



MULTICHANNEL PMIC

MAX16993 provides three step-down outputs to simplify instrument cluster design

As more and more functions are added to dashboards, the challenges of powering them all are increasing. You have to deliver more rails using less space; improve efficiency to keep critical circuits alive; and withstand thermal, electrical, and noise conditions that only worsen as the dash becomes more crowded.

The MAX16993 is built to alleviate many of these design headaches. It provides three outputs from a compact (25mm²) footprint: a high-voltage step-down controller (OUT1) that operates directly from the battery and two low-voltage step-down converters (OUT2/OUT3) that cascade from OUT1, with each providing up to 3A output current via integrated FETs.

The device is built to withstand the toughest conditions. The high-voltage step-down controller can operate from up to 36V continuously, and is protected from load-dump transients up to 42V. Multiple mechanisms are integrated to improve robustness, including spread-spectrum and forced-PWM options, low minimum on-time, RESET and ERROR outputs, and overtemperature and overcurrent protection.

Key Advantages

Small

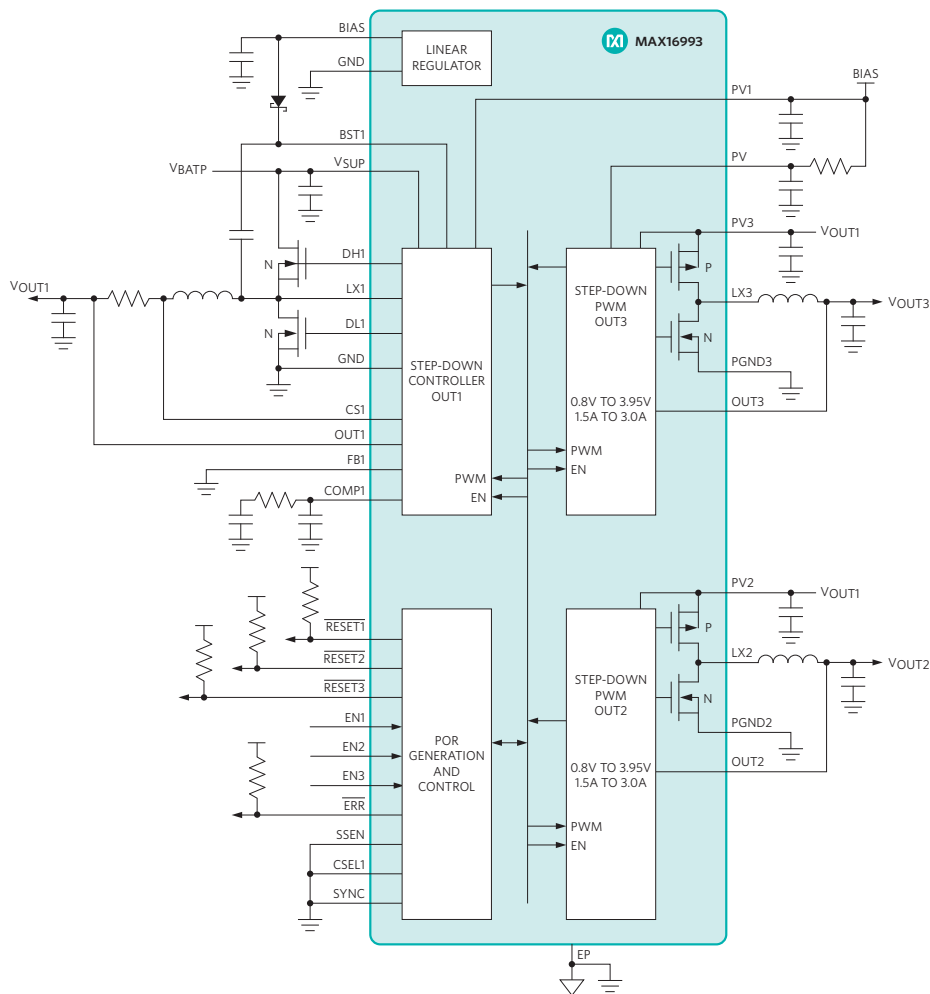
- Integrates high-voltage step-down controller and two low-voltage step down converters, saving 50% board space over discrete solutions
- 5mm x 5mm TQFN package

Quiet

- 2.1MHz operation reduces AM band noise
- Spread-spectrum enable input minimizes radiated EMI
- Factory-programmable synchronization I/O for improved noise immunity

Efficient

- Consumes 25µA quiescent current under no-load conditions to meet tight OEM power budgets



Option	Buck 1			Buck 2			Buck 3			Sync
	Fixed Output Voltage (V)	f_{SW1} Divide Ratio from f_{SW}	Active Timeout Period (ms)	Fixed Output Voltage (V)	Max Output Current (A)	Active Timeout Period (ms)	Fixed Output Voltage (V)	Max Output Current (A)	Active Timeout Period (ms)	
A	3.3/5.0	÷5	3.9	Adj.	3.0	3.9	Adj.	3.0	3.9	Input
B				3.15	1.5		1.8			
C			1.9	Adj.	1.9	Adj.	1.9			
D	3.3/3.15		3.9	1.35	3.0	3.9	1.2	1.5	3.9	
E	3.30				1.5					
F*	3.3/5.0			3.3	1.5		1.2			
G*							1.8			
H*	3.3/5.2				3.0					
I*	Adj.		1.9	Adj.	1.5	1.9	Adj.		1.9	

*Future product.