-16, 3x5 DFN-16
LT4275C	PD	1	13	PoE			•	•			125°C	MSOP-10, 3x3 DFN-10
LTC4274	PSE	1	90	LTPoE++, PoE+, or PoE				•	•	•	85°C	5x7 QFN-38
LTC4266	PSE	4	90	LTPoE++, PoE+, or PoE				•	•	•	85°C	5x7 QFN-38
LTC4290/71	PSE	8	90	LTPoE++, PoE+, or PoE				•	•	•	85°C	6x6 QFN-52, 4x4 QFN-24
LTC4270/71	PSE	12	90	LTPoE++, PoE+, or PoE				•	•	•	85°C	7x8 QFN-52, 4x4 QFN-24

PLL Synthesizers

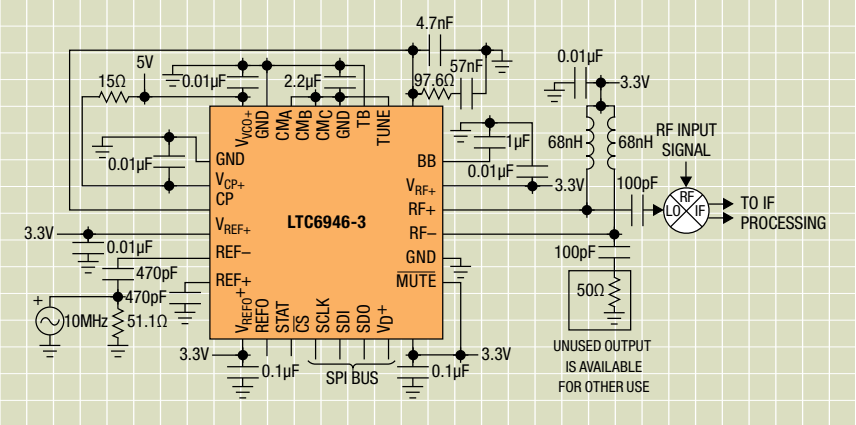
Features:

- 350MHz to 6GHz VCO Input Range
- Low –226dBc/Hz Normalized In-Band Phase Noise Floor
- –157dBc/Hz Wideband Output Phase Noise Floor
- –274dBc/Hz Normalized In-Band 1/f Noise
- Excellent Spurious Performance
- Programmable 1 to 6 Output Divider

Applications:

- Infotainment/GPS

5.7GHz Wideband Receiver



Part Number	Features	Frequency Range (GHz)	Phase Noise @f_{RF}=900MHz		Spurious Products	V_{CC}	Maximum Case Temperature	Package
			1MHz	40MHz				
LTC6945	Integer-N, PLL	0.350 to 6.00		-158dBc/Hz	<-100dBc	3.3V/5V	105°C	4x5 QFN-28
LTC6946	Integer-N, PLL + VCO	0.373 to 5.79	-141dBc/Hz	-158dBc/Hz	<-100dBc	3.3V/5V	105°C	4x5 QFN-28
LTC6947	Frac-N, PLL	0.350 to 6.00		-158dBc/Hz		3.3V/5V	105°C	4x5 QFN-28
LTC6948	Frac-N, PLL + VCO	0.373 to 5.79	-141dBc/Hz	-158dBc/Hz		3.3V/5V	105°C	4x5 QFN-28

RF Detectors

Applications:

- RF Sensing
- Exhaust Sensor
- Remote Door Lock
- Software-Defined Radio

Part Number	Function	Op Frequency	Dynamic Range (dB)	Detect Range (dBm)	Accuracy (dB)	V_{CC} (V)	I_{CC} (mA)	Package
LT5538	Wideband Log Detector	40MHz - 3.8GHz	75	-75 to +5	+/- 1	3.0 to 5.25	29	3x3 DFN-8
LT5534	Log Average Power Detector	50MHz - 3GHz	60	-63 to -2	+/- 0.5	2.7 to 5.25	7	2x2 SC70
LTC5505	Schottky Peak Detector	0.3 - 3.5GHz	44	-32 to +18	+/- 2	2.7 to 5.25	0.5	SOT-23
LTC5507	Schottky Peak Detector	0.1 - 1GHz	46	-32 to +14	+/- 2	2.7 to 5.25	0.55	SOT-23
LT5537	Log-Linear Detector	LF - 1GHz	83	-80 to +10	+/- 1	2.7 to 5.25	13.5	3x2 DFN-8
LT5581	RMS Detector	10MHz - 6GHz	40	-34 to +6	+/- 1	2.7 to 5.25	1.4	3x2 DFN-8
LTC5582	RMS Detector	40MHz - 10GHz	57	-56 to +1	+/- 0.5	3.1 to 3.50	41.6	3x3 DFN-10
LTC5583	Dual RMS Detector	40MHz - 6GHz	60	-58 to +1	+/- 0.2	3.1 to 3.50	90.1	4x4 QFN-24
LTC5587	RMS + ADC	10MHz - 6GHz	40	-34 to +6	+/- 1	2.7 to 3.60	3	3x3 DFN-12

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