



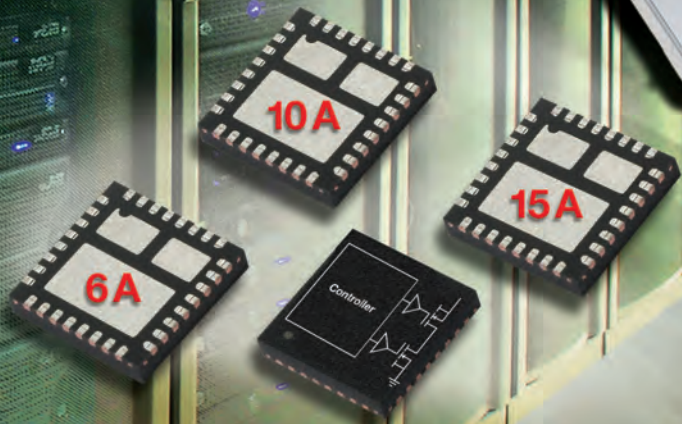
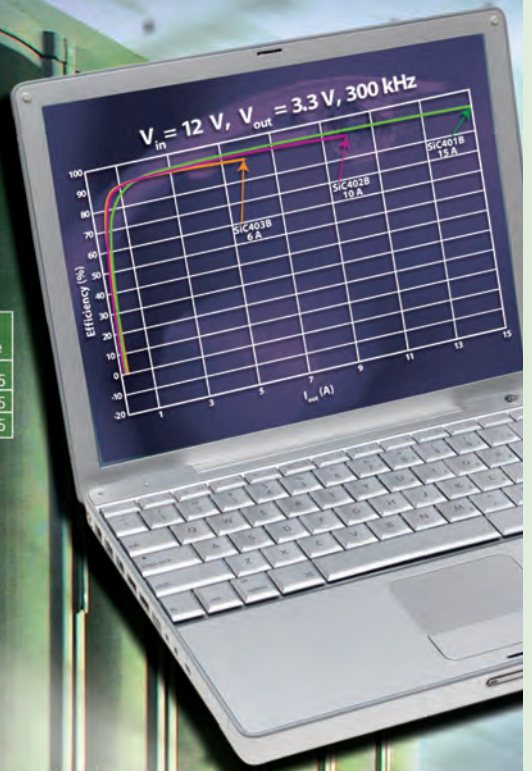
# microBUCK® PRODUCT FAMILY

Highly Integrated Synchronous Buck Regulators

ICS

## Compact Scalable microBUCK® Family

Product Number	I <sub>OUT</sub>	V <sub>IN</sub>	V <sub>OUT</sub>	Max Freq	Package
SiC403B	6 A	3 to 28 V	0.6 to 5.5 V	1 MHz	MLPQ5x5
SiC402B	10 A	3 to 28 V	0.6 to 5.5 V	1 MHz	MLPQ5x5
SiC401B	15 A	3 to 17 V	0.6 to 5.5 V	1 MHz	MLPQ5x5



PRODUCT OVERVIEW

# microBUCK® PRODUCT FAMILY

## Highly Integrated Synchronous Buck Regulators



### microBUCK® Product Family

Product Summary Table					
	SiC401B*	SiC402B*	SiC403B*	SiC413	SiC414
Package	MLPQ55 - 32L	MLPQ55 - 32L	MLPQ55 - 32L	SO-8	MLPQ44-28
Package size	5 mm x 5 mm x 0.9 mm	5 mm x 5 mm x 0.9 mm	5 mm x 5 mm x 0.9 mm	6.2 mm x 5mm x 1.75 mm	4 mm x 4 mm x 0.9 mm
$V_{IN}$	3 V to 17 V	3 V to 28 V	3 V to 28 V	4.75 V to 26 V	3 V to 28 V
$V_{OUT}$	0.6 V to 5.5 V	0.6 V to 5.5 V	0.6 V to 5.5 V	0.6 V to 13.2 V	0.75 V to 5.25 V
Operating frequency	200 kHz to 1 MHz	200 kHz to 1 MHz	200 kHz to 1 MHz	500 kHz	200 kHz to 1 MHz
$I_{OUT}$	15 A	10 A	6 A	4 A	6 A
Efficiency	95 % at 300 kHz	95 % at 300 kHz	95 % at 300 kHz	93 % at 300 kHz	95 % at 300 kHz
Integrated bootstrap diode	•	•	•	•	•
Under voltage lockout	•	•	•	•	•
Power good output	•	•	•		•
Output over-voltage protection	•	•	•	•	•
Output over-current protection	•	•	•	•	•
Selectable power save mode	•	•	•		•
Internal soft-start and soft-shutdown	•	•	•	•	•
Integrated configurable LDO with bypass logic	•	•	•		•
All ceramic solution enabled	•	•	•	•	•
Pseudo-fixed frequency adaptive on-time control	•	•	•		•
1 % internal reference voltage	•	•	•		•
Internal power MOSFETs	•	•	•	•	•
Applications					
Desktop and server computers	•	•	•	•	•
Notebook	•	•	•		•
Digital HDTV and digital consumer applications	•	•	•		
Networking and telecommunication equipment	•	•	•	•	•
LCD TV, STB, and other consumer applications	•	•	•	•	•
Embedded applications	•	•	•		
Point of load power supplies	•	•	•		

\* Product pending release

Datasheets are available on our web site at [www.vishay.com/power-ics/integrated-microbuck/](http://www.vishay.com/power-ics/integrated-microbuck/)

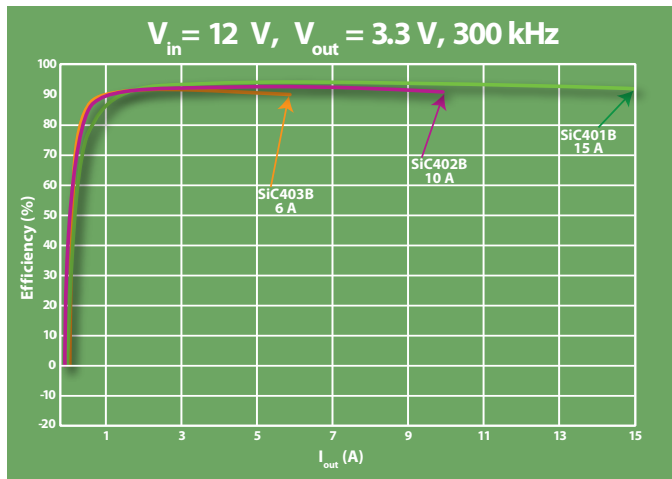
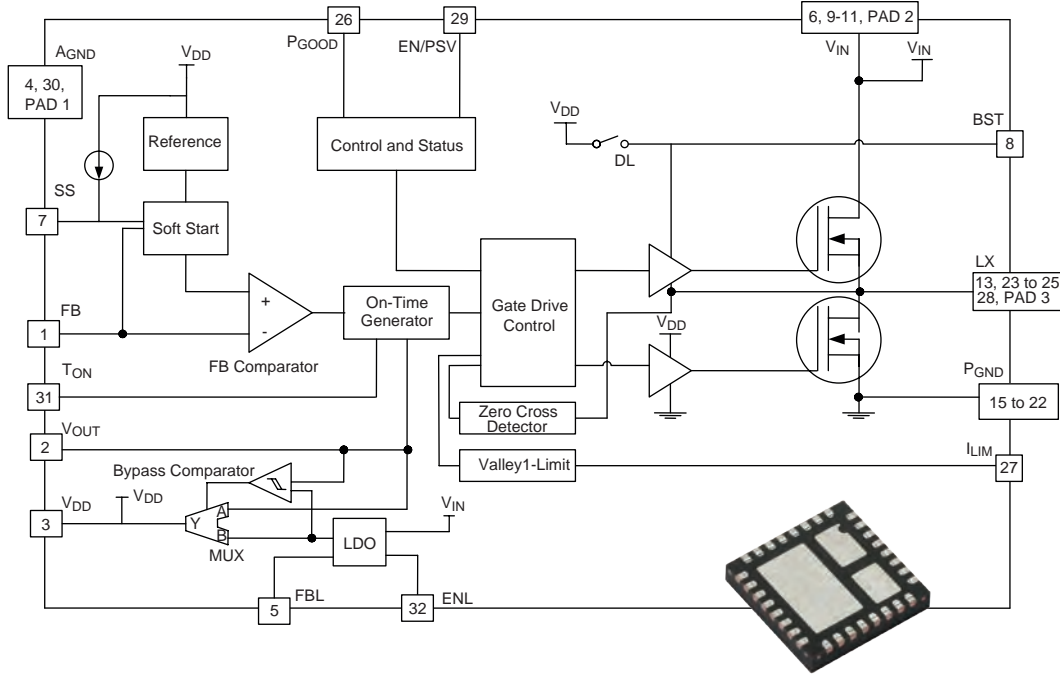
# microBUCK<sup>®</sup> PRODUCT FAMILY

## Highly Integrated Synchronous Buck Regulators

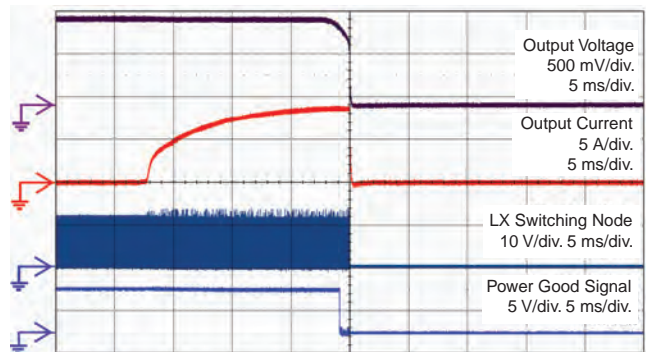
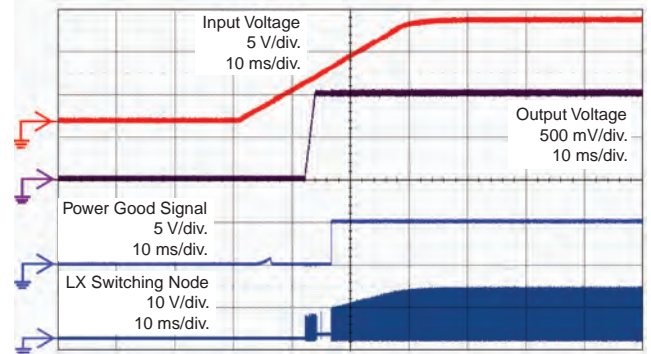


### SiC401B, SiC402B, and SiC403B microBUCK<sup>®</sup> Product Family

FUNCTIONAL BLOCK DIAGRAM



NOTE: Products SiC401B, SiC402B, and SiC403B are pending release

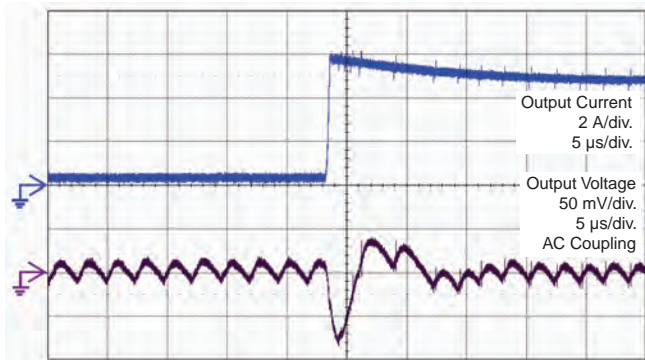


# microBUCK® PRODUCT FAMILY

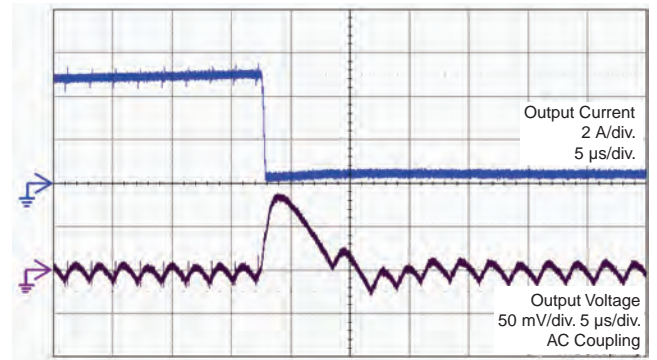
## Highly Integrated Synchronous Buck Regulators



### SiC401B, SiC402B, and SiC403B microBUCK® Product Family

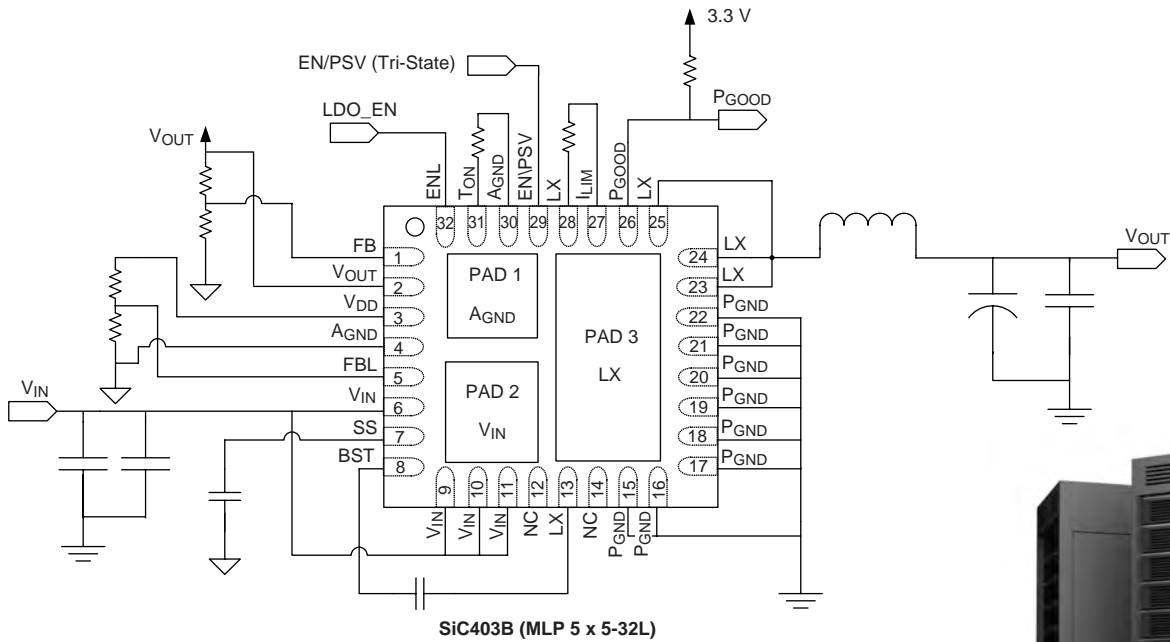


Transient response in continuous conduction mode  
(0.2 A - 6 A)  
( $V_{IN} = 12\text{ V}$ ,  $V_{OUT} = 1\text{ V}$ , FSW = 500 kHz)

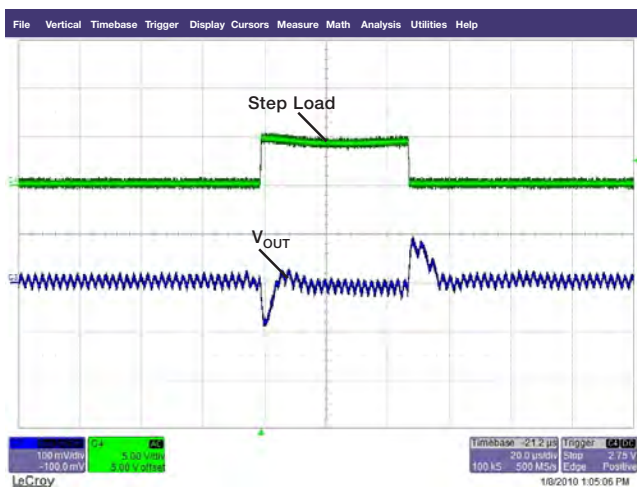


Transient response in continuous conduction mode  
(6 A - 0.2 A)  
( $V_{IN} = 12\text{ V}$ ,  $V_{OUT} = 1\text{ V}$ , FSW = 500 kHz)

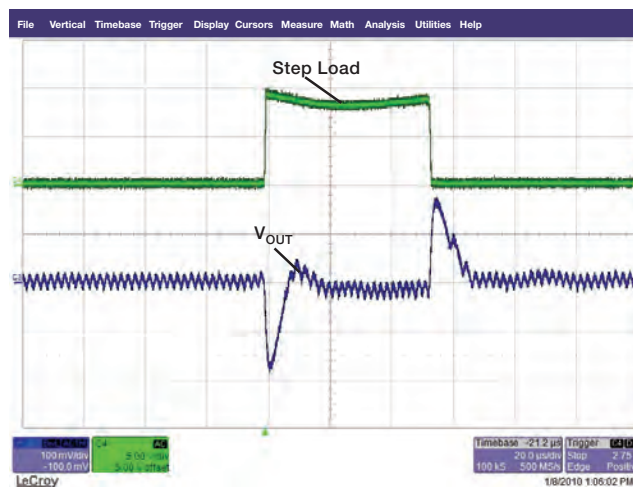
#### TYPICAL APPLICATION CIRCUIT



## SiC413 and SiC414 microBUCK<sup>®</sup> Product Family



Transient response I<sub>OUT</sub> 5 A

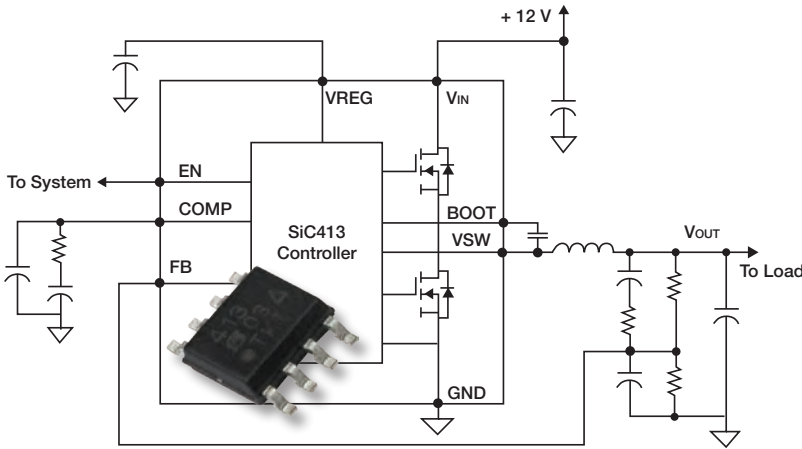


Transient response I<sub>OUT</sub> 10 A

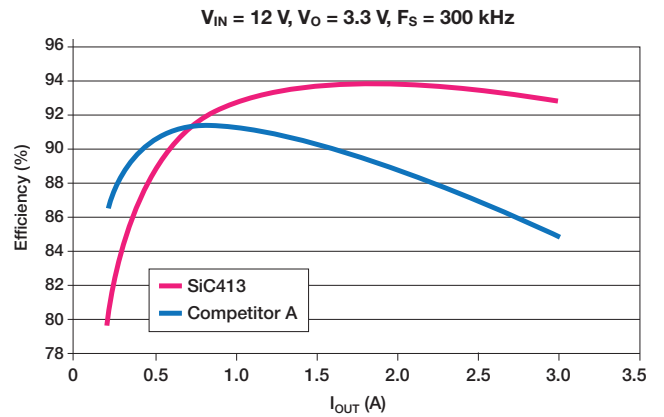




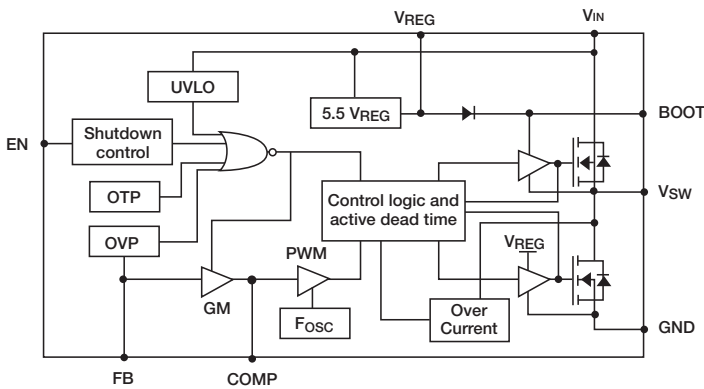
**SiC413 4 A, 26 V Buck Regulator with 93 % Efficiency in SO-8**



SiC413CB typical application circuit



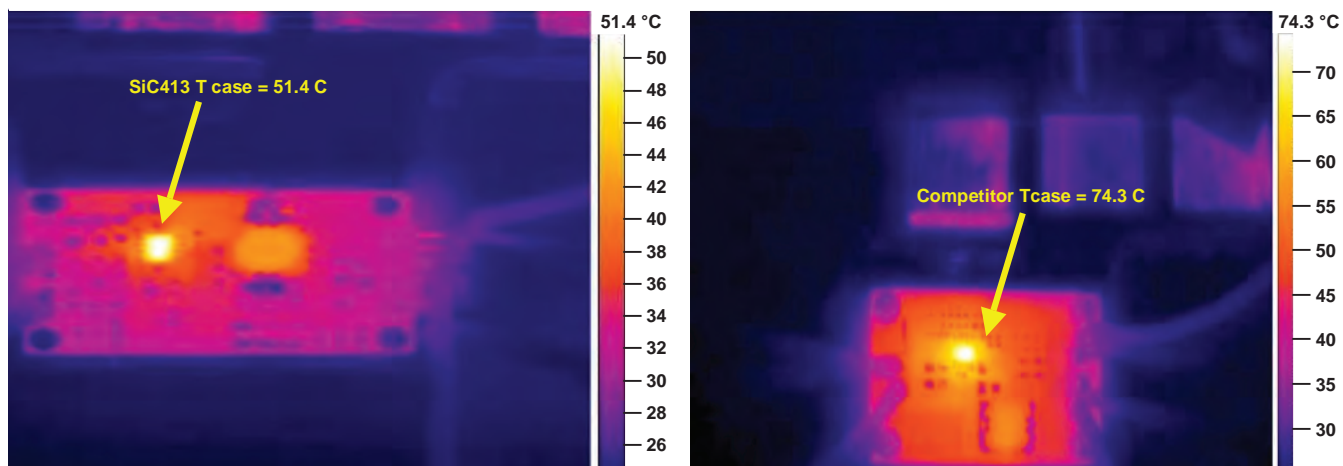
SiC413CB versus competitor efficiency



SiC413CB block diagram

## SiC413 4 A, 26 V Buck Regulator with 93 % Efficiency in SO-8 (continued)

SiC413CB Versus Competitor Thermals	
SiC413 is 23.2 °C cooler	
V <sub>IN</sub>	12 V
V <sub>OUT</sub>	3.3 V
I <sub>OUT</sub>	3.0 A
SiC413 efficiency	93 %
Competitor's efficiency	85 %



SiC413CB versus competitor thermals





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