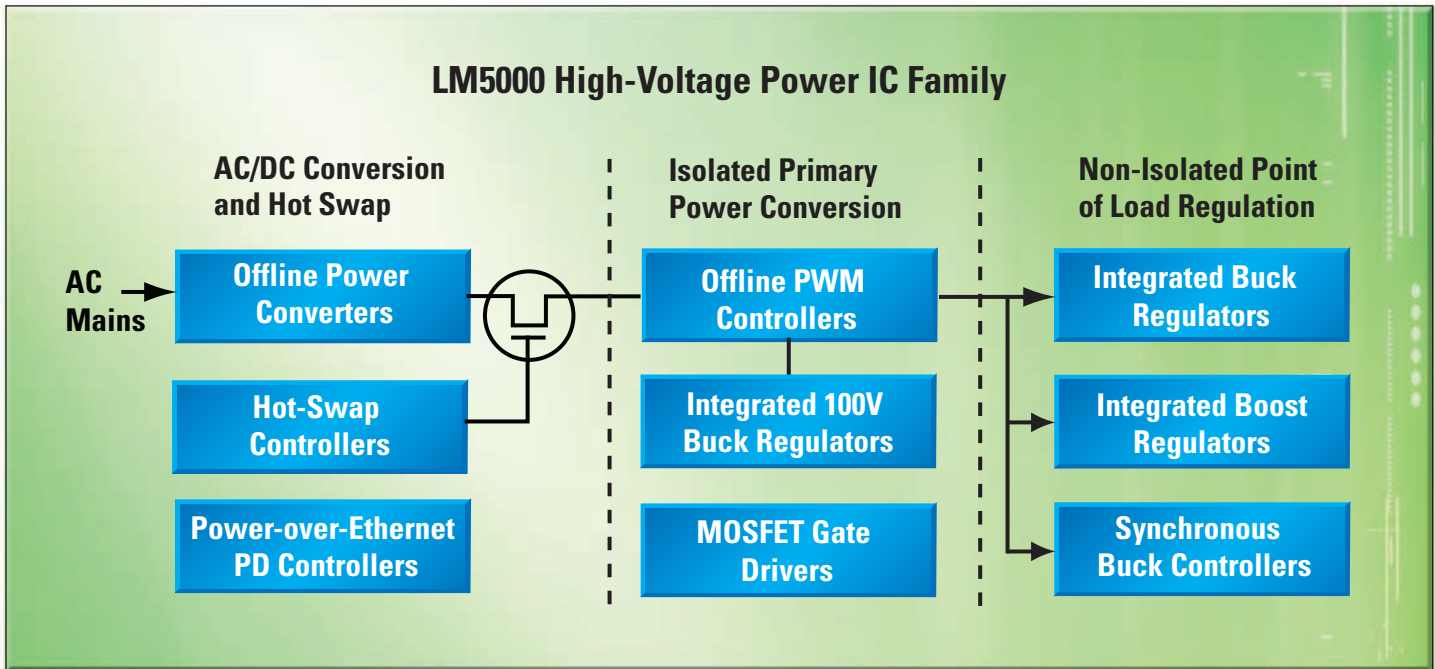


# LM5000 Family of High-Voltage Power Products

## Flexible High-Voltage Power Conversion Solutions



### Product Overview

National's LM5000 series of high voltage regulators, controllers, and gate drivers offer the most complete power management solutions operating from 10 to 100 volts. This high-voltage product capability is critical for end applications such as telecom, automotive, and industrial power systems where the right mix of integration, efficiency, and power are required.

National is a leader in Power Management because the company continues to release innovative and effective solutions. For instance, National's Constant On-Time (COT) buck regulators (such as the LM5007, LM5008, LM5010, etc.) retain all of the benefits of conventional hysteretic regulators while maintaining a relatively constant operating frequency. The LM5000 series of Emulated Current Mode (ECM) controlled buck regulators (such as the LM5005, LM5116, LM5575, etc.) retain all of the benefits of traditional current mode control without the inherent noise susceptibility problems. Both the COT and ECM topologies allow power designers to reliably achieve the small on-times necessary for large step-down applications.

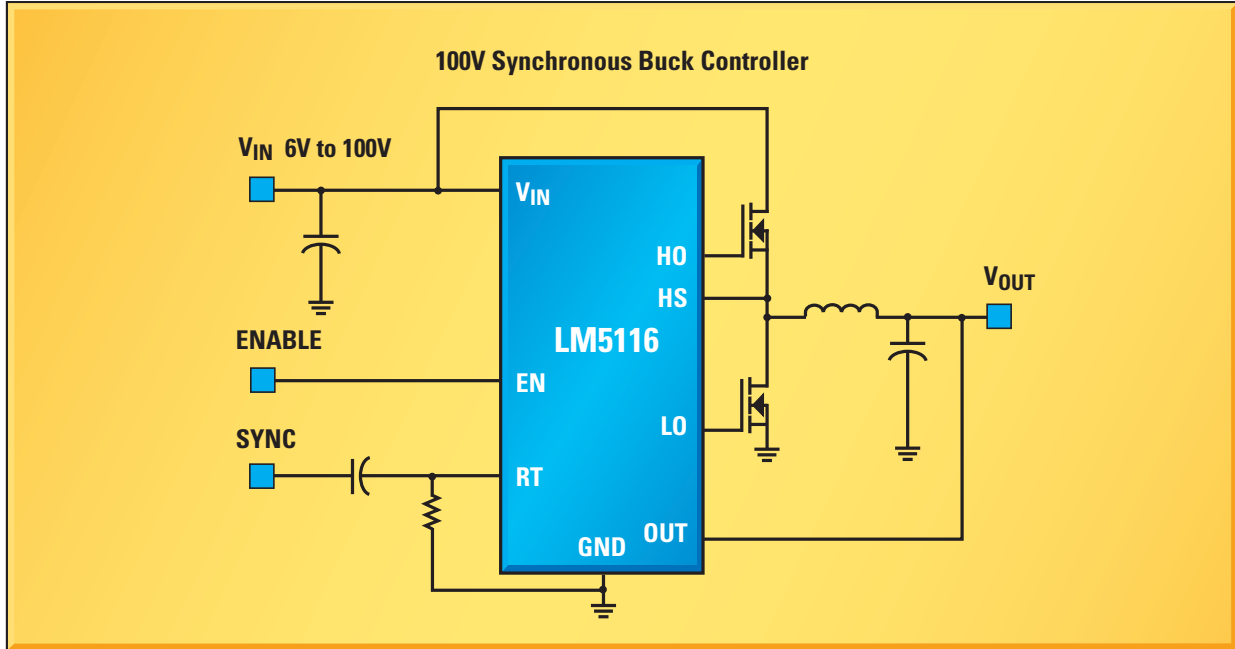
### Key Benefits

- Highly integrated, requiring minimal external components and board space
- 100V ABCD technology
- Advanced thermally enhanced packaging
- Integrated controller-driver combos and chipsets
- Isolated and non-isolated DC-DC converter solutions
- Up to 93% efficient at full load
- End-to-end power system solutions from the source to the load

### Key Applications

- Telecommunications
- Automotive
- Industrial
- Test and measurement

# Emulated Current Mode Converters



## LM5116 Features

- Emulated peak current mode
- Wide operating range up to 100V
- Low I<sub>q</sub> sleep mode (10 μA)
- Drives standard or logic level MOSFETs
- Robust 2A peak gate drive
- Free-run or synchronous operation to 1 MHz
- Programmable output from 1.215V to 85V
- Programmable line under-voltage lockout

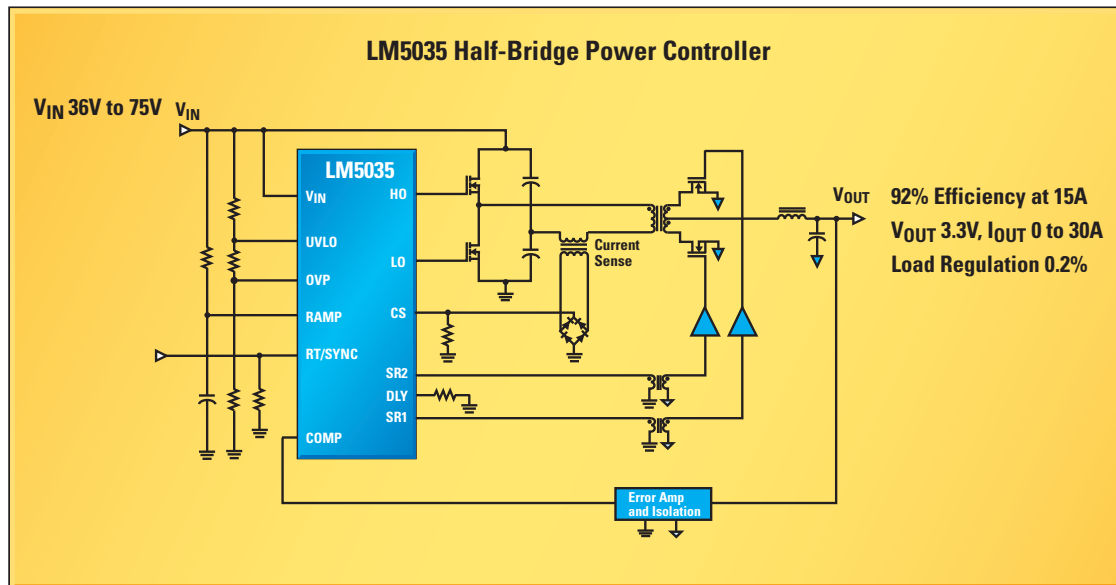
Product ID	Type	Topology	V <sub>IN</sub>	Max Load	Freq	FB V <sub>REF</sub>	Soft Start	Packaging
<b>LM5116</b>	Controller	Synch-Buck	6V to 100V	15A	<1 MHz	1.25V + 1.5%	✓	TSSOP-20EP
<b>LM5005</b> <b>LM25005</b>	Regulators	Non- Synch Buck	7V to 75V 7V to 42V	2.5A	<500 kHz	1.25V + 1.5%	✓	TSSOP-20EP
<b>LM5574</b> <b>LM25574</b>	Regulators	Non- Synch Buck	6V to 75V 6V to 42V	0.5A	<500 kHz <1 MHz	1.25V + 1.5%	✓	TSSOP-16
<b>LM5575</b> <b>LM25575</b>	Regulators	Non- Synch Buck	6V to 75V 6V to 42V	1.5A	<500 kHz <1 MHz	1.25V + 1.5%	✓	TSSOP-16EP
<b>LM5576</b> <b>LM25576</b>	Regulators	Non- Synch Buck	6V to 75V 6V to 42V	3A	<500 kHz <1 MHz	1.25V + 1.5%	✓	TSSOP-20EP

New

# Isolated PWM Controllers

## PWM Controllers for Isolated Topologies

Product ID	Description	Mode	Topologies	$V_{IN}$ (Max)	FSW (kHz)	UVLO	Packaging
LM5020	Single ended	Current	Flyback, forward, buck, or boost	100	50 to 1000	✓	MSOP-10, LLP-10
LM5021	AC-DC controller	Current	Flyback, forward	30	50 to 500	—	MSOP-8, MDIP-8
LM5025A/B	Active clamp	Voltage/feed-forward	Forward active clamp	105	100 to 1000	✓	TSSOP-16, LLP-16
LM5026	Active clamp	Current	Forward active clamp	105	100 to 1000	✓	TSSOP-16, LLP-16
LM5030	Alternating outputs	Current	Push-pull, half-, or full-bridge	100	50 to 1000	—	MSOP-10, LLP-10
LM5032	Dual interleaved	Current	Flyback, forward	105	100 to 1000	✓	TSSOP-16, LLP-16
LM5033	Alternating outputs	Voltage	Push-pull, half-, or full-bridge	100	50 to 1000	—	MSOP-10, LLP-10
LM5034	Dual interleaved active clamp	Current	Forward active clamp	105	100 to 1000	✓	TSSOP-20
LM5035	Half-bridge controller and gate driver	Voltage	Half-bridge	100	100 to 1000	✓	TSSOP-20, LLP-24
LM5041/A	Buck-fed cascade alternating outputs	Current	Current or voltage fed push-pull, bridge	100	50 to 1000	✓	TSSOP-16, LLP-16
LM5115	Secondary-side post regulator	Voltage/current-injection	Synchronous secondary-side post regulator	75	100 to 1000	—	TSSOP-16, LLP-16
LM25115	Secondary-side post regulator	Voltage/current-injection	Synchronous secondary-side post regulator	42	100 to 1000	—	TSSOP-16, LLP-16



### LM5035 Features

- 105V / 2A half-bridge gate drivers
- Synchronous rectifier control outputs with programmable delays
- High voltage (105V) start-up regulator
- Programmable line under-voltage lockout
- Line over-voltage protection
- Internal thermal shutdown protection
- Adjustable soft-start
- Cycle-by-cycle over-current protection

# Gate Drivers

## High-Current, Low-Side Gate Drivers for Low-Side FET Topologies (Such as Forward, Push-Pull)

Product ID	Type	IC V <sub>CC</sub> Range	Peak Gate Drive Sink/Source Typ Current (A)	Input Type	Rise/Fall Time Typ (ns) <sup>1</sup>	Packaging
LM5110-1	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8, LLP-10
LM5110-2	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8, LLP-10
LM5110-3	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8, LLP-10
LM5111-1	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8
LM5111-2	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8
LM5111-3	Dual	3.5 to 14	5.0/3.0	Dual, independent	14/12	SOIC-8
LM5112	Single	3.5 to 14	7.0/3.0	Inverting, non-inverting	14/12	LLP-6

## Half-Bridge Gate Drivers for Synchronous Buck, Half-Bridge, Full-Bridge Topologies (Such as Low-Side and High-Side FET Drivers)

Product ID	V <sub>IN</sub> Max (MOSFET)	V <sub>CC</sub> Range	Peak Gate Drive Sink/Source Typ Current (A)	Input Type	Rise/Fall Time Typ (ns) <sup>1</sup>	Packaging
LM27222	28	4 to 7	3.2/4.5	Single PWM	17/12	SOIC-8, LLP-8
LM5100A	100	7.5 to 14	3.0/3.0	Dual, independent	8/8	SOIC-8, LLP-10
<b>New</b> LM5100B	100	9 to 14	2.0/2.0	Dual, independent	8/8	SOIC-8, LLP-10
<b>New</b> LM5100C	100	9 to 14	1.0/1.0	Dual, independent	8/8	SOIC-8, LLP-10
LM5101A	100	7.5 to 14	3.0/3.0	Dual, independent	8/8	SOIC-8, LLP-10
<b>New</b> LM5101B	100	9 to 14	2.0/2.0	Dual, independent	8/8	SOIC-8, LLP-10
<b>New</b> LM5101C	100	9 to 14	1.0/1.0	Dual, independent	8/8	SOIC-8, LLP-10
LM5102	100	7.5 to 14	1.8/1.6	Dual, independent	10/10	MSOP-10, LLP-10
LM5104	100	7.5 to 14	1.8/1.6	Single PWM	10/10	SOIC-8, LLP-10
LM5105	100	7.5 to 14	1.8/1.6	Single PWM	15/15	LLP-10
LM5106	100	7.5 to 14	1.8/1.2	Single PWM	22/15	MSOP-10, LLP-10
LM5107	100	7.5 to 14	1.4/1.3	Dual, independent	15/15	SOIC-8, LLP-8
<b>New</b> LM5109B	90	7.5 to 14	1.0/1.0	Dual, independent	20/20	SOIC-8, LLP-8

All products have UVLO feature.

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