



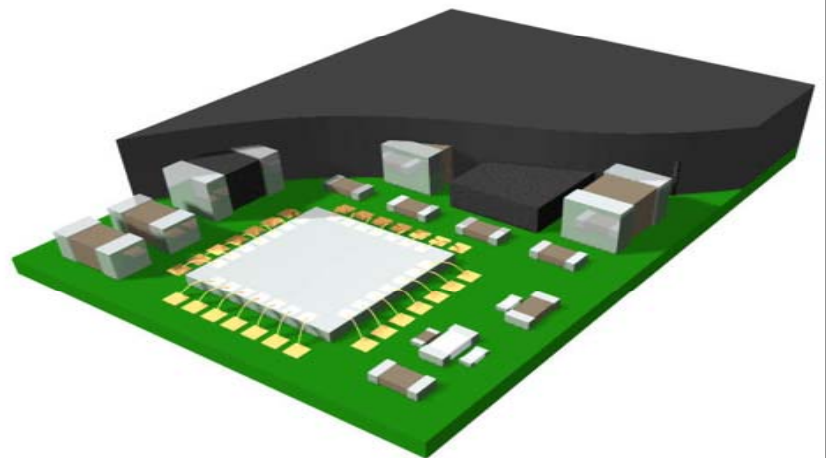
COMPONENTS • POWER • EASE-OF-USE • PERFORMANCE
 INNOVATION • EFFICIENCY • EXPERTISE • CONFIGURABLE
 ME • VOLUME • RELIABILITY • FLEXIBILITY • LONGEVITY
 NETWORK • PROVEN • DENSITY • QUALIFIED • COMPETITIVE
 SOLUTIONS • INTEGRATION • SUPPORT • OPPORTUNITIES

业界最小面积、最易设计的集成化电源芯片

VICOR

只是又多了一个新的稳压器件？

- › 高性能
 - 领导业界的效率
 - 目前为止唯一商用的ZVS方案
- › 高集成度
 - 业界领先的功率密度
 - 功率密度甚至超过了集成电
- › 使用简单
 - 对应不同输出，强化芯片性
 - 无需设计
 - 全陶瓷电容方案
- › 性价比
 - 工业级领先的性价比



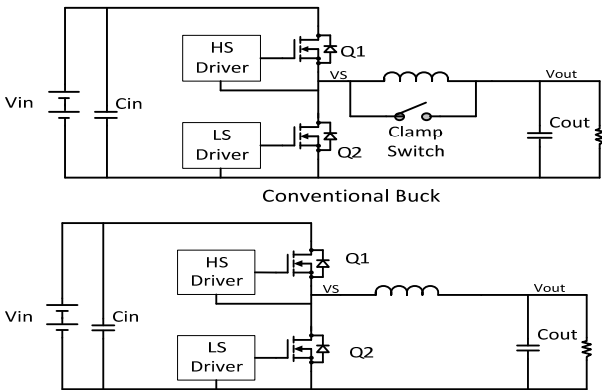
为何采用 ZVS?

零电压开关减少了

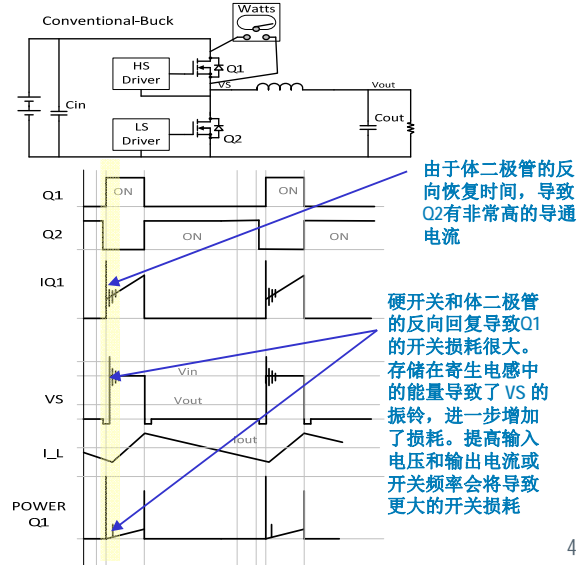
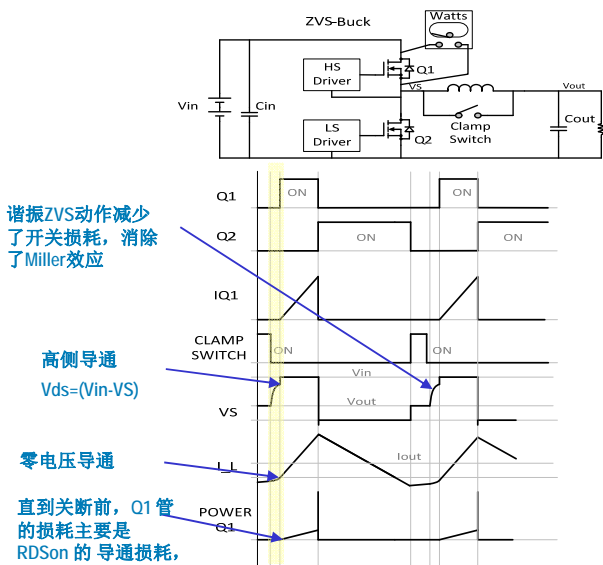
- Q1 的开关打开瞬间损耗
- 栅极驱动损耗
- 体二极管导通损耗

零电压开关使能

- > 更高的开关频率
 - 更高的功率密度 (更小的被动器件)
 - 更好的性能
- > 更高输入电压/ 更大输出电流
 - 更高的功率密度
 - 减少转换级
 - 减少输入线上损耗
- > 更高效率
 - 更高的功率密度
 - 更低的热降额

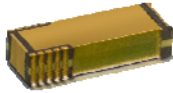


ZVS降压的拓扑结构提升



ZVS Buck 转换器

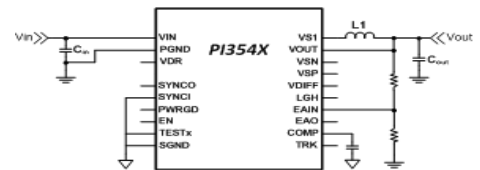
输入电压范围	输出电压范围	型号/封装	EVB提供情况	产品量产	输出电流
8-36V	1V, 1.8V, 2.5V, 3.3V, 5V, 12V, 15V	PI33xx-xx / 10x14 SiP	可提供	已量产	Up to 15A
8-18V	1V, 1.8V, 2.5V, 3.3V, 5V	PI34xx-xx / 10x14 SiP	可提供	已量产	Up to 15A
36-60V	2.5V, 3.3V, 5V, 12V	PI354x-xx / 10x10 SiP	可提供	已量产	Up to 10A
30-60V	3.3V, 5V, 12V	PI352x-xx / 10x14 SiP	可提供	已量产	Up to 22A
16-36V	3.3V, 5V, 12V	PI332x-xx / 10x14 SiP	17年7月	Q3 17	Up to 20A
30-60V	2.5V, 3.3V, 5V, 12V	PI358x-xx / 7x8 QFN	17年7月	Q3 17	1-10A



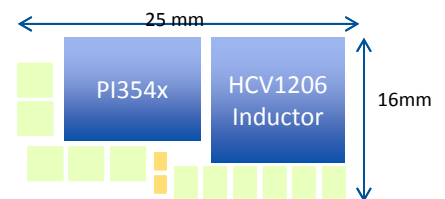
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ZVS Buck 稳压器

- › 业界领先的效率和功率密度
- › 设计简洁
 - 减少了外部器件的需要
- › 内部补偿
- › 对应的电感已经准备好了
- › 轻松并联
- › 可用作LED驱动或者电池充电



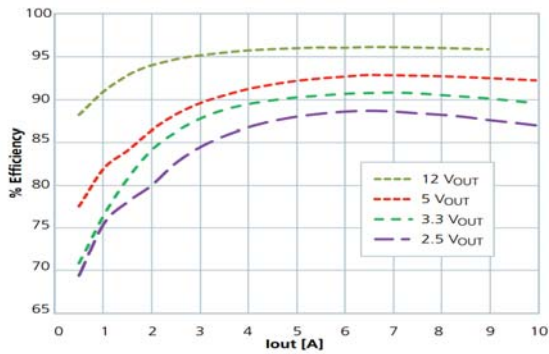
简洁的外围电路



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VICOR

PI354x 系列 48Vin的 ZVS Buck 转换器



PI354x 效率 / 48Vin

- › 输入电压：36V ~ 60V
- › 10x10mm LGA SiP 封装
- › 单线并联
- › 输入过压/欠压保护(OVLO/UVLO)
- › 输出电压过压保护(OVP)
- › 过温度保护(OTP)
- › 工作温度范围：-40° C 到 125° C (结温)



Device	Output Voltage		I _{out} Max
	Set	Range	
PI3542-00-LGIZ	2.5 V	2.2 V to 3.0 V	10 A
PI3543-00-LGIZ	3.3 V	2.6 V to 3.6 V	10 A
PI3545-00-LGIZ	5.0 V	4.0 V to 5.5 V	10 A
PI3546-00-LGIZ	12 V	6.5 V to 14 V	9 A

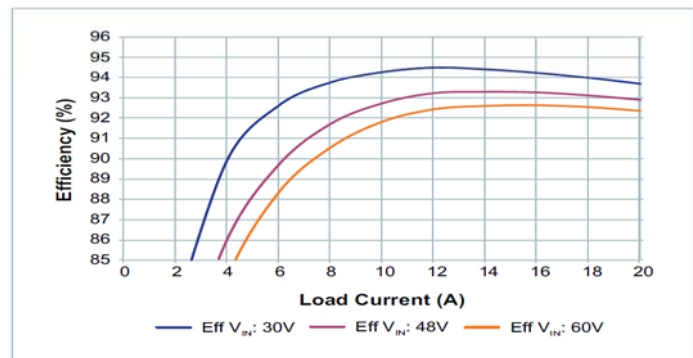
PI35 4x 产品系列

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VICOR

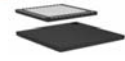
48V ZVS Buck - PI3525

- › 高效率的高压 ZVS-Buck 拓扑
- › 输入电压：30V 到 60V
- › 恒压/恒流输出
- › 可并联
- › 输入过压/欠压关断(OVLO/UVLO)
- › 输出过压保护(OVP)
- › 过温度保护(OTP)
- › 快速过流/慢速过流保护
- › 可调整软启动/电压跟踪
- › 工作温度：-40° C 到 120° C (结温)



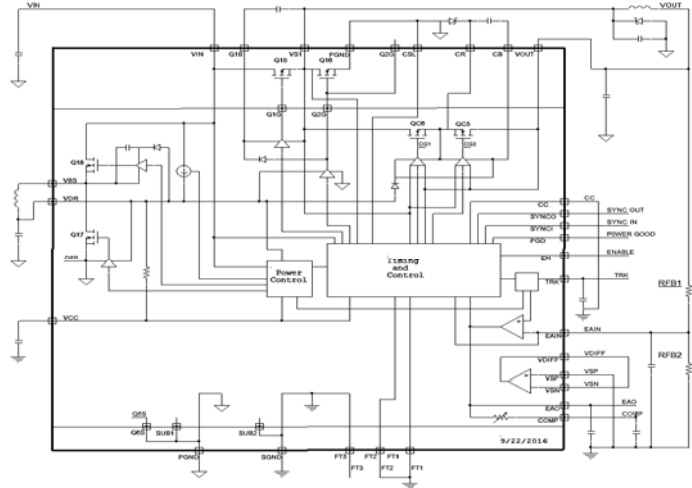
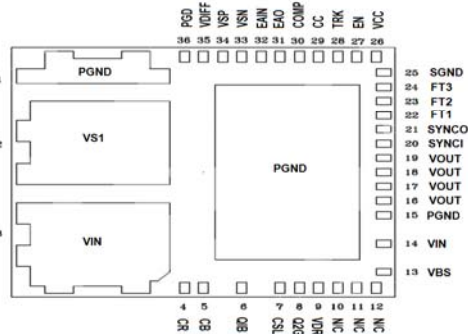
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48V ZVS Buck - QFN 封装

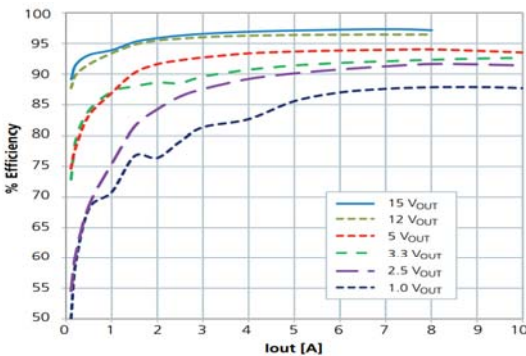


7x8mm QFN

型号	输出电压		输出电流
	默认值	范围	
PI3582-00-QFIZ	2.5V	2.2 to 3.0V	10A
PI3583-00-QFIZ	3.3V	2.6 to 4.0V	10A
PI3585-00-QFIZ	5.0V	4.0V to 6.5V	10A
PI3586-00-QFIZ	12V	6.5V to 14V	9A



24V ZVS Buck - PI33xx 系列



PI33xx 效率曲线 / 24 Vin

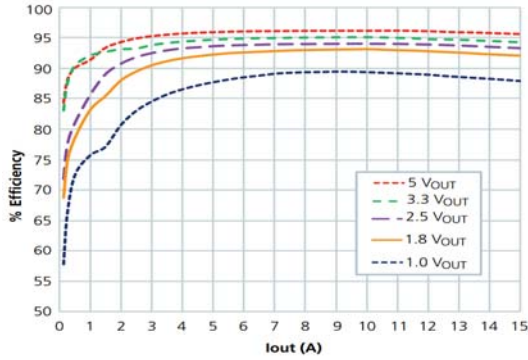
- > PI33xx series - 24 Vin 输入电压 (8 V to 36 Vin)
- > PI34xx series - 12 Vin 输入电压 (8 V to 18 Vin)
- > 最大支持10A输出电流
- > 工作温度: -40° C 到 125° C (结温)
- > 高效率

>95% : 36 Vin 转 12 Vout, 24 Vin 转 12 Vout, 12 Vin 转 5 Vout

Device	Output Voltage		Iout Max
	Set	Range	
PI3311-x0-LGIZ	1.0 V	1.0 to 1.4 V	10 A
PI3318-x0-LGIZ	1.8 V	1.4 to 2.0 V	10 A
PI3312-x0-LGIZ	2.5 V	2.0 to 3.1 V	10 A
PI3301-x0-LGIZ	3.3 V	2.3 to 4.1 V	10 A
PI3302-x0-LGIZ	5.0 V	3.3 to 6.5 V	10 A
PI3303-x0-LGIZ	12 V	6.5 to 13.0 V	8 A
PI3305-x0-LGIZ	15 V	10.0 to 16.0 V	8 A

PI33xx 基本组合
 1 V, 1.8 V, 2.5 V, 3.3 Vout @15 A (PI33xx-01)
 5 Vout @ 15 A (PI3302-03) 支持 11V to 36 Vin

12V ZVS Bucks - PI34xx 系列



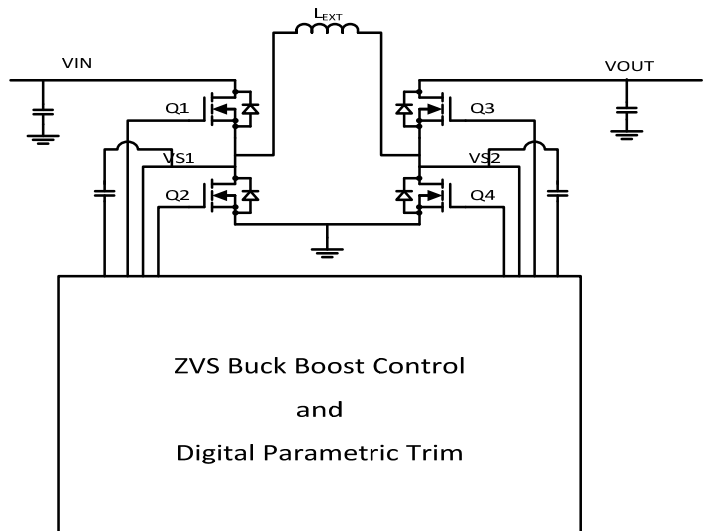
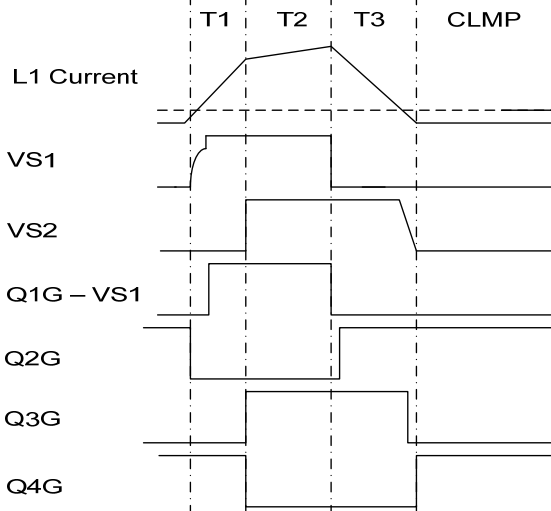
PI34xx 效率曲线 / 12 Vin

- › 灵活多样的功能设置
 - 可并联
 - 可频率同步
 - 可调软启动/电压跟踪
- › 有 I²C 版本可选并支持如下特性:
 - 输出电压微调
 - 故障报告
 - 使能和同步的极性
 - 延时启动(对交错的多项并联)

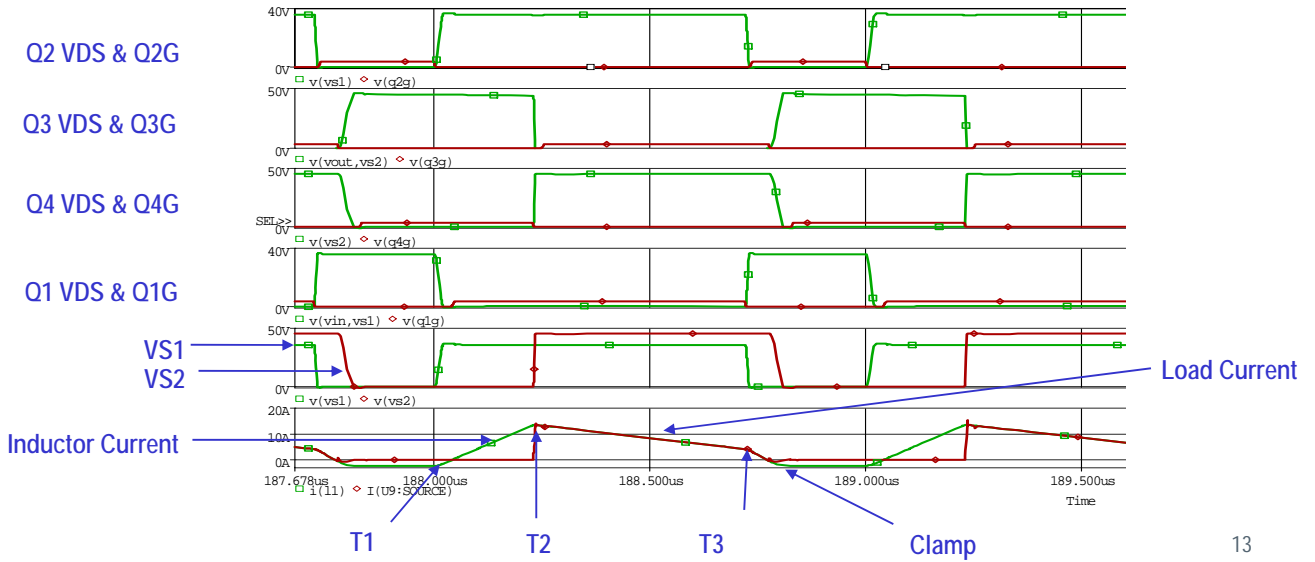
Device	Output Voltage		I _{out} Max
	Set	Range	
PI3420-00-LGIZ	1.0 V	1.0 V to 1.4 V	15 A
PI3421-00-LGIZ	1.8 V	1.4 V to 2.0 V	15 A
PI3422-00-LGIZ	2.5 V	2.0 V to 3.1 V	15 A
PI3423-00-LGIZ	3.3 V	2.3 V to 4.1 V	15 A
PI3424-00-LGIZ	5.0 V	3.3 V to 6.5 V	15 A

PI34xx

Cool-Power® ZVS升降压开关状态

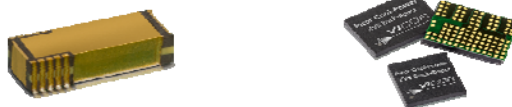


Cool-Power® PI375X 38V In To 45V Out Timing Simulation



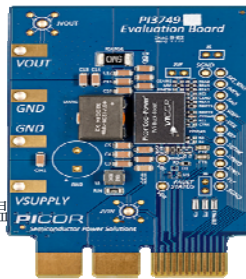
ZVS Buck-Boost 稳压器

输入电压范围	输出电压范围	型号/封装	EVB状态	发布时间	输出功率
16-34V	12-34V	PI3749-xx / 10x14 SiP	可提供	已发布	240W
21-60V	21-34V	PI3741-00 / 10x14 SiP	可提供	已发布	175W
21-60V	36-54V	PI3741-01 / 10x14 SiP	可提供	已发布	175W
8-60V	10-50V	PI3740-00 / 10x14 SiP	可提供	已发布	50W-120W
30-60V	12-55V	PRM2308xx / 8x23 SM-ChiP	Q2'17	Q3'17	400W
12-50V	12-36V	PRM2308xx / 8x23 SM-ChiP	Q2'17	Q3'17	150W

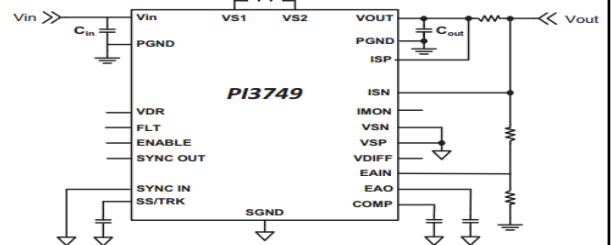
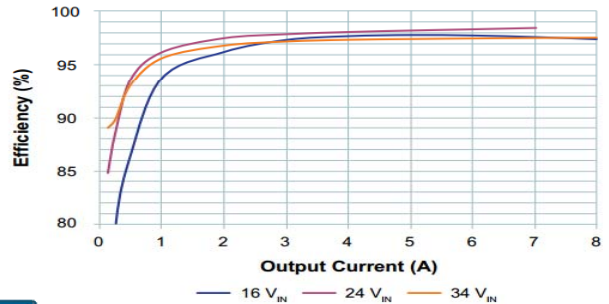


ZVS Buck-Boost - PI3749

- > 输入电压: 16V - 34V
- > 输出电压: 12V - 34V
- > 输出功率: 190 W
- > 工作频率: 800kHz
- > 封装: 10x14x2.5 LGA
- > 快速动态响应
- > 可并联
- > 可外部频率同步 / 交错
- > 输入过压/欠压锁定 (OVLO/UVLO)
- > 输出过压保护 (OVP)
- > 过温度保护 (OTP)
- > 快速/慢速过流保护
- > 工作温度: -40° C to 125° C (结温)

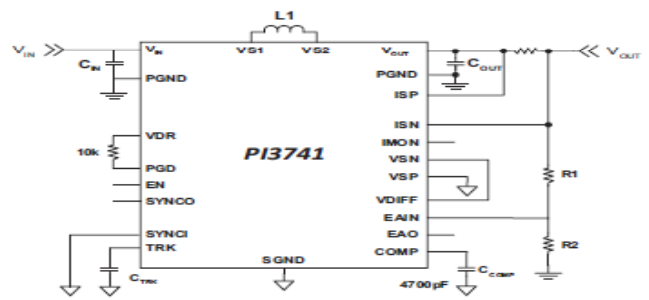
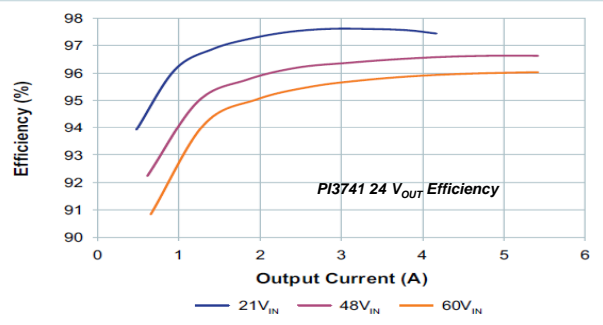


Efficiency @ $V_{OUT} = 24 V$ vs. Output Current



ZVS Buck-Boost - PI3741

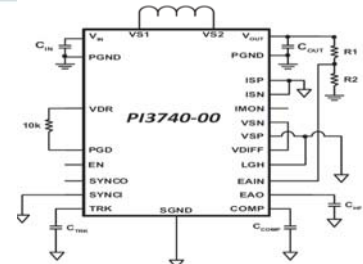
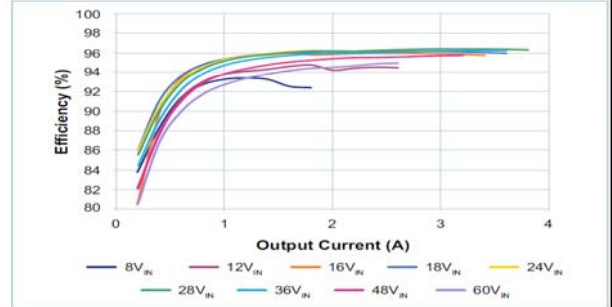
- 输入电压: 21V 到 60V
- 效率: 高达97%
- 输出功率: 高达150W
- 快速动态响应
- 可并联
- 可外部频率同步 / 交错
- 输入过压/欠压锁死 (OVLO/UVLO)
- 输出过压保护 (OVP)
- 过温度保护 (OTP)



Device	Output Voltage	
	Set	Range
PI3741-00-LGIZ	24 V	21 to 36 V
PI3741-01-LGIZ	48 V	36 to 54 V

超宽输出电压范围：ZVS Buck-Boost - PI3740

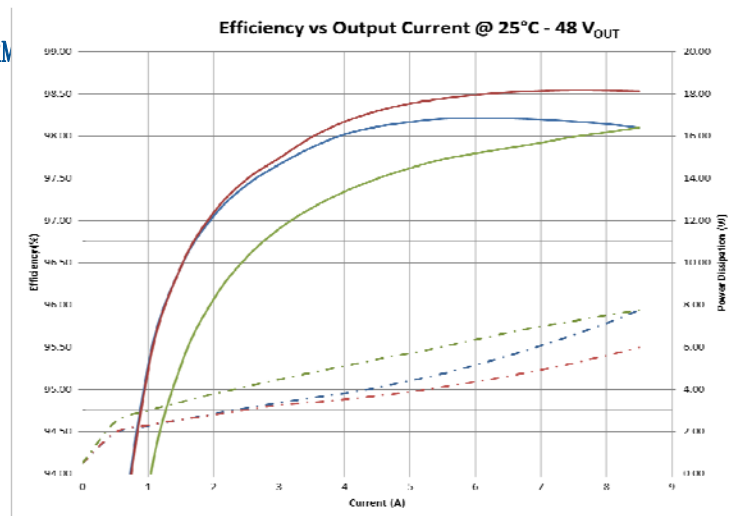
- › 效率：高达 96%
- › 输出功率：50 - 140W
- › 可并联
- › 可外部频率同步/交错
- › 提供恒流模式 (LGH)
- › OVLO / UVLO/OVP/OTP
- › 快速和慢速过流保护



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SM-ChiP PRM

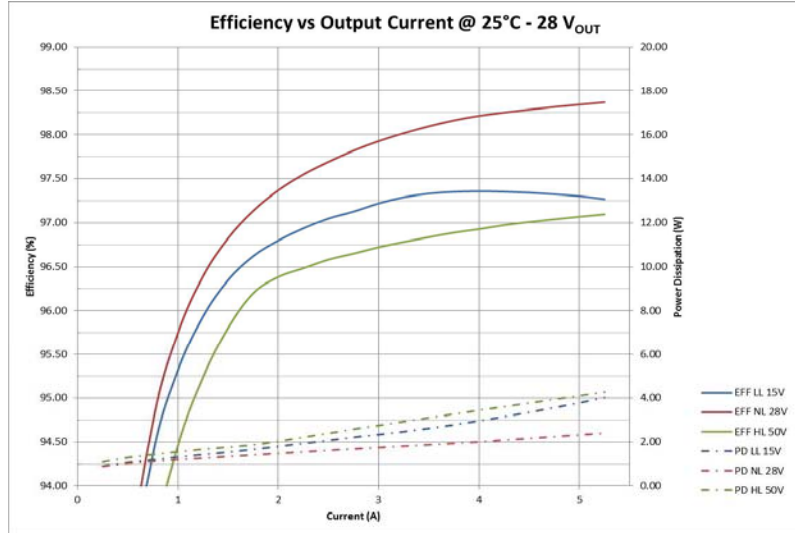
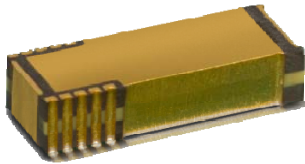
- › PRM2308S60G55 - 48V SM-ChiP PRM
- › 输入：48V (30V to 60V)
- › 输出：20V to 55V
- › 输出功率：400W
- › 峰值效率：>98.5%
- › SM-ChiP 封装 - 23x8x7.5mm



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SM-ChiP PRM

- > PRM2308S50Q36 - 28V SM-ChiP PRM
- > 输入: 28V (15V to 50V)
- > 输出: 12V to 36V
- > 输出功率: 150W
- > 峰值效率: >98%
- > SM-ChiP 封装 - 23x8x7.5mm



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Thank You