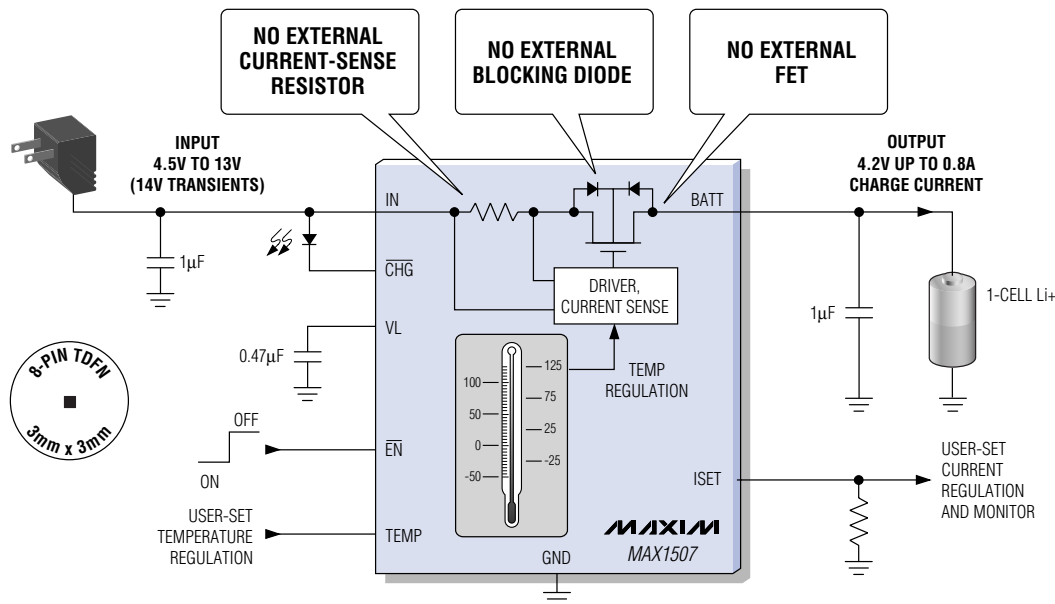




## Smallest, Temperature-Regulated, CC-CV Li+ Battery Charger with High 14V Adapter Input

Eliminates Heat Sink, Improves Reliability, and Fits in a 0.8mm Thin DFN Package



- Overvoltage Protection Above 7V Input
- Charge-Current Monitor
- 0.25V Dropout Voltage at 0.5A Current
- Soft-Start

### Widest Selection of Power Supplies for Battery-Powered and Nonportable Equipment

- Battery Chargers
- LDO and High-Voltage Linear Regulators
- Complete PDA and Digital Camera Power-Management Supplies
- White LED Supplies
- Battery-Pack Protection, Security, and Fuel-Gauge ICs
- USB Current-Limited Switches
- Single-/Dual-/Quad-Phase Step-Down DC-DCs
- OR-ing FET Controllers
- DDR Memory and PowerPC™ Supplies
- Offline Controllers

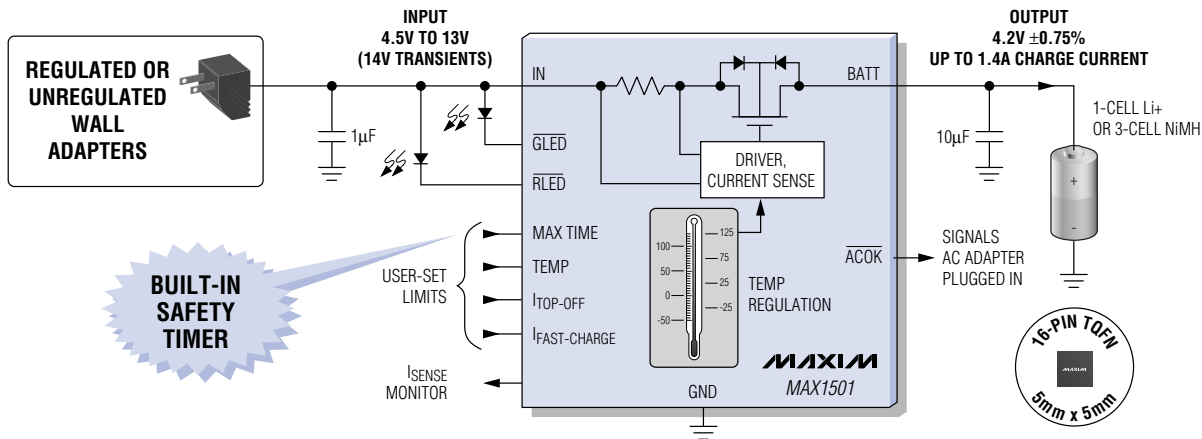
PowerPC is a trademark of IBM Corporation.

MAXIM is a registered trademark of Maxim Integrated Products, Inc. © 2003 Maxim Integrated Products.

**NEW**

# First Temperature-Regulated, CC-CV Linear Charger with Overvoltage Protection and Timer

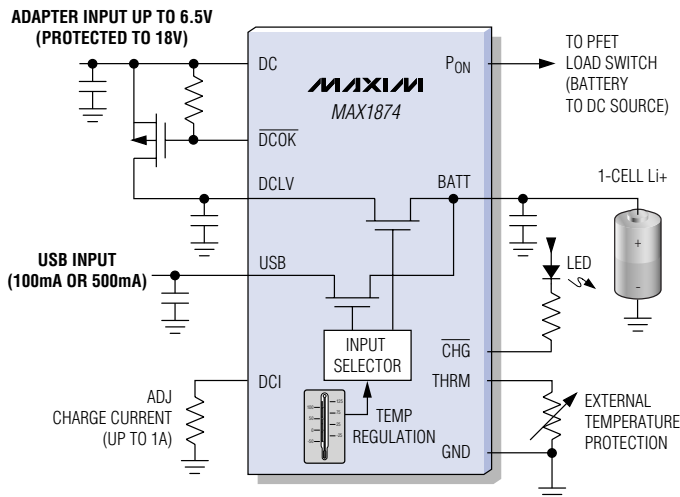
Multichemistry Charger Integrates PMOS FET, Reverse-Blocking Diode, and Current-Sense Resistor into Thin QFN Package



- Standalone or Microprocessor-Controlled Linear Charging
- Charging Stops at Input >6.5V
- Current-Sense Monitor Output
- Autorestart When  $V_{BATT}$  Falls <4V
- Regulates in No-Battery Condition

**NEW**

# Li+ Charger Has Thermal Regulation and Dual-Inputs for USB\* and AC Adapter

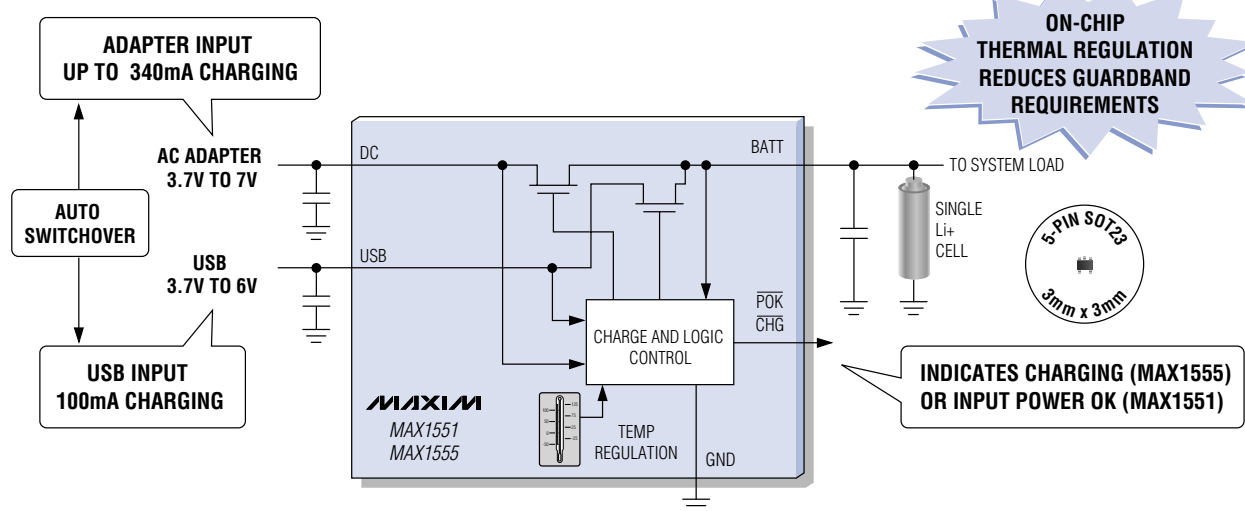


- Adds Overvoltage Protection
- On-Chip Thermal Regulation Simplifies Board Design
- Automatic Switchover When AC Adapter Is Plugged In
- Automatic Load Switch from Battery to DC Source
- Soft-Start Reduces Loading Surges
- Priced at \$1.75†

\*Protected by U.S. Patent 6,507,172.

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

# NEW First SOT23 Dual-Input USB\*/AC Li+ Charger with Thermal Regulation



## Battery Chargers

Part	No. of Series Li+ Cells	Cell Chemistry	Charge Rate	Charge Termination Method	EV Kit	Features	Pin-Package (mm x mm)
DS2770	1	Li+/Ni	Fast	I <sub>min</sub> timer	DS2770K	15V <sub>IN</sub> external switch pulse charger integrated with fuel gauge	16-TSSOP
MAX1501	1	Li+/NiMH	Fast, up to 1.4A	CC-CV, temp range	Yes	Thermal regulation, 14V in abs. max, overvoltage protection	16-QFN (5 x 5)
MAX1507/ MAX1508	1	Li+	Fast, up to 800mA	CC-CV, temp range	Yes	Thermal regulation, 14V in abs. max, overvoltage protection	8-QFN (3 x 3)
MAX1551/ MAX1555	1	Li+	Fast, up to 300mA	Voltage and current limit	Yes	Dual input (USB or AC adaptor), smallest	5-SOT23
MAX1645A	1 to 4	Independent	Fast	—	Yes	SBS level 2 (1.0 compliant) smart battery charger, SMBus™ interface, current-limiting input	28-SSOP
MAX1647	—	Independent	Fast, up to 4A	SMBus controlled	Yes	SMBus serial interface, level 2 Duracell®-/Intel®-compliant charger	16-NSO, 20-SSOP
MAX1667	4	Independent	Fast, up to 4A	SMBus controlled	Yes	SMBus serial interface, level 2 Duracell-/Intel-compliant charger	20-SSOP
MAX1737	1 to 4	Li+	Fast, up to 4A	Voltage and current limit	Yes	Highest efficiency, tightest I <sub>CHARGE</sub> accuracy	28-SSOP
MAX1758	1 to 4	Li+	Fast, up to 1.5A	Voltage and current limit	Yes	28V <sub>IN</sub> internal switches, sync rectified step-down, input-current-limit loop, timers	28-SSOP
MAX1772	2 to 4	Independent	Fast, up to 4A	Voltage and current limit	Yes	28V <sub>IN</sub> external switches, sync rectified step-down controller, input-current-limit loops	28-QSOP
MAX1811	1	Li+	Fast, up to 500mA	Voltage and current limit	—	Linear charger, internal switch, power through USB port, 0.5% precision	8-SO (1.4W)
MAX1873R/S/T	2/3/4	Li+/Ni	Fast, up to 4A	Voltage and current limit	Yes	28V <sub>IN</sub> lowest cost step-down controller, 300kHz PWM, input-current-limit loop	16-QSOP
MAX1874	1	Li+	Fast, up to 1A	Voltage and current limit	—	Dual input (USB or AC adaptor), smallest, overvoltage protection, load switchover	16-QFN (5 x 5)
MAX1879	1	Li+	Fast, up to 800mA	Voltage and current limit	—	Pulse charger, external switch, no heat dissipation, upgrade to MAX1679	8-µMAX
MAX1926	1	Li+	Fast, up to 4A	Voltage and current limit	Yes	12V <sub>IN</sub> external switches, step-down controller, temp sensor, timers	12-QFN (4 x 4)

SMBus is a trademark and Intel is a registered trademark of Intel Corporation.

Duracell is a registered trademark of The Gillette Company.

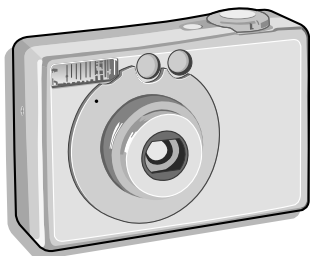
\*Protected by US Patent #6,507,172.



# World's Broadest Selection of Complete Digital Camera Power Supplies

Maxim's highly integrated power-management ICs provide complete power-supply solutions for digital cameras. They improve performance and reduce component count and size compared to conventional multichannel controllers in 2-cell AA, 1-cell Li+, and dual-battery designs. Their on-chip MOSFETs provide up to 95% efficiency for critical power supplies like the high-current main step-up or step-down supply. Additional channels operate with external FETs for design flexibility. This complete solution optimizes overall efficiency and cost while reducing board space.

95% EFFICIENCY, SMALLEST SIZE, DESIGN FLEXIBILITY, UP TO 1MHz OPERATION		
<p><b>MAX1565—5 Channels</b> 1 Step-Down DC-DC 4 Step-Up DC-DCs</p> <p>32-PIN TQFN 5mm x 5mm</p> <ul style="list-style-type: none"> <li>• Ideal for Two AA Cells</li> <li>• Evaluation Kit Available</li> <li>• Priced at \$2.60<sup>†</sup></li> </ul>	<p><b>MAX1566/MAX1567—6 Channels</b> 2 or 1 Step-Down DC-DCs 4 or 5 Step-Up DC-DCs</p> <p>40-PIN TQFN 6mm x 6mm</p> <ul style="list-style-type: none"> <li>• No Transformer (MAX1567)</li> <li>• AUX2 Is Inverter (MAX1567)</li> <li>• Main DC-DC Is Step-Up or Step-Down</li> <li>• Evaluation Kit Available</li> <li>• Priced at \$3.00<sup>†</sup></li> </ul>	<p><b>MAX1584/MAX1585—5 Channels</b> 2 Step-Down DC-DCs 3 Step-Up DC-DCs</p> <p>32-PIN TQFN 5mm x 5mm</p> <ul style="list-style-type: none"> <li>• No Transformer (MAX1585)</li> <li>• AUX2 Is Inverter (MAX1585)</li> <li>• Evaluation Kit Available</li> <li>• Priced at \$2.60<sup>†</sup></li> </ul>



For More Information on Maxim's Line of Digital Camera Power Supplies, Go to:  
[www.maxim-ic.com/DSC](http://www.maxim-ic.com/DSC)

<sup>†</sup>\$2500-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

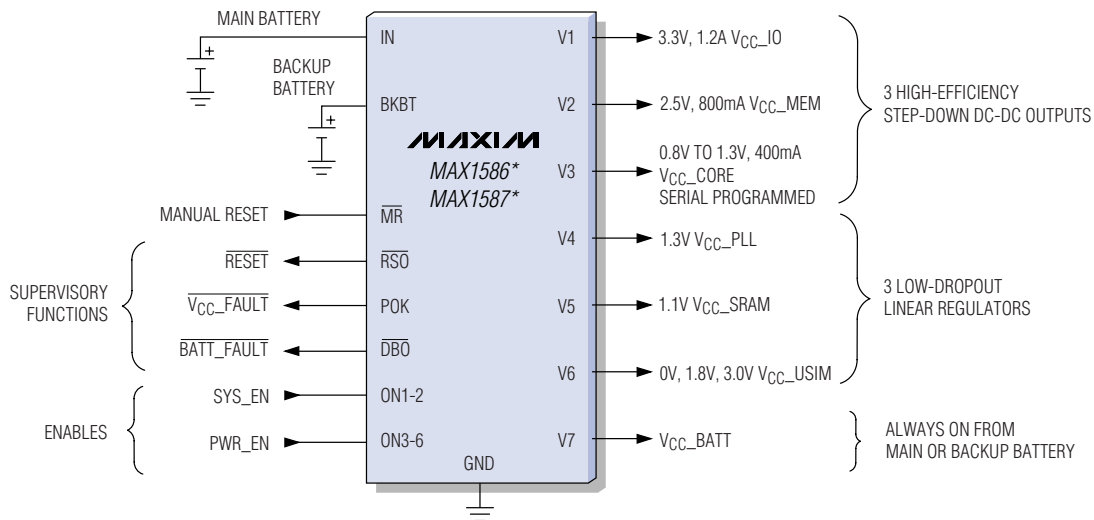
FUTURE PRODUCTS

# High-Efficiency, Low-IQ Complete Power Supply with Dynamic Core for PDAs and Smart Phones

## Complete Power for Devices Using Intel XScale™ Microprocessors

The MAX1586\*/MAX1587\* power-management ICs integrate seven high-performance, low-operating-current power supplies along with supervisory and management functions. Regulator outputs include three ultra-high-efficiency step-down DC-DC outputs, three linear regulators, and an always-on output (V7).

### SEVEN OUTPUTS, ALL SWITCHES INTERNAL, 1MHz PWM



- Low Operating Current
  - 65µA in Sleep Mode (Sleep LDOs On)
  - 170µA All Regulators On, No Load
  - 13µA Shutdown Current

- Tiny 6mm x 6mm, 40-Pin and 7mm x 7mm, 48-Pin TQFN
- Priced at \$5.20†



For More Details on Maxim's Selection of Power Supplies, Go to:  
[www.maxim-ic.com/PDA](http://www.maxim-ic.com/PDA)

XScale is a trademark of Intel Corporation.

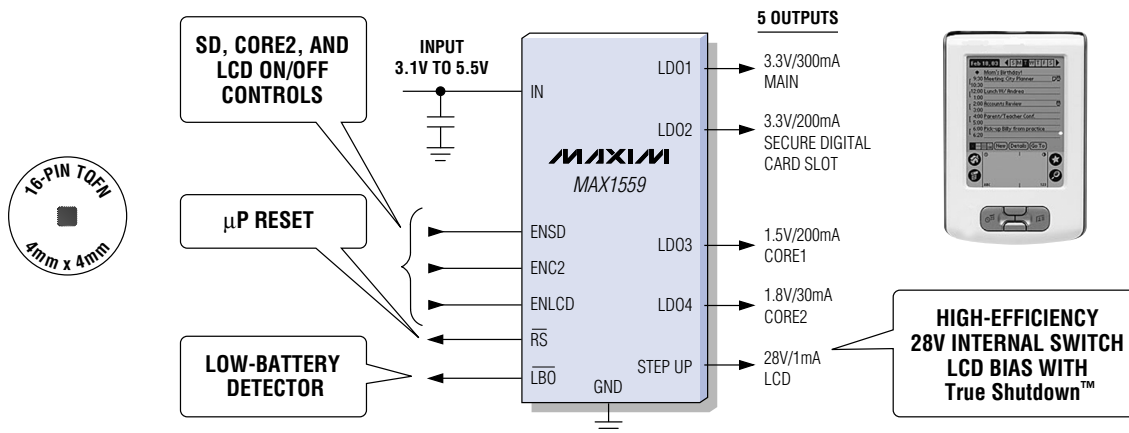
\*Future product—contact factory for availability.

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates.

Not all packages are offered in 1k increments, and some may require minimum order quantities.

# NEW Complete Power-Management Solution for Low-Cost PDAs

Four LDOs Plus 28V Internal-Switch LCD Bias Supply in a 4mm x 4mm TQFN



- High-Efficiency LCD Boost with True 0V Shutdown
- TQFN Is Smallest Solution
- 50μA Quiescent Current
- Low Cost: Prices Start at \$1.50†
- Evaluation Kit Available to Speed Designs
- Contact Factory for Other LDO Output Voltages

## Battery Pack Solutions

(See More Detailed Information in Maxim's Battery Management Design Guide)

Part	64-Bit ROM	Real-Time Clock	Interface	Memory (Bytes)	Local Temp Sensor (Bits)	Voltage ADC (Bits)	Fuel Gauge	Li+ Protector	EV Kit	Pin-Package (mm x mm)
DS2436	✓		1-Wire®	32 EEPROM	13	10		—	DS2436K	T0-92, 8-SO
DS2438	✓	✓	1-Wire	40 EEPROM	13	10	✓	—	DS2438K	8-SO
DS2720	✓		1-Wire	8 EEPROM	—	—		Single cell	DS2720K	8-μSOP
DS2740	✓		1-Wire	—	—	—	✓	—	DS2740K	8-μSOP
DS2751	✓		1-Wire	32 EEPROM	11	11	✓	—	DS2751K	8-TSSOP
DS2761	✓		1-Wire	32 EEPROM	11	11	✓	Single cell	DS2761K	16-TSSOP, flip chip (2.5 x 2.7)
DS2770	✓		1-Wire	32 EEPROM	11	11	✓	—	DS2770K	16-TSSOP
MAX1780			SMBus	1.5k ROM	11, 13, 15, and 16	11, 13, 15, and 16	✓	2, 3, or 4 cell	MAX1780 EV kit	48-TQFP
MAX1894/ MAX1924			—	—	—	—		3 or 4 cell	MAX1894 EV kit	16-QSOP
MAX1906			—	—	—	—		2, 3, or 4 cell	MAX1906 EV kit	16-QFN

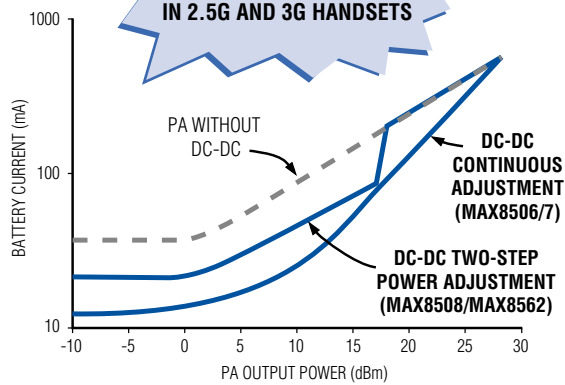
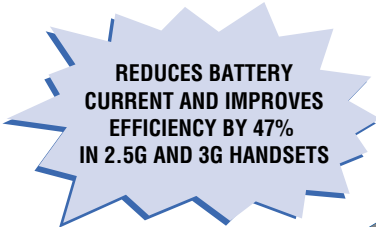
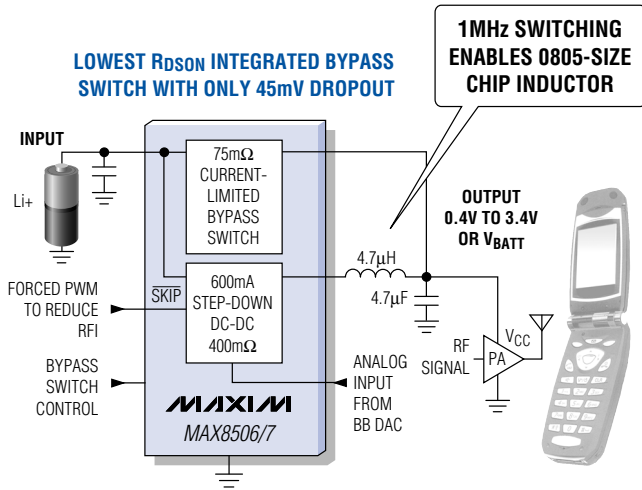
True Shutdown is a trademark of Maxim Integrated Products, Inc.

1-Wire is a registered trademark of Dallas Semiconductor.

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.



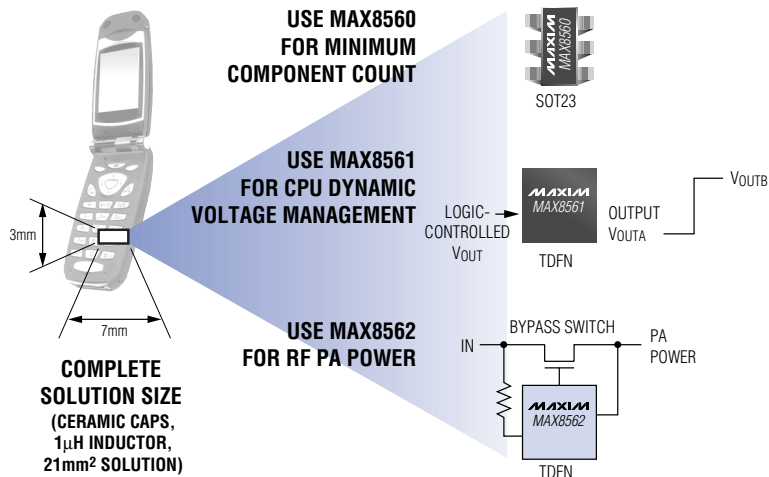
# Dynamic CDMA/WCDMA PA DC-DC Integrates Lowest $R_{DSON}$ 75m $\Omega$ Bypass FET



- Guaranteed 600mA Output Current (<45mV Dropout)
- External Feedback Network Sets Output Voltage (MAX8508)
- Dynamically Adjustable Output from 0.4V to 3.4V in 30 $\mu$ s with Analog DAC Signal (MAX8506/MAX8507)
- Evaluation Kit Available to Speed Designs



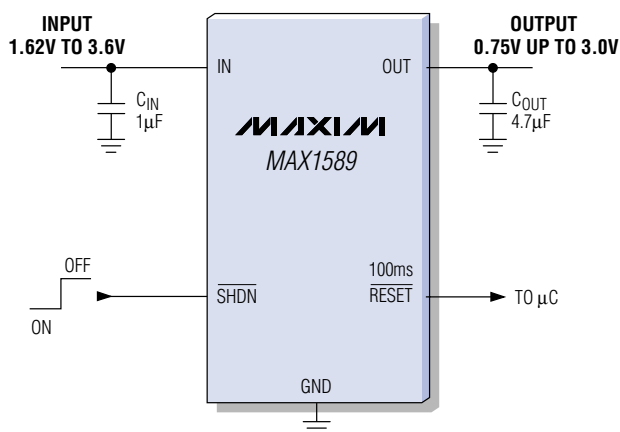
# First 4MHz Step-Down DC-DCs Deliver 500mA and Offer Over 90% Efficiency in SOT23 and TDFN



- 40 $\mu$ A Quiescent Current
- Adjustable Output Voltage from 0.6V to 2.5V
- $\pm 1.5\%$   $V_{OUT}$  Accuracy
- Logic-Controlled Output Voltage (MAX8561)
- Drives External Bypass FET (MAX8562)
- Fast Soft-Start Eliminates Inrush Current
- Evaluation Kit Available to Speed Designs



# Lowest Input Voltage, 500mA LDO Regulator with RESET in SOT and TDFN



**500mA  
GUARANTEED  
±0.5% V<sub>OUT</sub>  
ACCURACY**



- Low 150mV Drop-Out at 500mA Load
- Low 1µA Logic-Controlled Shutdown
- Thermal-Overload and Short-Circuit Protection

- Preset Output Voltages from 0.75V to 3.0V
- Priced at \$0.90†

## Lowest Dropout and Lowest Cost SOT23 and QFN LDOs for Baseband and RF Chipsets

**NEW**

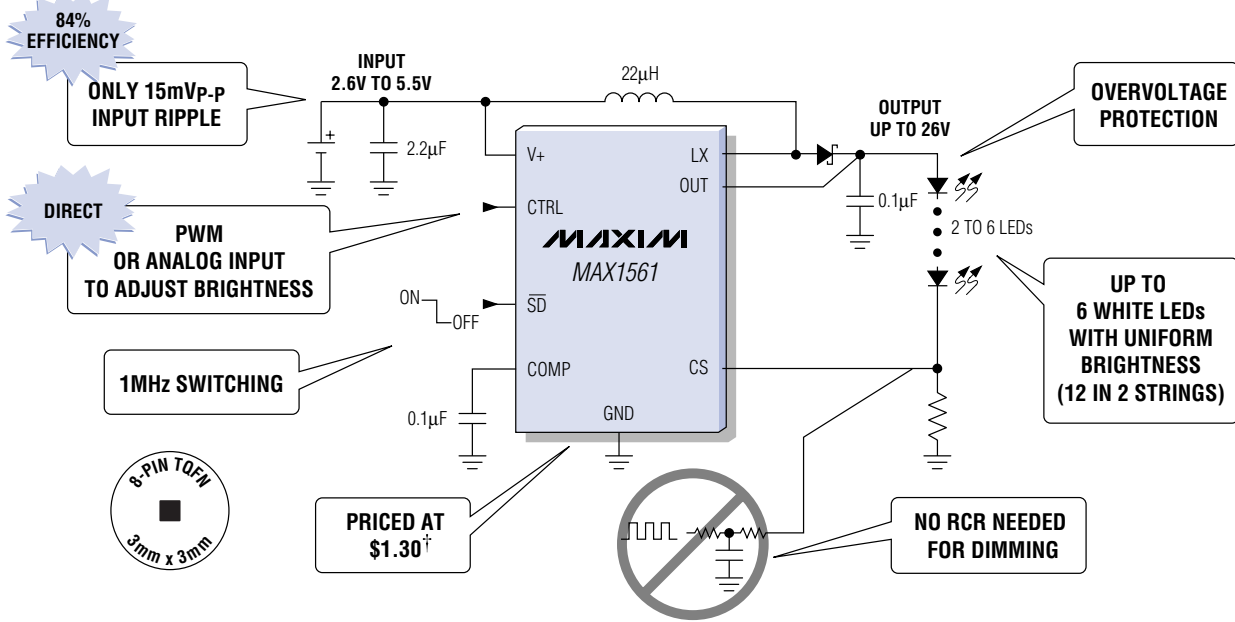
Part	Features	C <sub>OUT</sub> (µF)	Output Voltage (V)
MAX1589	500mA, 1.62V <sub>IN</sub> (min)	4.7	Fixed 0.75 to 3.0 in 25mV increments
MAX1725/6	20mA output, I <sub>Q</sub> = 2µA quiescent current, reverse-battery protection	1	1.8, 2.5, 3.3, 5, or adj 1.5 to 5
MAX1818	120mV dropout at 500mA	3.3	1.5, 1.8, 2, 2.5, 3.3, 5, or adj 1.25 to 5
MAX1819	120mV dropout at 500mA, UCSP™ package	3.3	1.5, 1.8, 2, 2.5, 3.3, 5, or adj 1.25 to 5
MAX8510	Lowest noise (11µV <sub>RMS</sub> , 78dB PSRR), 120mV dropout at 120mA, SC70	1	Fixed 1.5 to 4.5
MAX8511/2	Smallest, 120mV dropout at 120mA, SC70	1	Fixed 1.5 to 4.5 (MAX8511); adj 1.5 to 4.5 (MAX8512)
MAX8530/1	Smallest dual LDOs (200mA and 150mA) in UCSP or 3mm x 3mm TQFN	2.2/1	Fixed 1.5 to 3.3
MAX8532	Single 200mA LDO in UCSP	2.2	Fixed 1.5 to 3.3
MAX8863/4	120mA output, reverse-battery protection	1	2.8, 2.84, 3.15, or adj 1.25 to 6.5
MAX8867/8	150mA output, reverse-battery protection	1	Fixed 2.5 to 5 in 100mV increments
MAX8875	150mA output with POK, reverse-battery protection	1	Fixed 2.5 to 5 in 100mV increments
MAX8877/8	150mA output, 1.1mm high, reverse-battery protection	1	Fixed 2.5 to 5 in 100mV increments
MAX8880/1	200mA output, reverse-battery protection	1	1.8, 2.5, 3.3, 5, or adj 1.25 to 5
MAX8882/3	Dual 160mA output LDOs in SOT23	2.2	Fixed 1.8 to 3.3 in 100mV increments
MAX8887/8	150mV dropout at 300mA, thin 1.1mm (max) height	2.2	Fixed 1.5 to 3.3 in 100mV increments
MAX8890	Triple 100mA output LDOs in 4mm x 4mm QFN	2.2	Fixed 1.8 to 3.3 in 50mV increments

UCSP is a trademark of Maxim Integrated Products, Inc.

†1000-up recommended resale. Price provided is for design guidance and is FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

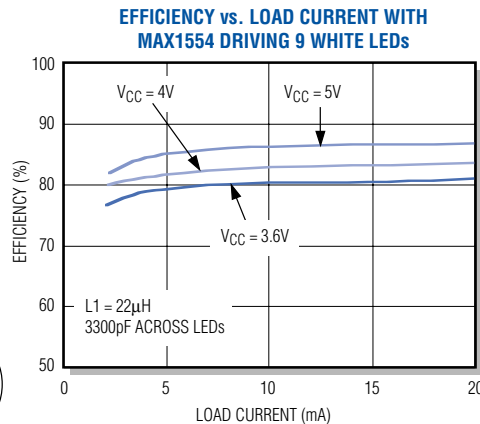
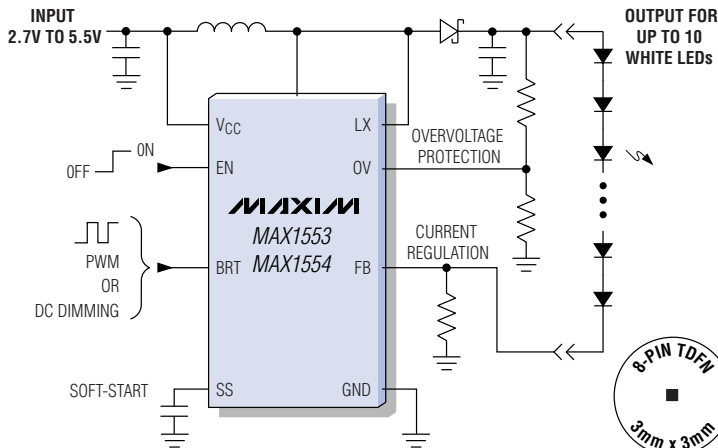
# High-Efficiency, 26V Current Source Powers Up to 6 White LEDs with Uniform Brightness

1MHz Switching, Low-Profile Inductor and Capacitor, 84% Efficiency



# **NEW** Highest Efficiency, 40V Internal Switch Step-Up DC-DC for 2 to 10 White LEDs

Smallest Solution for 10 White LEDs in Handheld Devices

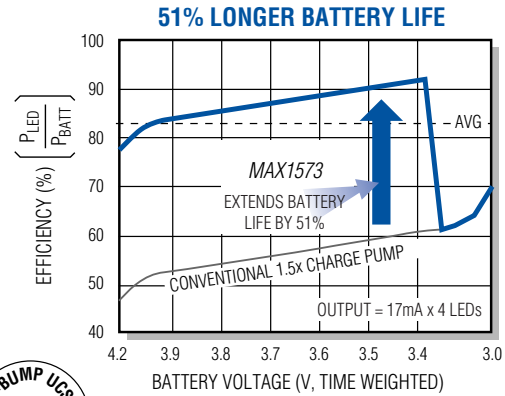
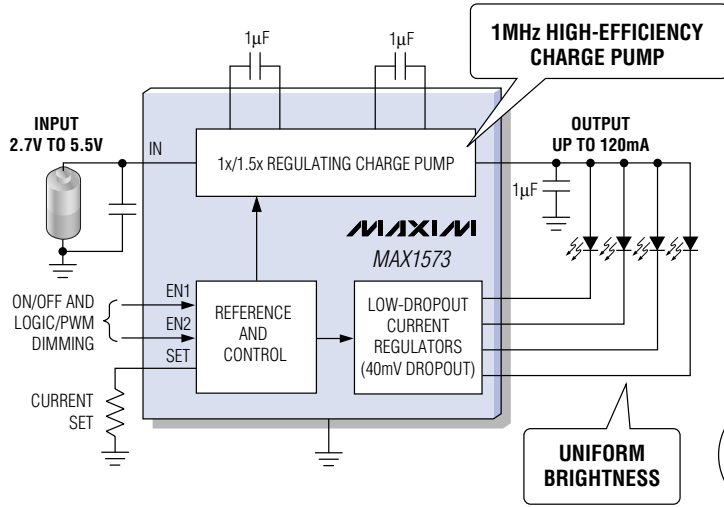


†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.



# Highest Efficiency White-LED Charge Pump in 2mm x 2mm UCSP

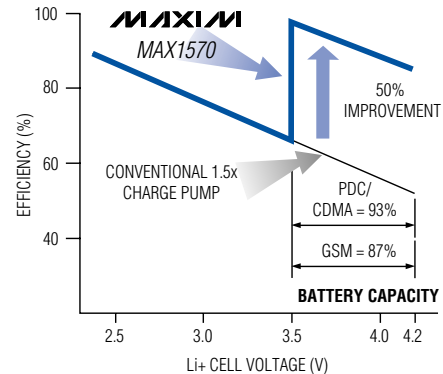
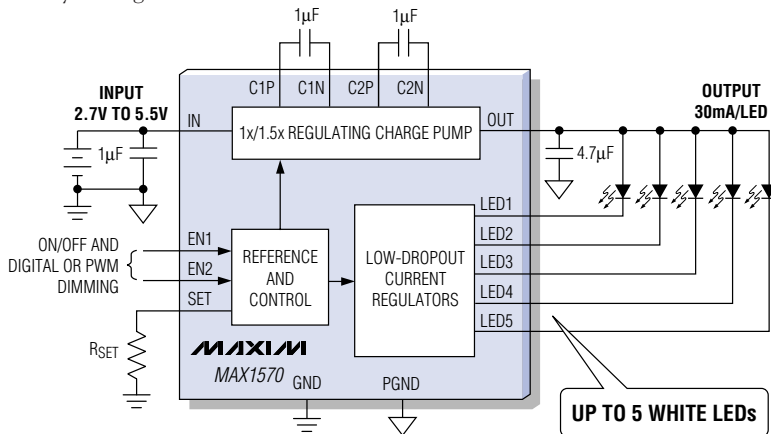
Delivers Up to 92% Efficiency, Needs No Ballast Resistors



- 2% LED Current Matching
- Low Input Ripple, Low EMI, and Soft-Start
- Output Overvoltage Protection
- No Schottky Diode Required
- Priced at \$2.09†

## First High-Efficiency 1x and 1.5x Regulating Charge Pump

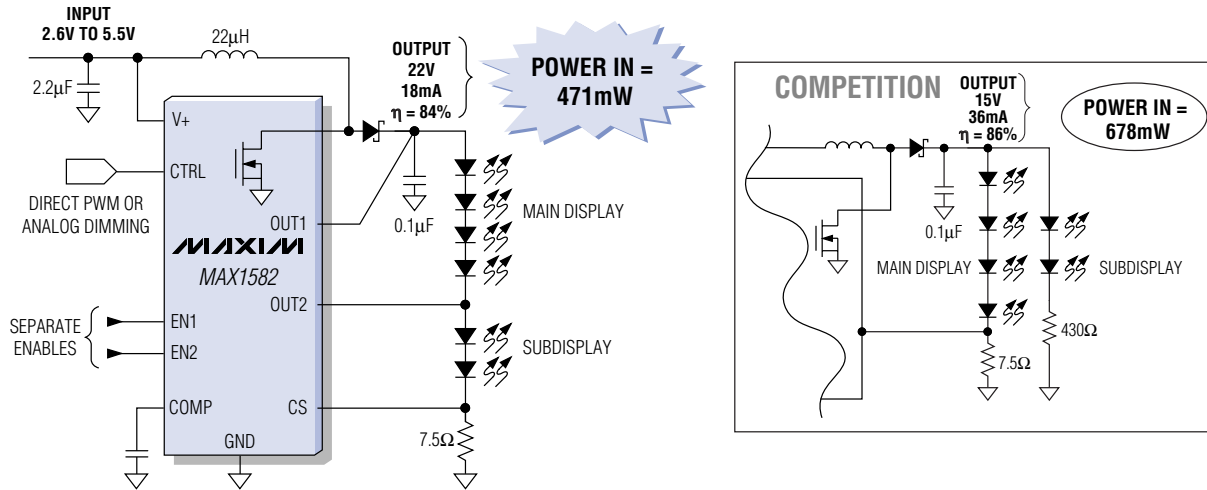
The MAX1570 is the first integrated solution to combine the highest efficiency 1x/1.5x charge pump with low-dropout (200mV) current regulators into a compact 4mm x 4mm TQFN package. No external inductor or ballast resistors are required. The converter switches automatically between 1x and 1.5x charge-pump modes to maximize battery life of cell phones, PDAs, and digital cameras. Additional features include soft-start to limit inrush current, brightness control (digital or PWM), and complete input-to-output disconnect during shutdown to eliminate battery leakage.



†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.

# **NEW** Driver for Dual Displays (Main and Sub) Cuts Power by 25%

Series Connection Saves Power vs. Parallel Solution



- Perfect LED-to-LED Current Matching
- 1MHz PWM Switching
- Overvoltage Protection
- UCSP (2mm x 2mm) and QFN (4mm x 4mm)

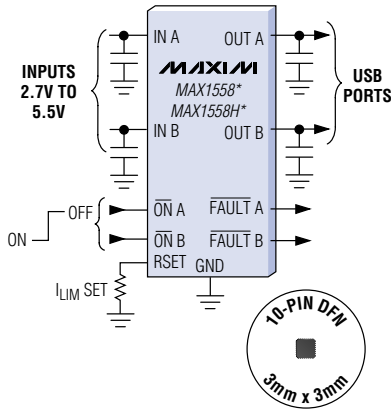
## Broadest Selection of White LED Drivers

	Part	Connection	Description	Features	Max No. of LEDs	Input Voltage (V)	Efficiency (%)	Frequency (MHz)	Pin-Package (mm x mm)
<b>NEW</b>	MAX1553/ MAX1554	Series	40V step-up DC-DC in QFN	Smallest, highest-efficiency for 10 LEDs in series, current regulation, low-profile external components, overvoltage protection (OVP)	10	2.7 to 5.5	82	300kHz	8-TDFN (3x3)
	MAX1561	Series	26V <sub>OUT</sub> step-up DC-DC	High frequency for smallest components, current regulation, internal MOSFET, OVP	6	2.6 to 5.5	84	1	8-TDFN (3x3)
	MAX1570	Parallel	1x/1.5x charge pump with current regulation	Smallest 5-LED parallel solution, 0.3% LED current matching, 30mA/LED, 200mV dropout current regulators	5	2.7 to 5.5	85	1	16-TQFN (4x4)
<b>NEW</b>	MAX1573	Parallel	1x/1.5x charge pump in UCSP	Smallest 4-LED parallel solution, 2% LED current matching, 28mA/LED, OVP, current regulators	4	2.7 to 5.5	92	1	16-TQFN (4x4)/ 14-UCSP (2x2)
	MAX1582	Series	26V <sub>OUT</sub> step-up DC-DC for main and subdisplays	Drives two LED sections for main and subdisplays, current regulation, internal MOSFET, OVP, low-profile external components	2 + 4	2.6 to 5.5	84	1	12-TQFN (4x4)/ 16-UCSP
<b>NEW</b>	MAX1599	Series	30V <sub>OUT</sub> step-up DC-DC	Highest efficiency for 6 LEDs in series, current regulation, internal MOSFET, OVP	6	2.6 to 5.5	87	500kHz	8-TDFN (3x3)
	MAX1848	Series	13V <sub>OUT</sub> step-up DC-DC in SOT23	Highest efficiency for 3 LEDs in series, current regulation, low-profile external components, OVP	3	2.6 to 5.5	87	1.2	8-TDFN (3x3)/ 8-Thin SOT23
	MAX1910/ MAX1912	Parallel	1.5x/2x charge pump	Higher output voltage for more than LEDs; current or voltage regulation, load disconnected in shutdown	4	2.7 to 5.3	70	750kHz	10-µMAX
	MAX1916	Parallel	Triple current regulator	Provides even brightness when LED supply already available; 60mA/LED, 0.3% LED current matching, brightness control, thermal protection	3	2.5 to 5.5	—	—	6-Thin SOT23
<b>NEW</b>	MAX1984/ MAX1985/ MAX1986	Parallel	5.5V <sub>OUT</sub> step-up DC-DC with 8 current regulators	Highest efficiency and multiple brightness controls	8	2.7 to 5.5	90	1	20-TQFN (4x4)

# Smallest USB Switches with Autoreset and Fault Blanking

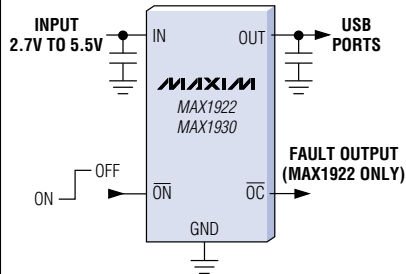
**FUTURE PRODUCTS**

## MAX1558\*/MAX1558H\* DUAL 1.2A SWITCHES FOR 2 USB PORTS



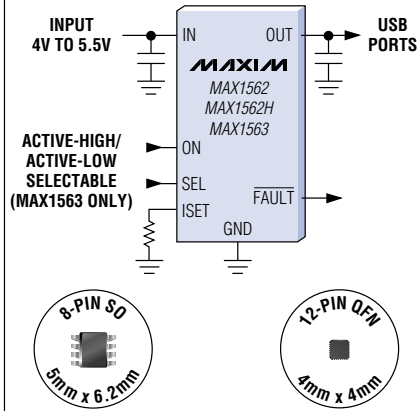
- Tiny DFN Package
- 60mΩ Resistance per Switch
- Reverse Current Blocking
- Enabled Low or High (MAX1558H)

## MAX1922/MAX1930 1A SWITCH FOR UP TO 2 USB PORTS



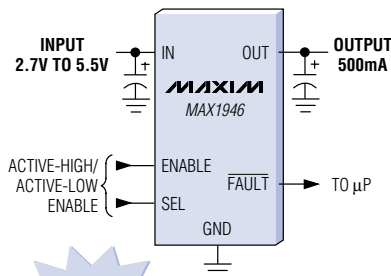
- Pin Compatible with TPS2010–TPS2013 (MAX1930)
- 70mΩ Switch Resistance
- ±20% Current-Limit Accuracy

## MAX1562/MAX1563 4A SWITCH FOR UP TO 8 USB PORTS



- Programmable Up to 4A (MAX1563)
- Programmable Up to 3A (MAX1562)
- 30mΩ Switch Resistance
- ±20% Current-Limit Accuracy

## MAX1946 SINGLE PORT



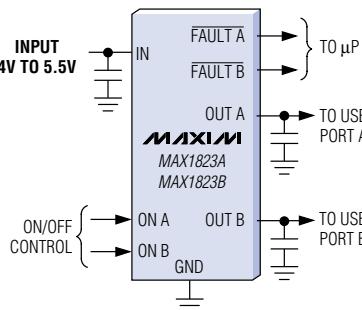
**MAX1946  
SMALLEST**

**COMPETITION  
67% LARGER**

- Tiny 3mm x 3mm TQFN
- For PDAs and Notebooks

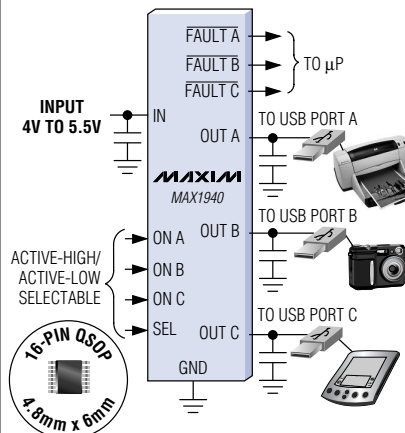
**NEW**

## MAX1823A/MAX1823B DUAL PORTS



- Active High (MAX1823B)
- Reverse Current Blocking

## MAX1940 TRIPLE PORTS



- Meets Notebook Needs
- Tiny QSOP Package

\*Future product—contact factory for availability.

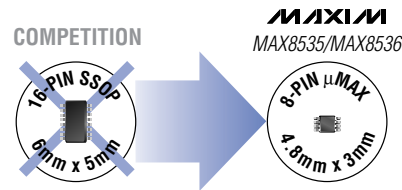
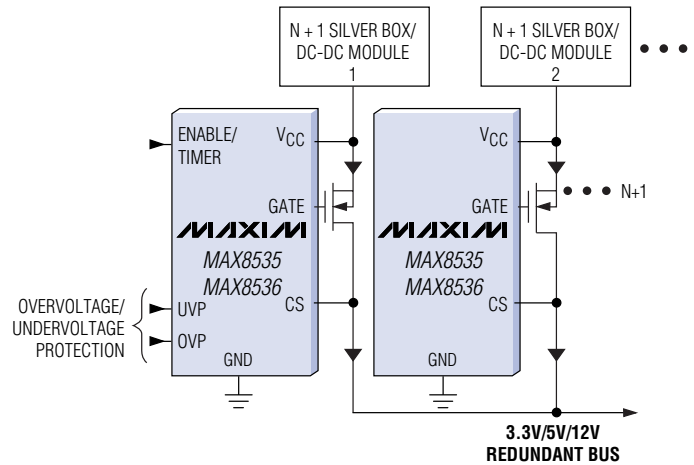
# Best OR-ing FET Controllers for N+1 Redundant Supplies

## Beat Schottky Diodes

- 80% Lower Power Dissipation Improves Efficiency, Eliminates Heatsinks
- Overvoltage and Undervoltage Protection Improves Reliability
- Enable Input and Fault Signal Output, Simplify Sequencing and Monitoring for System Power Management
- Timer Provides Soft-Start

## Beat Competitors' OR-ing Controllers

- Five Times Faster Reverse-Current Protection Improves Bus Voltage Integrity (0.8µs vs. 5µs)
- Eliminates Extraneous Functions and Saves Cost
- 50% Smaller Package Saves Space



## **NEW** Maxim Offers a Wide Selection of USB Current-Limited Switches

Part	No. of USB Ports	Input Voltage (V)	Guaranteed Output Current (mA)	On-Resistance (mΩ)	Tight Current-Limit Accuracy	Fault Blanking	Autoreset	Thermal Shutdown Protection	Pin-Package (mm x mm)
<b>NEW</b> MAX1558/ MAX1558H	2	2.7 to 5.5	1.2A/channel	60	✓	✓	✓	✓	10-QFN (3 x 3)
MAX1562	6	4 to 5.5	3A	30	✓	✓	✓	✓	8-SO/12-QFN
MAX1563	8	4 to 5.5	4A	30	✓	✓	✓	✓	8-SO/12-QFN
MAX1607	1	2.7 to 5.5	500	60	✓	✓		✓	8-SO
MAX1693/ MAX1694	1	2.7 to 5.5	500	60	✓	✓		✓	10-µMAX
MAX1812	2	4 to 5.5	500/channel	75		✓		✓	10-µMAX
<b>NEW</b> MAX1823A/B	2	4 to 5.5	500/channel	75		✓	✓	✓	10-µMAX
MAX1922	2	2.7 to 5.5	1.4A	70	✓	✓		✓	8-SO
MAX1930	2	2.7 to 5.5	1A	70	✓			✓	8-SO
MAX1931	1	2.7 to 5.5	500	60		✓		✓	10-µMAX
MAX1940	3	4 to 5.5	500/channel	75		✓	✓	✓	16-QSOP
MAX1946	1	2.7 to 5.5	500	80		✓	✓	✓	8-QFN (3 x 3)



# 1A-to-240A Step-Down Controllers for Nonportable Applications

Network/Telecom Equipment, Base Stations, xDSL/Wireless and Cable Modem/Routers, Set-Top Boxes, Desktops, and Servers

1A to 5A	
V <sub>INPUT</sub> (V)	Part
2.7 to 5.5	<b>MAX1951</b> Smallest, internal switch, all ceramic, 2.5A output
3 to 5.5	<b>MAX1957</b> Lowest cost, DDR termination source/sink, tracking
2.7 to 5.5	<b>MAX1970/MAX1972</b> Internal switch, smallest dual 0.75A, 1.4MHz, POR, all ceramic
2.7 to 5.5	<b>MAX1971</b> Internal switch, smallest dual 0.75A with POR for SFP GBIC modules
2.7 to 5.5	<b>MAX1973</b> Internal switch, smallest 1A, 1.4MHz, all ceramic, voltage margin
2.7 to 5.5	<b>MAX1974</b> Internal switch, smallest 1A, 0.75V <sub>OUT</sub> , 1.4MHz, all ceramic, POK
2.25 to 5.5	<b>MAX8505</b> Smallest internal switch for 3A output, 1MHz, PWM, all ceramic, soft-start, POK
4.75 to 23	<b>MAX8529</b> Dual out-of-phase, 1.5MHz, all ceramic

1A to 10A	
V <sub>INPUT</sub> (V)	Part
4.5 to 23	<b>MAX1858A/MAX1875A/MAX1876A</b> Dual out-of-phase, foldback I <sub>LIM</sub> , prebias startup (MAX1875A/MAX1876A only), sequenced outputs (MAX1858A only)
4.5 to 28	<b>MAX1864</b> Switcher + 2 LDOs
4.5 to 28	<b>MAX1865</b> Switcher + 3 positive and 1 negative LDOs
3 to 5.5	<b>MAX1945</b> Smallest internal switch, 6A output
2.7 to 5.5	<b>MAX1953A</b> Smallest, all ceramic, 1MHz, foldback current limit
3 to 13.2	<b>MAX1954A</b> Lowest cost, 300kHz, foldback current limit
4.5 to 28	<b>MAX1964</b> Switcher + 2 sequenced LDOs
4.75 to 23	<b>MAX1965</b> Switcher + 3 positive and 1 negative tracking LDOs
2.7 to 2.8	<b>MAX8545/MAX8546/MAX8548</b> Low-cost controller, foldback I <sub>LIM</sub> , up to 15A out

1A to 25A	
V <sub>INPUT</sub> (V)	Part
1.5 to 22	<b>MAX1917</b> DDR termination source/sink, tracking, smallest output capacitors
2.25 to 5.5	<b>MAX1955</b> Dual output, internal 5V bias, 0.5% accuracy
1.6 to 5.5	<b>MAX1956</b> Dual output, internal 5V bias, 0.5% accuracy
2.35 to 5.5	<b>MAX1960/MAX1962</b> 0.5% accuracy, ceramic or electrolytic caps, internal 5V bias for low-cost FETs

TEC Controllers and APD Bias for Optical Modules/Networks		
MAX1968 MAX8520/MAX8521	MAX1978	MAX1932
Smallest, safest, and most accurate TEC controllers. Internal power MOSFETs; 0.5MHz/1MHz frequency reduces size of external components. Independent and accurate heating/cooling control eliminates current surges.	Smallest, safest, most accurate single-chip TEC controller. Fits 0.93in <sup>2</sup> , <3mm tall components. Independent and accurate heating/cooling current/voltage limit. Current control eliminates current surges. Includes current temperature monitors (overtemp/undertemp alarms), 0.001°C temperature stability.	Safest, lowest noise, most accurate APD bias supply, true, accurate high-side current limit; sub-1mV ripple, 0.6% accurate, digital and analog interfaces. Avalanche breakdown indicator allows optimal bias regardless of temperature.

Multiphase Up to 240A
Dual Phase
6V to 24V input, VID and nonVID outputs. 6V gate drives smallest output capacitors, Intel VRM 9.09/9.1 and AMD™ Athlon™ (MAX1938), AMD Hammer (MAX1937), Athlon Mobile (MAX1939)
4.75V to 24V input, MAX5037/MAX5038/MAX5041, dual-phase 60A controllers
2- to 8-Phase
MAX8523/MAX8525 chipset, for Pentium®, 4, VRD 10.x and VRM 10.x designs

Pentium is a registered trademark of Intel Corporation.  
AMD and Athlon are trademarks of Advanced Micro Devices, Inc.



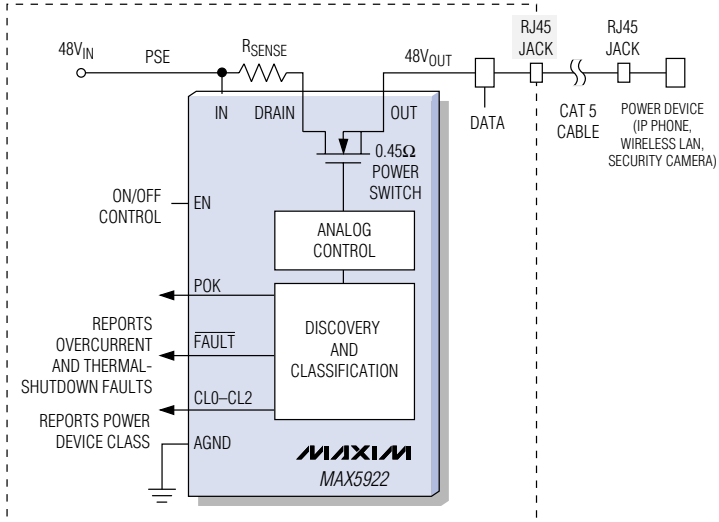
# First Power Switch For Power-Over-Ethernet Is Fully IEEE802.3af Compliant

Highest Integrated Solution Reduces Board Space and Saves Cost

**IEEE802.3af Compliance**  
(Not Available from Competition)

**Highest Integration/Reliability, Lowest Cost**

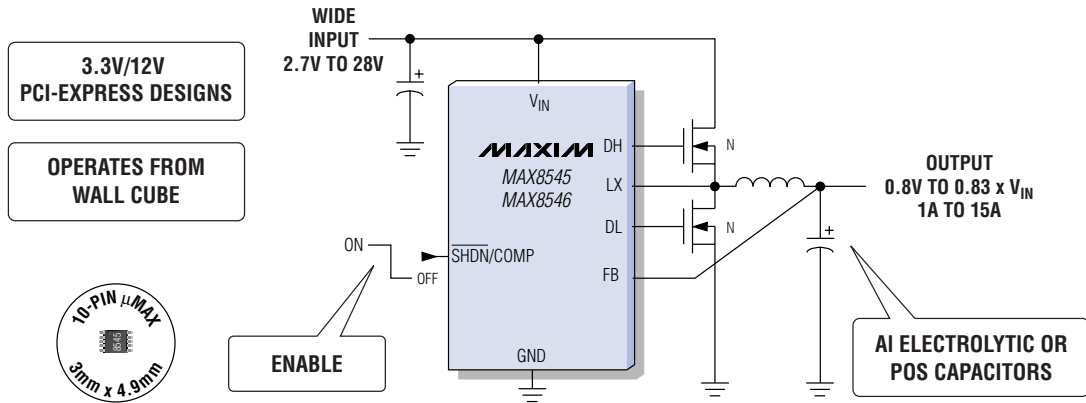
- Internal 0.45Ω Power FET
- Flexibility of Design
  - Detection-Disable Input Allows User to Skip Detection and Classification Phases
  - Selectable Undercurrent Load Disconnect
  - Collision-Avoidance Detection Input Allows User to Configure the Device for Midspan Operation
  - Selectable Latched or Autoretry Fault Management



# Simple, Low-Cost DC-DC Controllers for Desktops, Desknotes, Graphic Cards, and Set-Top Boxes

2.7V to 28V Input, Lossless ISENSE, and Foldback ILIMIT

Use the MAX8545 and MAX8546 voltage-mode, 300kHz PWM step-down DC-DC controllers with powerful 2.5Ω (typical) gate drivers for 1A to 15A applications. Lossless current sense and foldback current protection (which reduces power dissipation by 80%) provide reliable, low-cost implementation. Their wide-input voltage range eliminates the need for an additional bias supply. Priced at \$0.95.†



†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.



# 2-to-8 Phase, Scalable Multiphase Converter Chipset for Servers, Desktops, and Workstations

Reduces Capacitor Requirements, Includes Current-Mode Controller and Dual MOSFET Drivers

## Chipset Part Numbers

- MAX8524—200kHz to 1.2MHz Current-Mode PWM Controller with VRM/VRD 10.0 Code
- MAX8525—200kHz to 1.2MHz Current-Mode PWM Controller with VRM/VRD 9.1 Code
- MAX8523—Dual MOSFET Drivers (Each Accommodates Two Phases)

## Scalable Architecture

- Design 20A to 240A Output Converters, Up to 30A per Phase

## Optimize Designs

- High Accuracy, Fast Response, Ultra-Compact or Lowest Cost Designs
- Current-Mode Control Reduces Capacitor Requirement, Meets Transient Requirements

Parameter	Lowest Cost	Highest Performance, Smallest Size
Capacitors	200kHz/phase, electrolytic	1.2MHz/phase, ceramic
Current-sense	Lossless inductor sense	High accuracy with sense resistors
MOSFETs	MAX8523 driver + low-cost MOSFETs	MOSFETs with integrated gate drives

# MOSFET Driver Combines Highest Performance, Most Design Flexibility

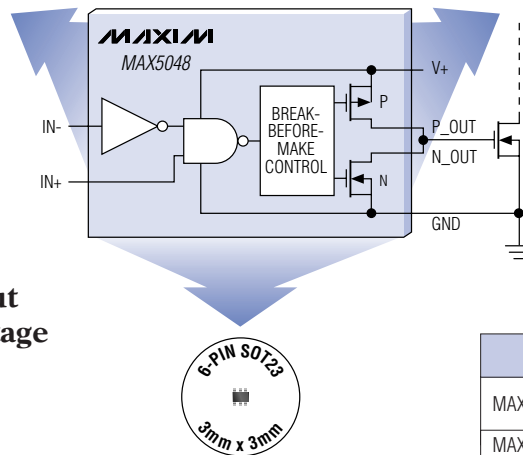
High Output Current, High-Speed, Robust FET Driver in a Tiny SOT23

## Highest Performance

- 7.6A Sink/1.3A Source Current
- Matching 12ns Propagation Delay from IN+ or IN-
- V+ = 4V to 12.6V, 13V Transients
- Up to 14V Logic Input Regardless of V+ Voltage

## Smallest Size

- 56% Smaller than Competitor's TSSOP



## Flexibility of Design

- Independent Rise/Fall Time with Separate Source/Sink Outputs
- Invert/Noninvert Inputs Control MOSFET and Shutdown

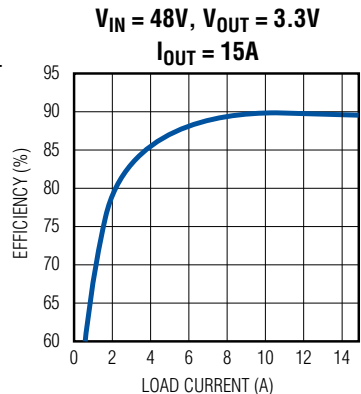
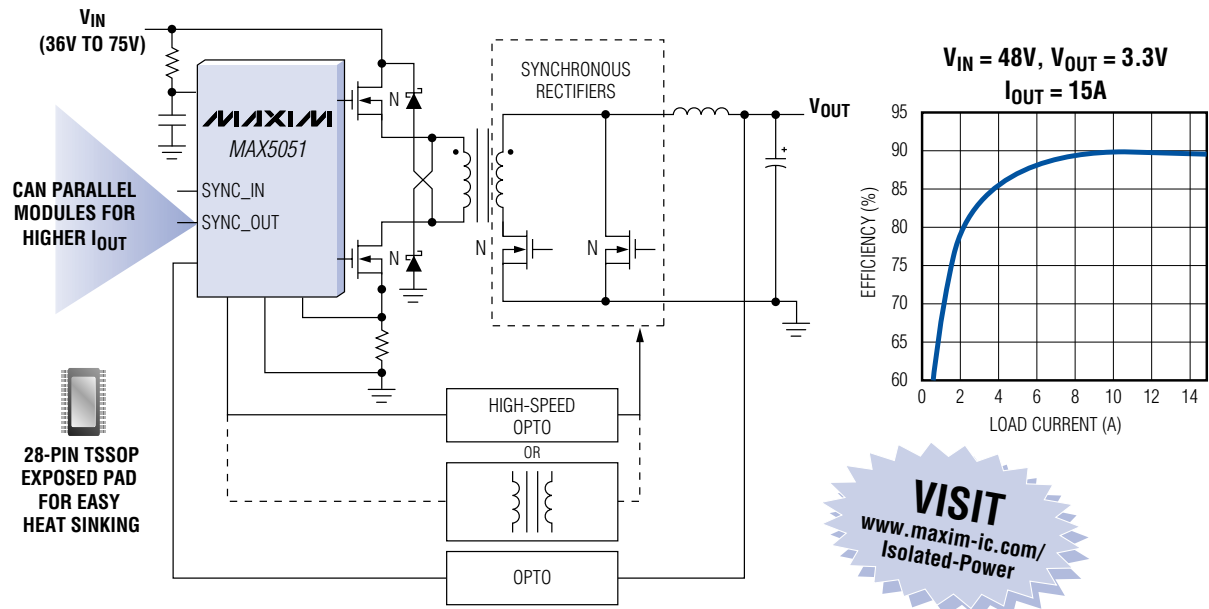
Part	Logic Input	Price† (\$)
MAX5048A	$\frac{V_{CC}}{2}$ CMOS	0.87
MAX5048B	TTL	0.87

†1000-up recommended resale. Prices provided are for design guidance and are FOB USA. International prices will differ due to local duties, taxes, and exchange rates. Not all packages are offered in 1k increments, and some may require minimum order quantities.



# Highest Integration PWM Controller Cuts Cost by 3x, Reduces Component Count by 2x

Two-Switch Topology PWM Controller Is Ideal for Building  
High-Performance, Synchronous-Rectified, 48V Isolated Power Supplies

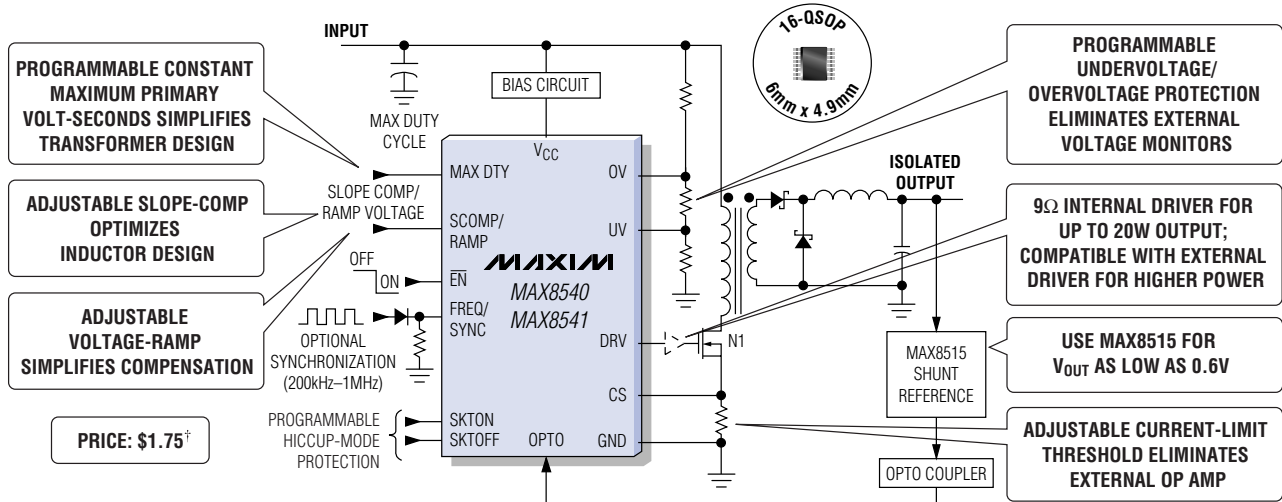


**VISIT**  
[www.maxim-ic.com/Isolated-Power](http://www.maxim-ic.com/Isolated-Power)



# Versatile 1MHz PWM Controllers Reduce Isolated DC-DC Size and Cost

Reliable Startup With High Capacitance Loads



PROGRAMMABLE CONSTANT  
MAXIMUM PRIMARY  
VOLT-SECONDS SIMPLIFIES  
TRANSFORMER DESIGN

ADJUSTABLE SLOPE-COMP  
OPTIMIZES  
INDUCTOR DESIGN

ADJUSTABLE  
VOLTAGE-RAMP  
SIMPLIFIES COMPENSATION

PRICE: \$1.75†

PROGRAMMABLE  
UNDERVOLTAGE/  
OVERVOLTAGE PROTECTION  
ELIMINATES EXTERNAL  
VOLTAGE MONITORS

9Ω INTERNAL DRIVER FOR  
UP TO 20W OUTPUT;  
COMPATIBLE WITH EXTERNAL  
DRIVER FOR HIGHER POWER

USE MAX8515 FOR  
VOUT AS LOW AS 0.6V

ADJUSTABLE CURRENT-LIMIT  
THRESHOLD ELIMINATES  
EXTERNAL OP AMP

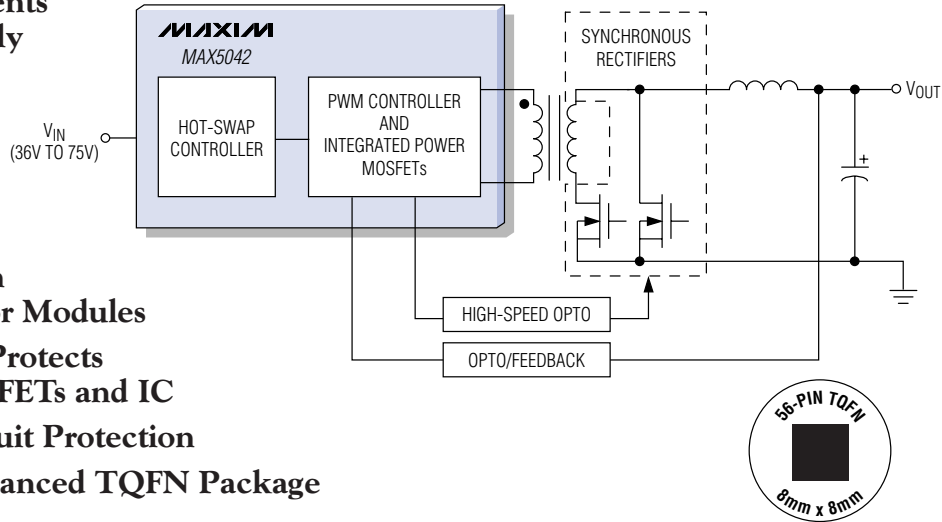
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# Industry's First Hot-Pluggable Isolated PWM Converter

Integrates Hot-Swap Controller, PWM Controller, and Power MOSFETs

- 65% Fewer Components for 50W Power Supply
- 40% Smaller PCB Area than 1/4 Brick Module
- 80% Lower Cost than 50W Modules
- BOM Costs Less than \$0.20/W† vs. \$1/W for Modules
- Thermal Shutdown Protects Internal Power MOSFETs and IC
- Indefinite Short-Circuit Protection
- 2.5W Thermally Enhanced TQFN Package



# High Reliability, -48V Hot-Swap Controllers Are Drop-In Replacements for Industry-Standard ICs

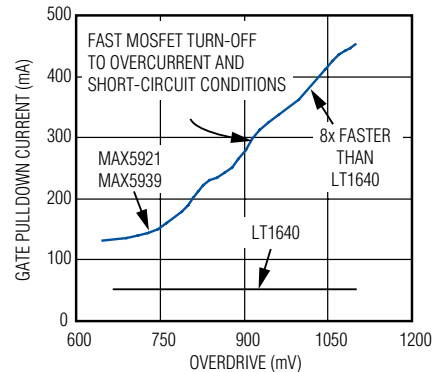
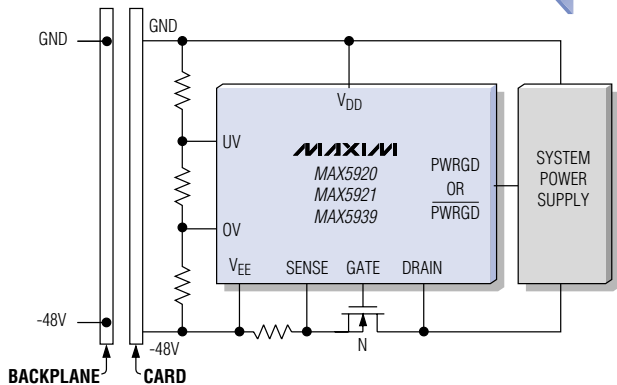
Highly Integrated Solution Is Immune to Input Voltage Steps, Withstands -100V Input Transients

**MAX5920**

Choose a Second-Source Replacement for LT1640 and LT4250

**MAX5921/MAX5939**

Choose Improved Drop-In Replacements for LT1640 and LT4250



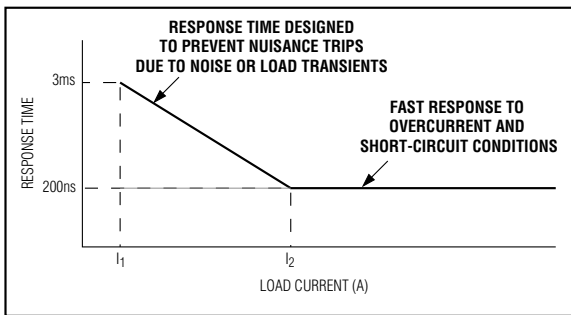
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**NEW**

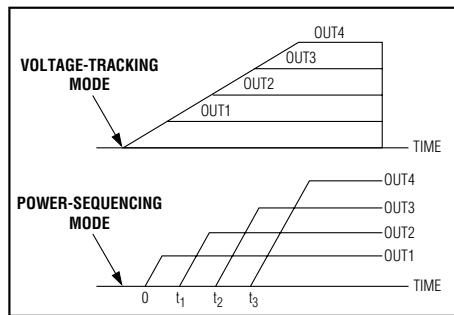
# Triple/Quad Hot-Swap ICs for +1V to +13.2V Supplies

Allow Sequencing, Tracking, or Independent On/Off Control

### SUPERIOR FAULT PROTECTION



### CONFIGURABLE FOR VOLTAGE TRACKING OR POWER SEQUENCING



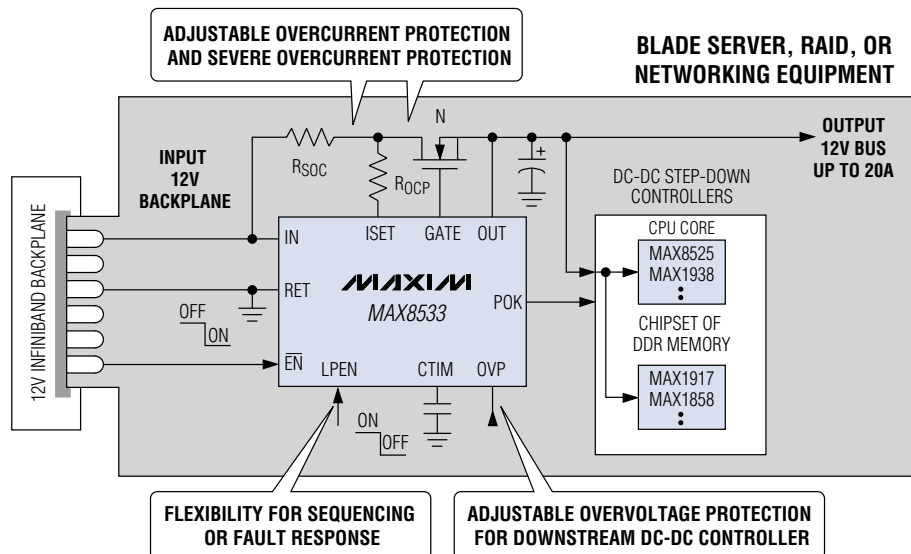
Part	No. of Inputs	Circuit-Breaker Threshold	Fault Management	Status Polarity
MAX5927	4	Adj from 25mV to 10mV	Selectable: latched off or autoretry	Selectable: active low or active high
MAX5929	4	25mV	Latched off	Active high
MAX5930	3	Adj from 25mV to 10mV	Selectable: latched off or autoretry	Selectable: active low or active high
MAX5931*	3	25mV	Selectable: latched off or autoretry	Selectable: active low or active high

**NEW FUTURE**

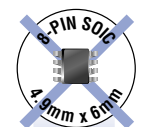
**NEW**

# Smallest 12V Hot-Swap Controller Adds Overvoltage Protection

Complies to InfiniBand™ Standard and Provides Bilevel Current Protection

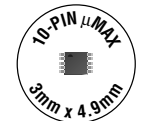


COMPETITION



**50% SMALLER**

**MAXIM**  
MAX8533



\*Future product—contact factory for availability.  
InfiniBand is a trademark of InfiniBand™ Trade Association.