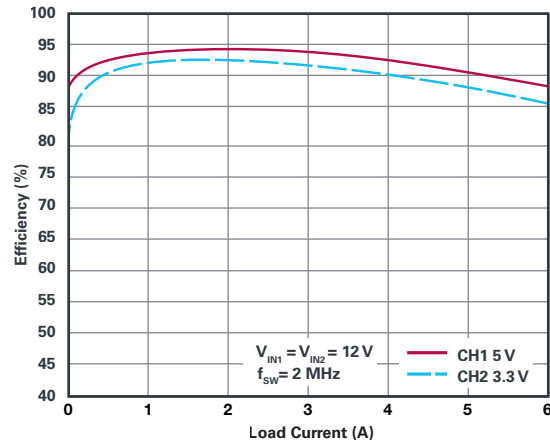
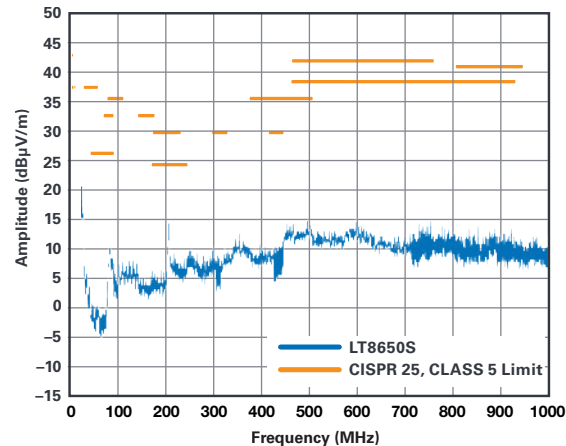


Silent Switcher 2

High Efficiency • High Frequency • Low EMI

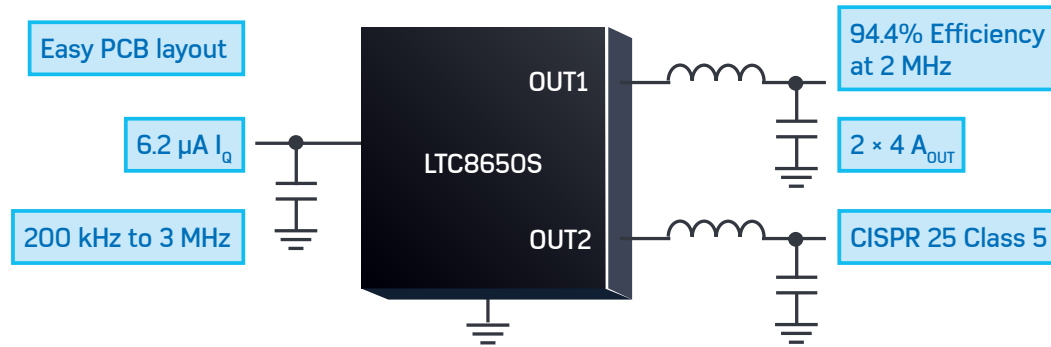


Efficiency: 95% Efficient at 2 MHz



LT8650S EMI/EMC Curve 5 V at 3.8 A, 3.3 V at 4.2 V,
 $f_{sw} = 2\text{ MHz}$ with Spread Spectrum

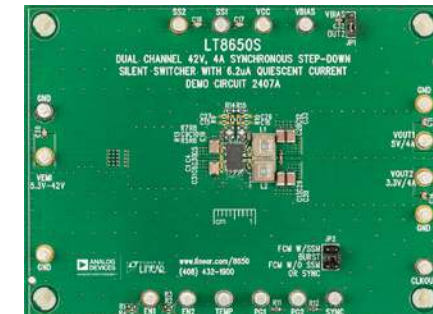
Part Number	Silent Switcher Family	V _{IN} Range (V)	I _{OUT}	V _{OUT(MIN)} (V)	Frequency	I _Q	Package (mm)
65 V_{IN(MAX)}							
LT8641	Silent Switcher®	3.0 to 65	3.5 A	0.8	200 kHz to 3 MHz	2.5 µA	3 × 4, 18-lead QFN
LT8645S/LT8646S	Silent Switcher 2	3.4 to 65	8 A	0.8	200 kHz to 2.2 MHz	2.5 µA	4 × 6, 32-lead LQFN
LT8645S-2	Silent Switcher 2	3.4 to 65	8 A	0.8	200 kHz to 2.2 MHz	2.5 µA	4 × 6, 32-lead LQFN
42 V_{IN(MAX)}							
LT8606	Low EMI	3.0 to 42	350 mA	0.8	200 kHz to 2.2 MHz	3 µA	2 × 2 DFN, 10-lead MSOP-EP
LT8607	Low EMI	3.0 to 42	750 mA	0.8	200 kHz to 2.2 MHz	3 µA	2 × 2 DFN, 10-lead MSOP-EP
LT8608	Low EMI	3.0 to 42	1.5 A	0.8	200 kHz to 2.2 MHz	2.5 µA	2 × 2 DFN, 10-lead MSOP-EP
LT8609S	Silent Switcher 2	3.0 to 42	2 A/3 A peak	0.8	200 kHz to 2.2 MHz	2.5 µA	3 × 3, 16-lead LQFN
LT8609A	Low EMI	3.0 to 42	2 A/3 A peak	0.8	200 kHz to 2.2 MHz	2.5 µA	3 × 3 DFN, 10-lead MSOP-EP
LT8614	Silent Switcher	3.4 to 42	4 A	0.97	200 kHz to 2.2 MHz	2.5 µA	3 × 4, 18-lead QFN
LT8653S	Silent Switcher 2	3.0 to 42	2 × 2 A/3 A peak	0.8	200 kHz to 3 MHz	6 µA	3 × 4, 20-lead LQFN
LT8640/LT8640-1	Silent Switcher	3.4 to 42	5 A/7 A peak	0.97	200 kHz to 3 MHz	2.5 µA	3 × 4, 18-lead QFN
LT8640S	Silent Switcher 2	3.4 to 42	5 A/7 A peak	0.97	200 kHz to 3 MHz	2.5 µA	4 × 4, 24-lead LQFN
LT8643S	Silent Switcher 2	3.4 to 42	5 A/7 A peak	0.97	200 kHz to 3 MHz	230 µA	4 × 4, 24-lead LQFN
LT8650S	Silent Switcher 2	3.0 to 42	2 × 4 A/6 A peak	0.8	200 kHz to 3 MHz	6.2 µA	4 × 6, 32-lead LQFN
LT8636	Silent Switcher	3.4 to 42	5 A/7 A peak	0.97	200 kHz to 3 MHz	2.5 µA	4 × 3, 24-lead LQFN
LT8648S	Silent Switcher 2	3.0 to 42	15 A	0.6	200 kHz to 3 MHz	6 µA	4 × 7, 36-lead LQFN
18 V_{IN(MAX)}							
LT8642S	Silent Switcher 2	2.8 to 18	10 A	0.6	200 kHz to 3 MHz	240 µA	4 × 4, 24-lead LQFN
LTC7151S	Silent Switcher 2	3.1 to 20	15 A	0.6	400 kHz to 3 MHz	2 mA	4 × 5, 28-lead LQFN
LTC7150S	Silent Switcher 2	3.1 to 20	20 A	0.6	400 kHz to 3 MHz	2 mA	5 × 6, 42-ball BGA
LT8652S	Silent Switcher 2	3.0 to 18	2 × 8 A	0.6	300 kHz to 3 MHz	6 µA	4 × 7, 36-lead LQFN
5 V_{IN(MAX)}							
LTC3307A/ LTC3308A/ LTC3309A	Silent Switcher	2.25 to 5.5	3 A/4 A/6 A	0.5	1 MHz to 3 MHz	45 µA	2 × 2, 12-lead LQFN
LTC3310S	Silent Switcher 2	2.25 to 5.5	10 A	0.5	500 kHz to 5 MHz	1.3 mA	3 × 3, 18-lead LQFN



Silent Switcher 2 Technology's Unrivaled Ease of Use Faster • Smaller • Quieter

The **LT8650S** combines high efficiency at high frequencies and an ultralow EMI design to deliver a very compact dual output 4 A (6 A peak) synchronous step-down solution. It delivers efficiency as high as 94.4% ($12 V_{IN}$ to $5 V_{OUT}$) with a switching frequency of 2 MHz offering a very compact solution footprint. The LT8650S's unique Silent Switcher 2 architecture uses four internal input capacitors as well as internal BST and $INTV_{CC}$ capacitors to minimize the area of the hot loops. Additionally, its fast, clean, low overshoot switching edges enable both high efficiency operation, at high switching frequencies and low EMI/EMC emissions. The internal construction uses copper pillars in lieu of bond wires and an integrated ground plane to further reduce EMI/EMC emissions. This improved EMI/EMC performance is not sensitive to PCB layout, simplifying design and reducing risk even when using two layer PCBs. The LT8650S can easily pass the automotive CISPR 25, Class 5 peak EMI limits with a 2 MHz switching frequency over its entire load range. Spread spectrum frequency modulation is also available to further lower EMI/EMC levels.

- ▶ 4 A from each channel simultaneously
- ▶ Up to 6 A on either channel
- ▶ Silent Switcher architecture:
 - Ultralow EMI/EMC emissions on any PCB
 - Eliminates PCB layout sensitivity
 - Internal bypass capacitors reduce radiated EMI
 - Optional spread spectrum modulation
- ▶ Wide input voltage range: 3.0 V to 42 V
- ▶ 94.4% efficiency at 2 MHz
- ▶ Ultralow quiescent current Burst Mode[®] operation:
 - $6.2 \mu A I_Q$, output ripple <10 mV p-p
- ▶ Fast minimum switch-on time: 40 ns
- ▶ Adjustable and synchronizable: 300 kHz to 3 MHz
- ▶ Output soft start and tracking
- ▶ Small thermally enhanced 4 mm × 6 mm, 32-lead LGA package



LT8650S Demo Board (DC2407A)



AHEAD OF WHAT'S POSSIBLE™

VISIT ANALOG.COM

For regional headquarters, sales, and distributors or to contact customer service and technical support, visit analog.com/contact.

Ask our ADI technology experts tough questions, browse FAQs, or join a conversation at the EngineerZone Online Support Community. Visit ez.analog.com.

©2019 Analog Devices, Inc. All rights reserved. Trademarks and registered trademarks are the property of their respective owners.

BR21354-11/19(A)