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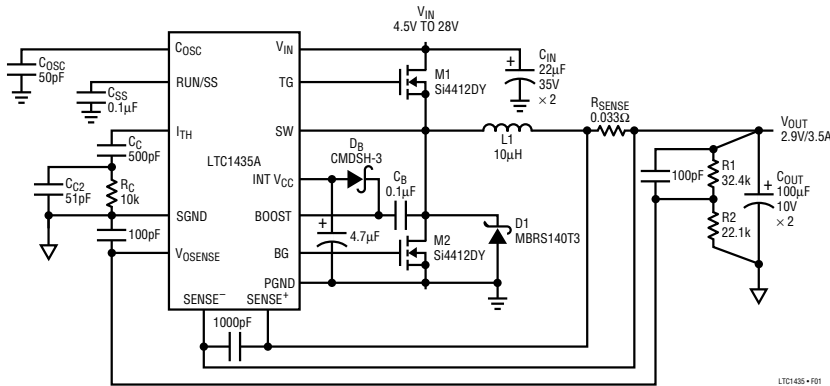
*U.S. PATENT #5723970

High Current, Main DC/DC Converters

High Efficiency, Low Noise, Synchronous Step-Down DC/DC Converters – Single and Dual

High Current Single Output: LTC1435 Series (LTC1435, LTC1436, LTC1437)

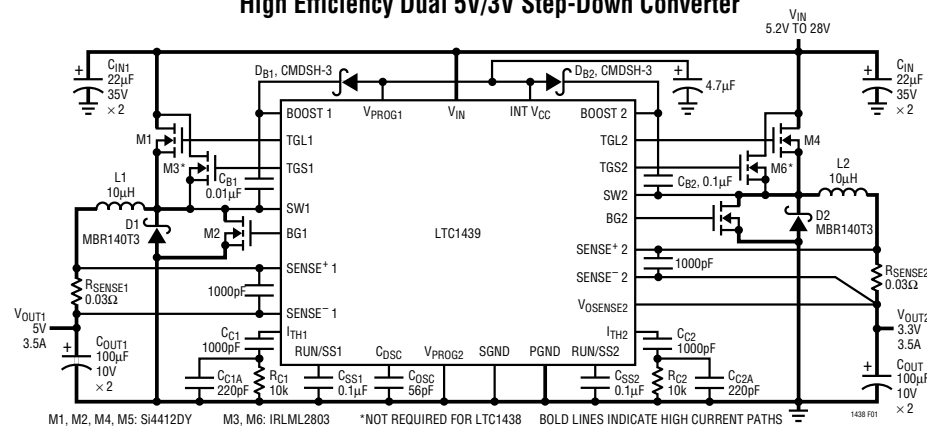
High Efficiency 2.9V/3.5A Step-Down Converter



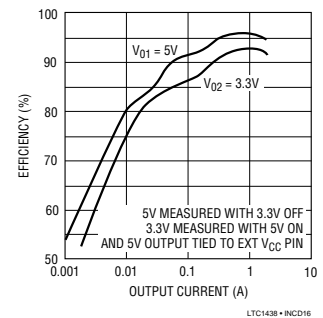
- Programmable Fixed Frequency (PLL Lockable)
- Maintains Constant Frequency at Low Output Currents
- Dual N-Channel MOSFET Synchronous Drive
- Wide V_{IN} Range: 3.5V to 36V Operation
- Very Low Dropout Operation: 99% Duty Cycle Extends Operating Time in Battery Power
- Low Dropout, 0.5A Linear Regulator for VPP Generation or Low Noise Audio Supply
- Secondary Feedback Control
- Built-in Power-On Reset Timer
- Programmable Soft Start
- Low-Battery Detector
- Remote Output Voltage Sense
- Pin Selectable Output Voltage
- Logic Controlled Micropower Shutdown: $I_Q < 25\mu A$
- Low Quiescent Current: 260µA (Single), 320µA (Dual)
- Up to Four Outputs Possible Including 2.9V at 1A
- SSOP and SO Packages

Multiple Output: LTC1439 Series (LTC1438, LTC1439, LTC1538, LTC1539)

High Efficiency Dual 5V/3V Step-Down Converter



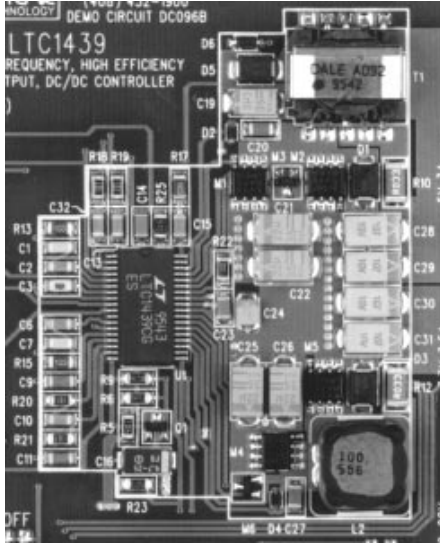
Efficiency vs Output Current



Choose the Right DC/DC Converter for Your Portable

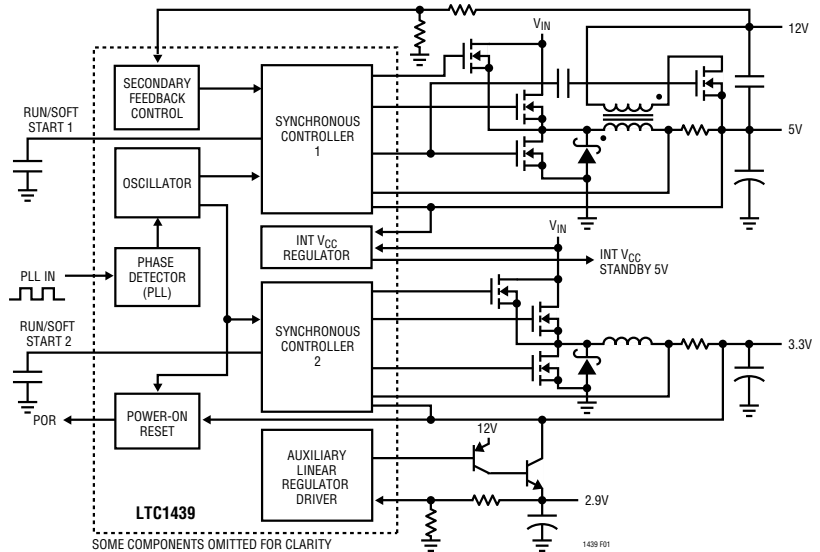
CHARACTERISTICS	LTC1435A	LTC1436	LTC1436-PLL	LTC1437	LTC1438 LTC1438-ADJ	LTC1438X	LTC1439	LTC1538-AUX	LTC1539
Number of Controllers	Single	Single	Single	Single	Dual	Dual	Dual	Dual	Dual
Auxiliary Linear Reg Controller	—	✓	✓	✓	—	—	✓	✓	✓
Power-On Reset	—	✓	✓	✓	✓	—	✓	—	✓
Low-Battery Comparator	—	✓	—	✓	✓	✓	✓	✓	✓
Synchronization	—	—	✓	✓	—	—	✓	—	✓
Industrial Temperature	✓	✓	✓	—	✓	—	✓	✓	✓
5V Keep Alive in SHDN	—	—	—	—	—	—	—	✓	✓
Packaging	16-SSOP 16-SO	24-SSOP	24-SSOP	28-SSOP	28-SSOP	28-SSOP	36-SSOP	28-SSOP	36-SSOP

5V/3A, 3.3V/5A, 12V/120mA Evaluation Board



Actual Size

Complete Notebook Computer Power Supply, Four Outputs

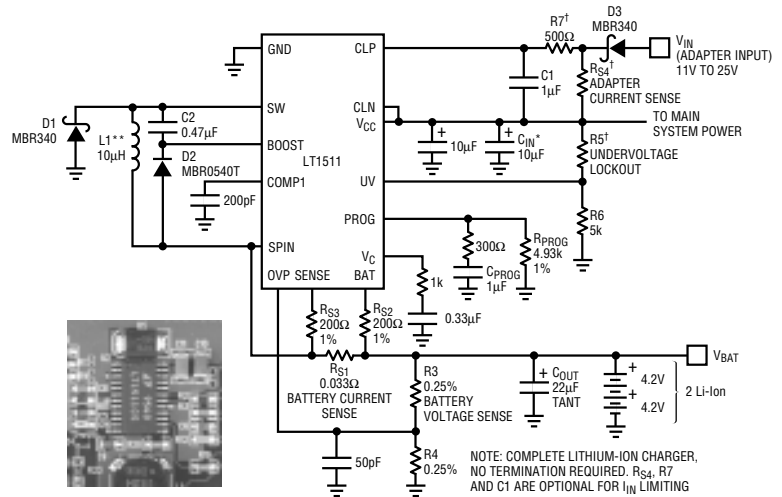


Battery Charging: LT1510 Series (LT1511/LT1512/LT1513)

Constant-Voltage/Constant-Current Battery Chargers

- Charge Li-Ion, NiCd, NiMH: Only One Resistor Required to Program Charging Current
- Charge Any Number of Cells Up to 20V
- Surface Mount Packages
- LT1510: 1.5A Step-Down Topology (+) or (-) Terminal Sensing
- LT1511: 3A Step-Down Topology AC Adaptor Current Limit
- LT1512 and LT1513:
 - SEPIC Topology: 500kHz
 - 1.5A Switch (LT1512): 3A Switch (LT1513)

Lithium-Ion Battery Charger



NOTE: COMPLETE LITHIUM-ION CHARGER, NO TERMINATION REQUIRED. R_{S4} , R_7 AND C_1 ARE OPTIONAL FOR I_{IN} LIMITING
 * TOKIN OR UNITED CHEMI-CON/MARCON
 25V CERAMIC SURFACE MOUNT
 ** 20μH COILTRONICS CTX20-4

Battery Charger Selection Guide

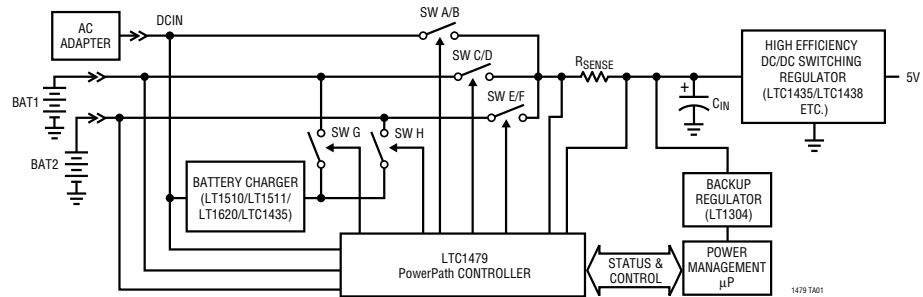
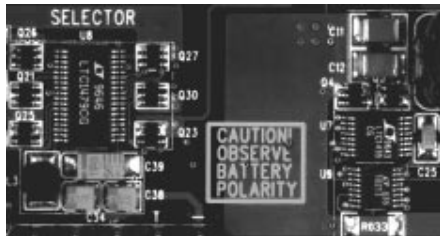
CHARACTERISTICS	LT1510CS8	LT1510	LT1511	LT1512	LT1513
Maximum Charging Current	1.2A	1.5A	3A	1A	2A
Step-Up	—	—	—	✓	✓
Step-Down	✓	✓	✓	✓	✓
Packaging	SO-8	16-SO	24-SSOP 16-PDIP	SO-8 8-PDIP	7-DD

Dual Smart Battery Controller System: LT1621/LTC1435/LTC1479

Complete Power Path Management for Two Batteries, DC Power Source, Charger and Backup

- Compatible with Li-Ion, NiCd, NiMH and Lead Acid Batteries
- All N-Channel Switching Reduces Power Loss
- Seamless Switching Between Power Sources
- Independent Charging and Monitoring of Two Battery Packs
- High Output Currents: >10A Easily Obtained
- Low Standby Current
- Micropower Shutdown
- Over 92% Efficiency of Charger (at 6V)
- SSOP Packages
- SBS 1.0 Standard Compliant

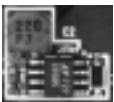
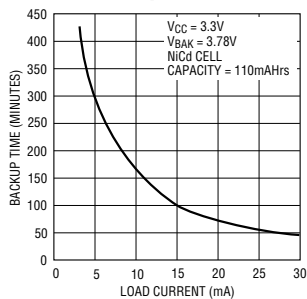
Dual Battery PowerPath Controller System Block Diagram



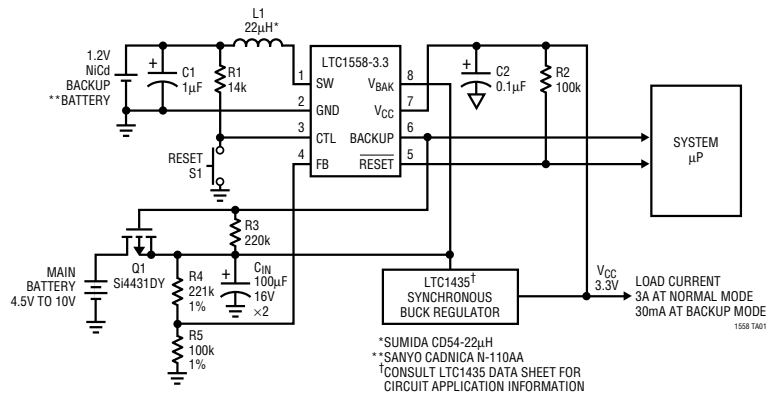
Battery Backup Controller: LTC1558

- Complete Backup Battery System
- Generates Adjustable Backup Voltage from a Single 1.2V NiCd Button Cell
- Smart NiCd Charger Minimizes Recharge Time and Maximizes System Efficiency
- Short-Circuit Protection and Thermal Limiting
- SSOP and SO Packages

Backup Time vs 3.3V Output Load Current



Backup Battery System

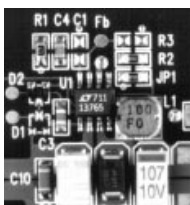


Low Noise DC Supply for Multimedia Audio Circuitry

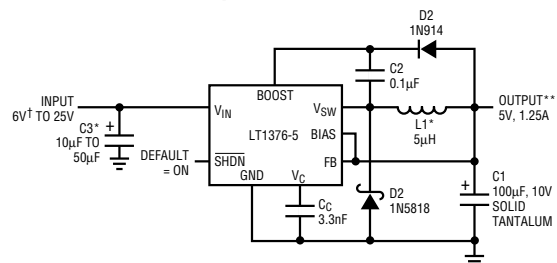
LT1375/LT1376: 1.5A, 500kHz Step-Down Switching Regulators

Simple 5V, 1.25A Buck Converter

Buck Converter



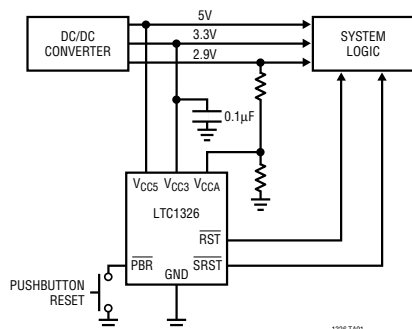
- Constant 500kHz Switching Frequency
- Easily Synchronizable
- Uses All Surface Mount Components
- Inductor Size Reduced to 5μH
- Saturating Switch Design: 0.4Ω
- Effective Supply Current: 2.5mA
- Shutdown Current: 20μA
- Cycle-by-Cycle Current Limiting



* RIPPLE CURRENT $\geq I_{OUT}/2$
 ** INCREASE L1 TO 10 μH FOR LOAD CURRENTS ABOVE 0.6A AND TO 20μH ABOVE 1A
 † FOR INPUT VOLTAGE BELOW 7.5V, SOME RESTRICTIONS MAY APPLY.
 SEE APPLICATIONS INFORMATION.

Micropower Precision Triple Supply Monitor: LTC1326

Multiple Supply Monitoring with Integrated Reset



- Simultaneously Monitors 5V, 3.3V and Adjustable Voltages
- Guaranteed Threshold Accuracy: $\pm 0.75\%$
- Low Supply Current: 20µA
- Power Supply Glitch Immunity
- Manual Pushbutton Reset Input: Soft Reset
- Active Low and Active High Reset Outputs
- 8-Lead SO and MSOP Packages
- New LTC1326-2.5 Monitors **2.5V**, 3.3V and Adjustable Voltages

LCD Display Backlight and Contrast

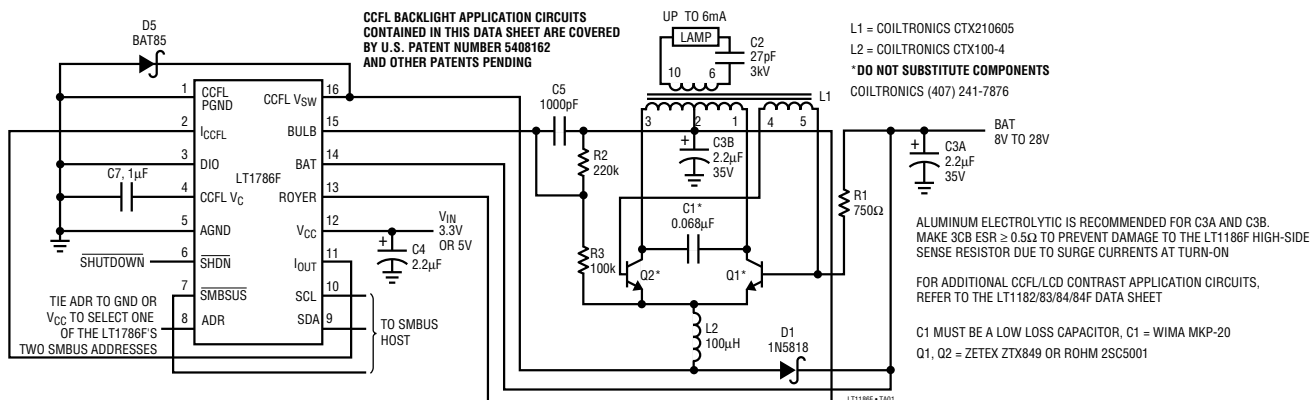
LT1786F: CCFL Inverter with SMBus Brightness Control

- Wide Battery Input Range: 4.5V to 30V
- Grounded Lamp or Floating Lamp Configurations
- Open Lamp Protection
- Precision 100µA Full-Scale DAC Programming Current with 6-Bit Control
- DAC Setting Is Retained in Shutdown
- Micropower Standby Mode: 35µA Total Supply Current

Choose the Right LCD Illumination Supply

Characteristics	LT1182	LT1183	LT1184F	LT1186	LT1786F
LCD Contrast Supply	✓	✓			
LCD Reference Pinned Out		✓	N/A	N/A	N/A
Digital Brightness Controller				✓	✓

90% Efficient CCFL with SMBus Control of Lamp Current

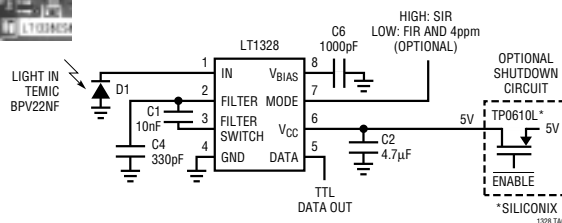


4Msps IrDA Infrared Receiver: LT1328

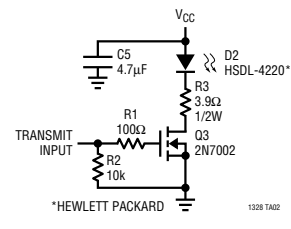
- Receives Multiple IR Modulation Methods: IrDA, SIR, FIR, 4ppm, Sharp/Newton
- Low Frequency Ambient Rejection
- Low Supply Current: 2mA
- 5V Single Supply
- 8-Lead MSOP and SO Packages



IrDA Receiver



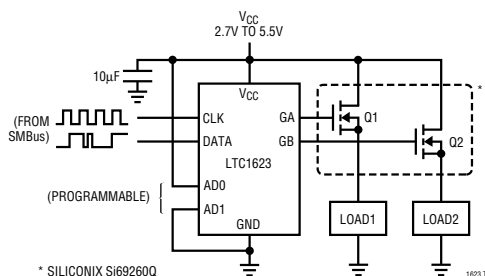
IrDA Transmitter



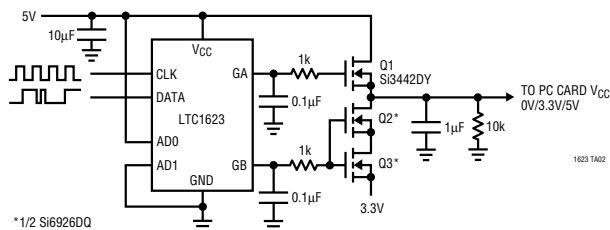
SMBus Dual High Side Switch Controller: LTC1623

- SMBus and I²C™ Compatible
- Built-In Charge Pumps
- Low Standby Current: 17µA
- Peripheral Control and Power Plane Switching
- Drive N-Channel Switches
- 8-Lead MSOP and SO Packages

SMBus Controlled Dual-Load Switch



Single Slot PCMCIA 3.3V/5V Switch



I²C is a trademark of Philips Electronics N.V.

Protected PCMCIA Interface: LTC1472

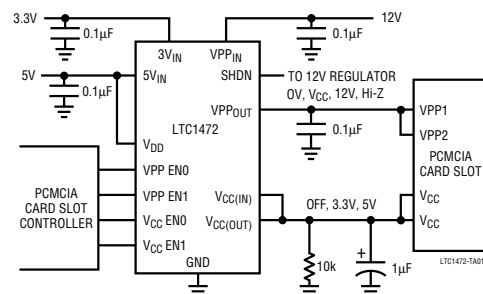
- V_{CC} and V_{PP} Switching in a Single IC
- Built-In Current Limit and Thermal Shutdown
- Extremely Low R_{DS(ON)} NMOS Switches
- 1μA Quiescent Current in Standby
- Narrow SO Package

Linear Technology PCMCIA Product Family

DEVICE	DESCRIPTION	PACKAGE
LT1312	Single PCMCIA VPP Driver/Regulator	8-Pin SO
LT1313	Dual PCMCIA VPP Driver/Regulator	16-Pin SO*
LTC1314	Single PCMCIA Switch Matrix	14-Pin SO
LTC1315	Dual PCMCIA Switch Matrix	24-Pin SSOP
LTC1470	Protected V _{CC} 5V/3.3V Switch Matrix	8-Pin SO
LTC1471	Dual Protected V _{CC} 5V/3.3V Switch Matrix	16-Pin SO*
LTC1472	Protected V _{CC} and VPP Switch Matrix	16-Pin SO*













*Narrow Body

Protected PCMCIA V_{CC} and VPP Card Driver



Low Power 5V RS232 Transceivers

- Uses Small Capacitors: 0.1μF, 0.2μF
- CMOS Compatible Low Power: 60mW
- 3V Logic Compatible
- Operates to 120kBd
- 1μA Supply Current in Shutdown Mode
- Receiver Keep-Alive in Shutdown
- SO and SSOP Packages

SUPPLY VOLTAGE	3V OR 5V LOGIC	TYP POWER DISS(mW)	Rx ACTIVE IN SHDN	I _Q IN SHDN (μA)	DRIVER DISABLE	10kV ESD	0.1μF CAPS	DEVICE TYPE
5	5	60	0	1		15kV		LT1137A
5	5	30	1	60		15kV	 *	LT1237
3	3	1.5	0	1	—			LTC1327
5	5	1.5	0	1	—			LTC1337
5 & 3	3	1.5	0 or 5	0.2 or 10	—			LTC1348
3	3	1.5	2	35	—			LTC1350

*Requires one 1 μ F capacitor

Typical Mouse Driving Application

