



Vishay Intertechnology, Inc.

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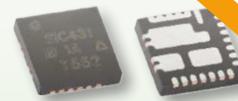
# microBUCK® Integrated Circuits

**SiC401 SERIES**  
3 V to 28 V, Scalable  
6 A, 10 A, and 15 A  
Regulators

**SiP1211X SERIES**  
3 A Regulators with  
Integrated Compensation

**SiP1210X SERIES**  
3 A to 6 A Compact  
Regulators with COT  
Architecture

**SiC46X SERIES**  
4.5 V to 60 V, Scalable  
3 A, 6 A, and 10 A  
Regulators



**SiC43X SERIES**  
3 V to 24 V Input, Scalable  
8 A, 12 A, 15 A, and 20 A  
Regulators

[www.vishay.com](http://www.vishay.com)

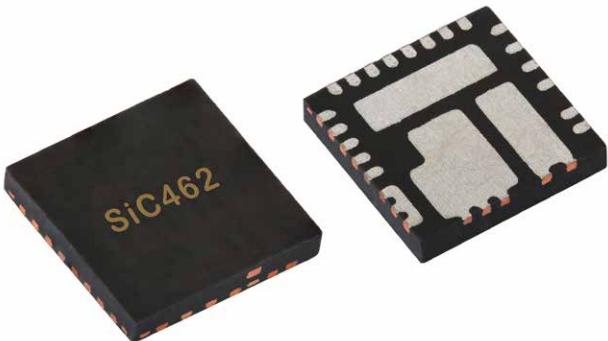
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## SiC46x Family of 4.5 V to 60 V Input Buck Regulators

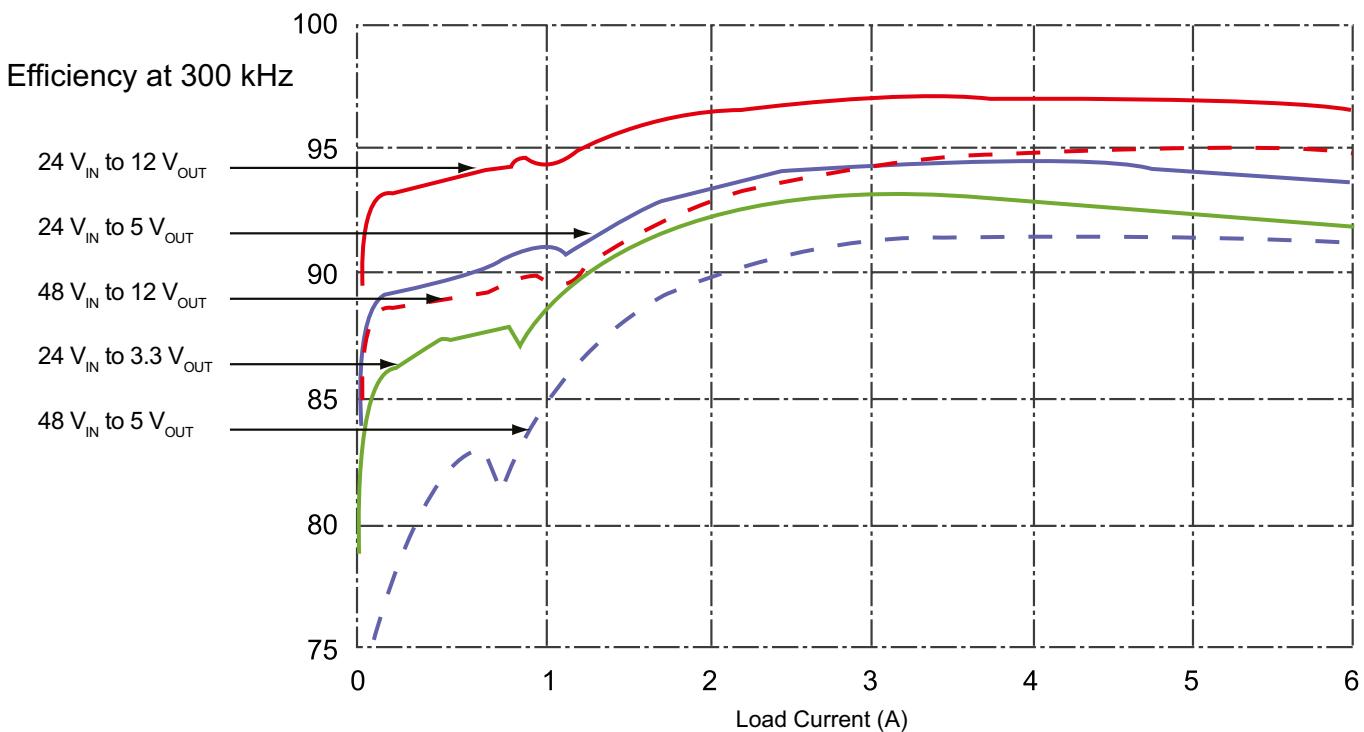
Vishay's SiC46x family integrates high-performance trench MOSFETs and an advanced controller for unsurpassed power density in a compact 5 x 5 package. With an input voltage range of 4.5 V to 60 V, the SiC46x family can step down from a high-voltage bus to an intermediate bus. The constant on-time architecture also allows direct conversion down to low voltages, eliminating the intermediate bus altogether and simplifying power designs.

### FEATURES

- Scalable solution: 3 A, 6 A, and 10 A
- Stable with any output capacitor
- Low quiescent current – 250 µA
- Adjustable current limit, soft start, switching frequency
- Ability to start up into a pre-biased load
- Protection and monitoring: OVP, OCP, UVP, OTP, UVLO, power good
- 40 °C to +105 °C operating ambient temperature



SiC46x in PowerPAK® MLP 5mm x 5mm



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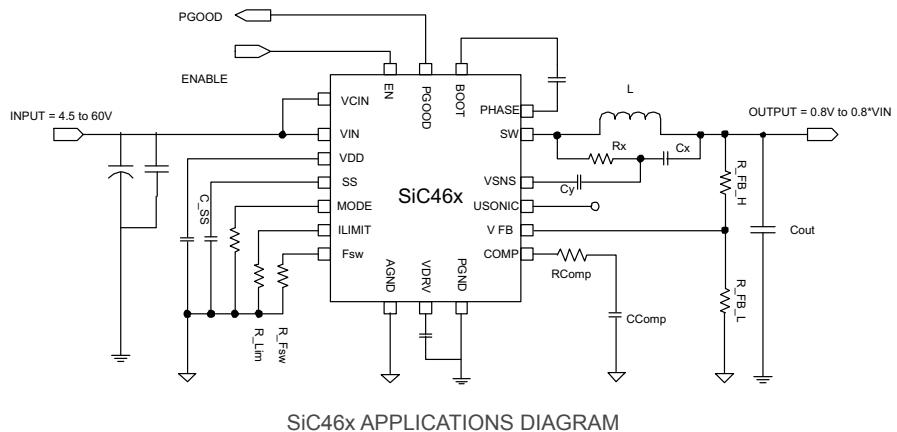
## microBUCK® INTEGRATED CIRCUITS

Focus Products

## SiC46x APPLICATIONS

The wide 4.5V to 60V input range and output range (0.8 to 0.8\*VIN) of the SiC46x family and the ability to work with a single input supply make it ideal for a wide range of applications:

- Industrial and automation
- Industrial computing
- Base station power supplies
- Wall transformer regulation
- Home Automation
- Robotics
- Drones
- Battery management systems
- Power tools
- Medical Equipment
- Vending, ATM, and slot machines



SiC46x APPLICATIONS DIAGRAM





## microBUCK® INTEGRATED CIRCUITS

Focus Products

## SiC43x Family of 3 V to 24 V Input Buck Regulators

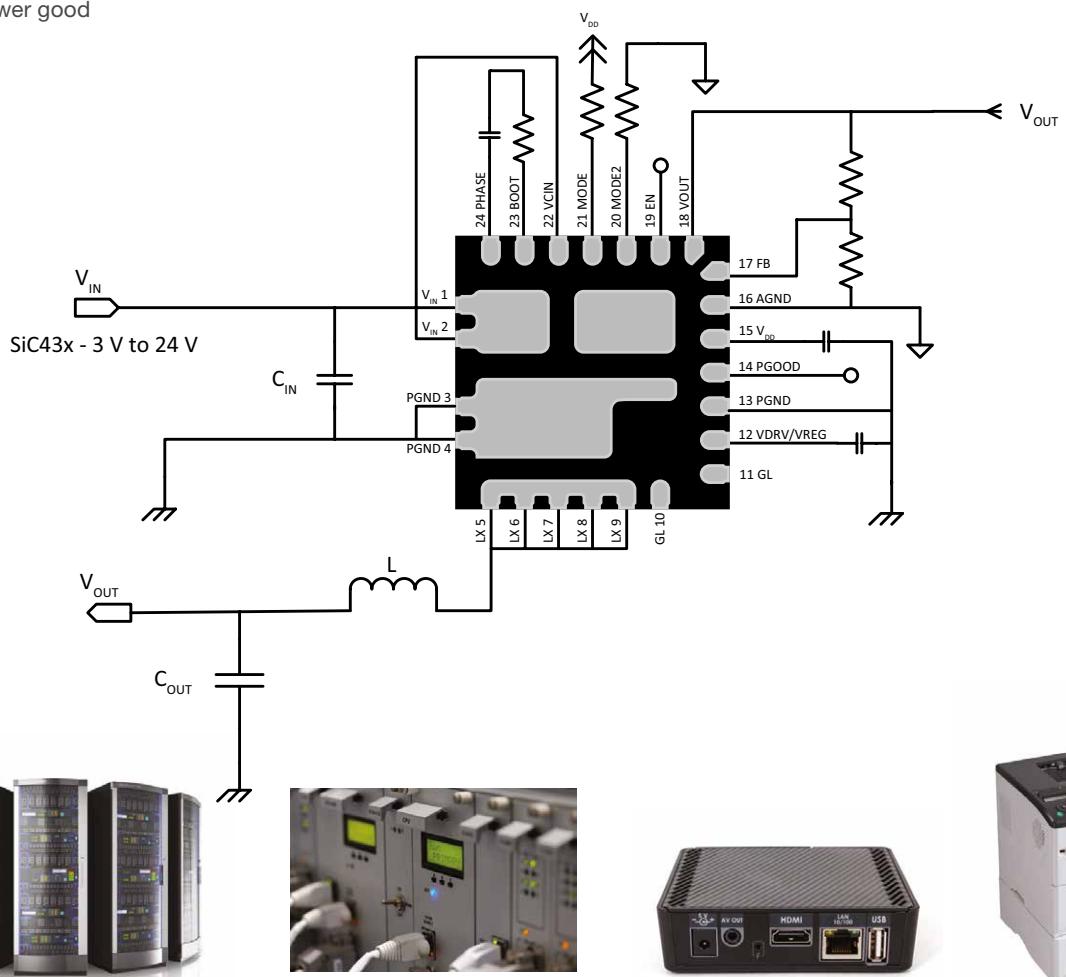
Vishay's 3 V to 24 V input family of 6 A to 20 A regulators are packaged in a compact 4 mm x 4 mm MLP package. Minimal external components are needed for part operation and the part even integrates compensation to further simplify the job of the designer.

## FEATURES

- Scalable solution: 8 A, 12 A, 15 A, and 20 A
- Stable with any output capacitor
- No external compensation
- Low quiescent current – 50  $\mu$ A
- Adjustable current limit, soft start, switching frequency, and operating mode with just two external resistors
- Ability to start up into a pre-biased load
- Protection and monitoring: OVP, OCP, UVP, OTP, UVLO, power good

## APPLICATIONS

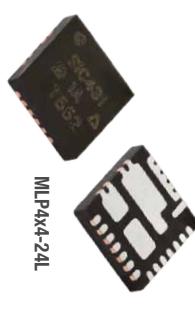
- General purpose POL
- Computing, desktop, server, and industrial computing
- Telecom, switch/router, data center
- Multi-function printers
- USB car charger
- Set-top boxes, HDTV
- Consumer audio / video





# INTEGRATED CIRCUITS

**microBUCK® Family**



MLP5x5-27L

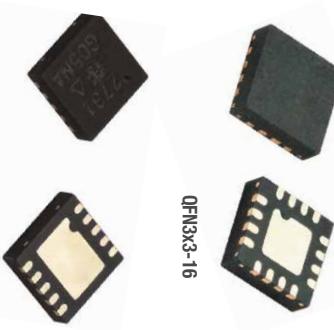
Spec.	Part Number	SiC431*	SiC432*	SiC433*	SiC434*	SiC461*	SiC462	SiC463*
Voltage	V <sub>N</sub>	3 V to 24 V	4.5 V to 60 V	4.5 V to 60 V	4.5 V to 60 V			
	V <sub>OUT</sub>	0.6 V <sub>N</sub> to 0.95 V <sub>N</sub>	0.8 V <sub>N</sub> to 0.80* V <sub>N</sub>	0.8 V <sub>N</sub> to 0.80* V <sub>N</sub>	0.8 V <sub>N</sub> to 0.80* V <sub>N</sub>			
	I <sub>OUT</sub> max.	24 A	18 A	12 A	8 A	10 A	6 A	3 A
MOSFETs	HS (mΩ)	6	7.2	12	15	12	21	40
	LS (mΩ)	2	2.55	5	8	7	12	30
Control	Control scheme	V2 COT	V2 COT	V2 COT				
	f <sub>SW</sub> (Hz)	300 k, 500 k, 750 k, 1000 k	100 K to 500 K	100 KHz to 500 KHz	100 K to 500 K			
	Power saving mode	✓	✓	✓	✓	✓	✓	✓
Protection	LDO							
	OCP	✓	✓	✓	✓	✓	✓	✓
	OVP	✓	✓	✓	✓	✓	✓	✓
I/O	UVP	✓	✓	✓	✓	✓	✓	✓
	Soft start	✓	✓	✓	✓	✓	✓	✓
	OIP	✓	✓	✓	✓	✓	✓	✓
Link	Enable	✓	✓	✓	✓	✓	✓	✓
	Sync							
PGOOD		✓	✓	✓	✓	✓	✓	✓
Operation temp. (°C)	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125
Package	PowerPAK MLP4x4-24L	PowerPAK MLP4x4-24L	PowerPAK MLP4x4-24L	PowerPAK MLP5x5-27L	PowerPAK MLP5x5-27L	PowerPAK MLP5x5-27L	PowerPAK MLP5x5-27L	PowerPAK MLP5x5-27L
Scalable part numbers	SiC432/433/434	SiC431/433/434	SiC431/432/434	SiC431/432/433	SiC462/3	SiC461/3	SiC461/2	SiC461/2
Datasheet	*Release Q1 2017	*Release Q2 2017	*Release Q2 2017	*Release Q2 2017	SiC462		*Release Q2 2017	



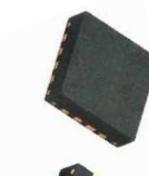
# INTEGRATED CIRCUITS

microBUCK® Family

VISHAY INTERTECHNOLOGY, INC.



QFN3x3-16



DFN3x3-10

Spec.	Part Number	SIP12107	SIP12108/A	SIP12109	SIP12110	SIP12116	SIP12117
Voltage	$V_{IN}$	2.8V to 5.5V	2.8V to 5.5V	4.5V to 16V	4.5V to 16V	4.5V to 15V	4.5V to 15V
	$V_{OUT}$	0.6V to 5.5V	0.6V to 5.5V	0.6V to 5.5V	0.6V to 5.5V	0.6V to 5.5V	0.6V to 5.5V
	$I_{OUT}$ max.	3A	5A	4A	6A	3A	3A
MOSFETs	HS (mΩ)	56	35	45	45	80	80
	LS (mΩ)	33	21	26	26	50	50
	Control scheme	CM COT	CM COT	CM COT	CM COT	CM COT	CM COT
Control	$f_{SW}$ (Hz)	200 kHz to 4 MHz	200 kHz to 4 MHz	400 kHz to 1.5 MHz	400 kHz to 1.5 MHz	600K	600K
	Light Load Mode	✓	✓	✓	✓	✗	✓
	OCP	✓	✓	✓	✓	✓	✓
Protection	OVP	✓	✓	✓	✓	✓	✓
	UVP	✓	✓	✓	✓	✓	✓
	OTP	✓	✓	✓	✓	✓	✓
I/O	Soft start	1.5 ms	1.5 ms	✓	✓	1.5 ms	1.5 ms
	OTP	✓	✓	✓	✓	✓	✓
	Enable	✓	✓	✓	✓	✓	✓
	PGOOD	✓	✓	✓	✓	✓	✓
	Operation temp. (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
	Package	QFN3x3-16L	QFN3x3-16L	QFN3x3-16L	QFN3x3-16L	DFN10-3x3	DFN10-3x3
Link	Scalable part numbers	SIP12108	SIP12107	SIP12110	SIP12109	-	-
	Datasheet	SIP12107	SIP12108/A	SIP12109	SIP12110	SIP12116	SIP12117

# ACHIEVE HIGH EFFICIENCY WHILE REDUCING COSTS BY USING VISHAY'S microBUCK® SCALABLE DC/DC REGULATORS



## Advantages of Vishay's microBUCK®

- Compact and scalable family
- High efficiency at both light and full loads
- Ultra-fast transient response
  - Fully protected against voltage, current, and temperature overstress

## For the Following Applications

- Point-of-load regulation for low-power processors, network processors, DSPs, FPGAs, and ASICs
- Computing, broadband, networking, LAN / WAN
- A/V, high-density cards, storage, DSL, STB, DVR, and DTV
- Industrial power supplies



Use Vishay's compact 8 A, 12 A, 15 A, and 20 A microBUCK® regulators to efficiently power your next-generation server and telecommunication design



To save board space, use Vishay's SiC46x in your next industrial power supply design



## Useful Links

- [www.vishay.com/power-ics/integrated-microbuck/](http://www.vishay.com/power-ics/integrated-microbuck/)
- Simulation tool <http://vishay.transim.com>
- For technical questions, contact [PowerICtechsupport@vishay.com](mailto:PowerICtechsupport@vishay.com)



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**SOLUTIONS**

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