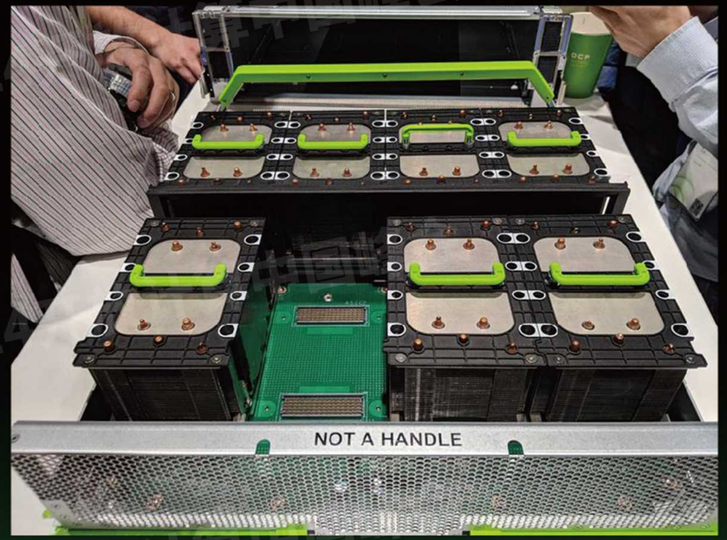
数据中心服务器主板的供电新方案

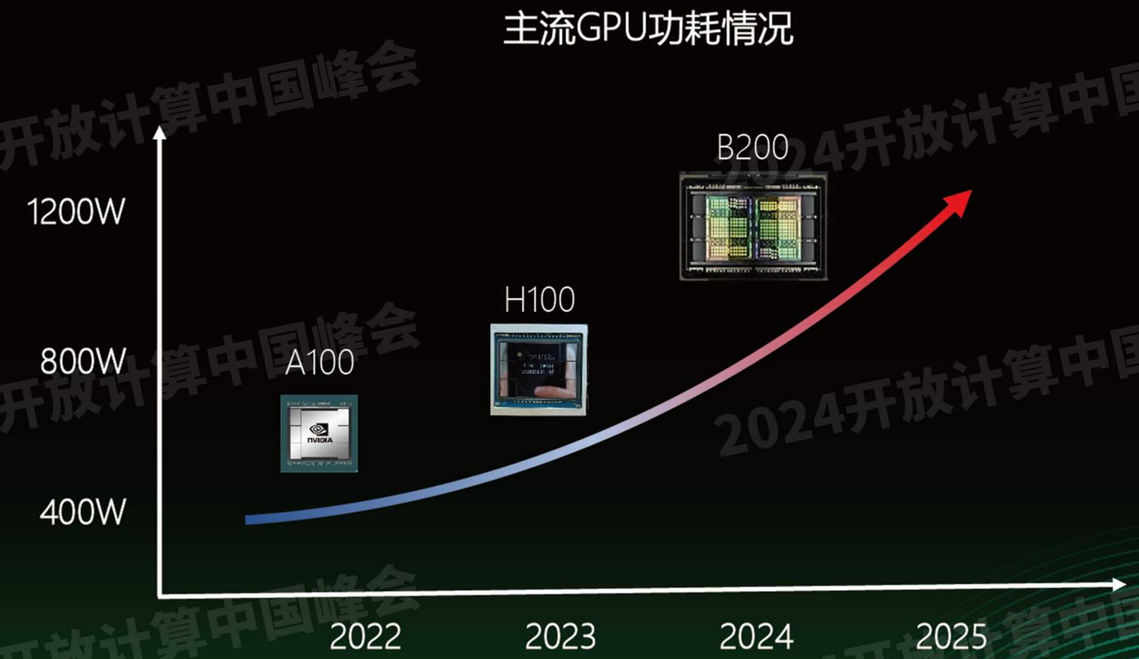
王卿 – 北中国区销售总监

长工微电子

2024开放计算中国峰会

应对高算力需求，xPU功耗迅速增加





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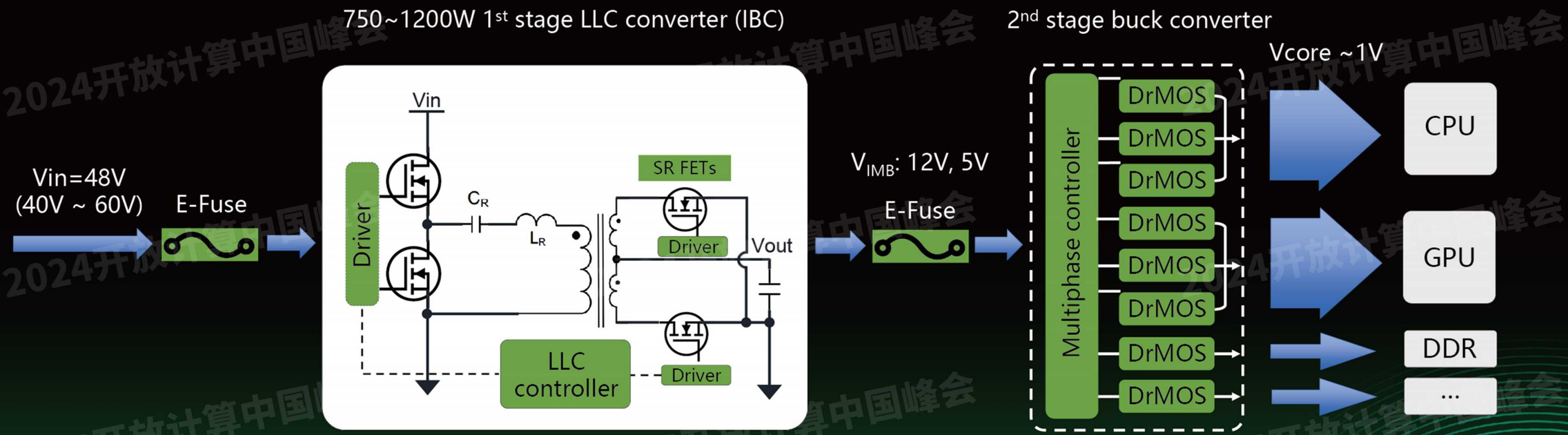
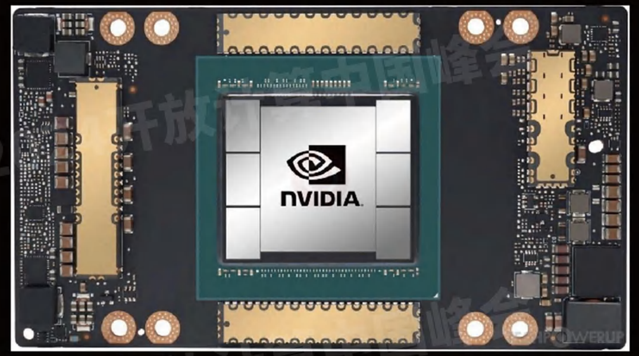
48V总线架构下的长工微电源解决方案



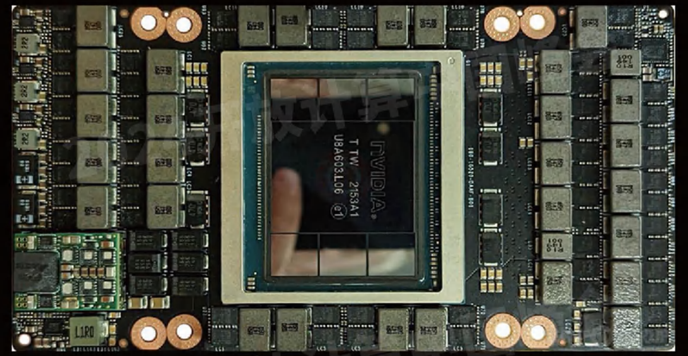
5V中间总线方案——解决功率密度难题的最佳方向

Innovision Semiconductor



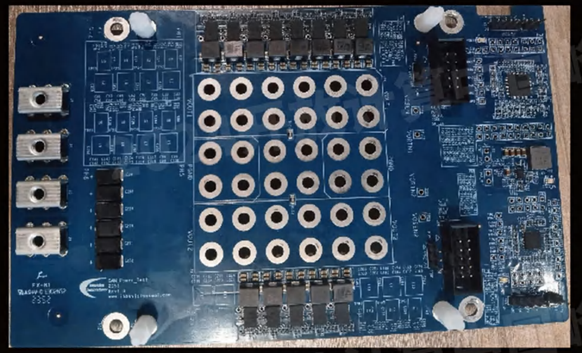
48V-48V-1V

- 高效率，高集成度
- 动态调节特性
- V公司独家方案



48V-12V-1V

- 沿袭主流12V方案，方案选择性广，设计思路有延续性
- 前级48V转换模块资源丰富
- 开关频率一般在800kHz，功率密度和动态性能越发不能满足需求



48V-5V-1V

- 更高的占空比，更小的电感
- 高转换效率，高动态特性
- 开关频率可达1.2MHz以上
- 整体功率密度最高，后续技术持续演进中

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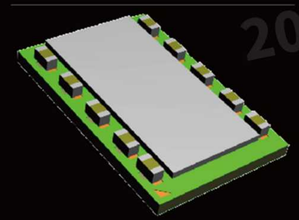
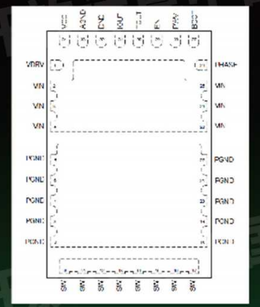
IS6820A——5V下效率最高的量产Power Stage

Innovision Semiconductor

- IS6820A for $5V_{IMB}$





- PQFN 4x6mm
- 60A TDC, 120A Imax
- Optimized for high F_{sw}

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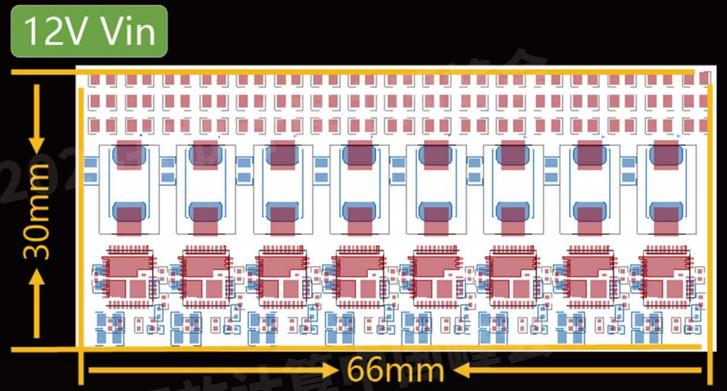
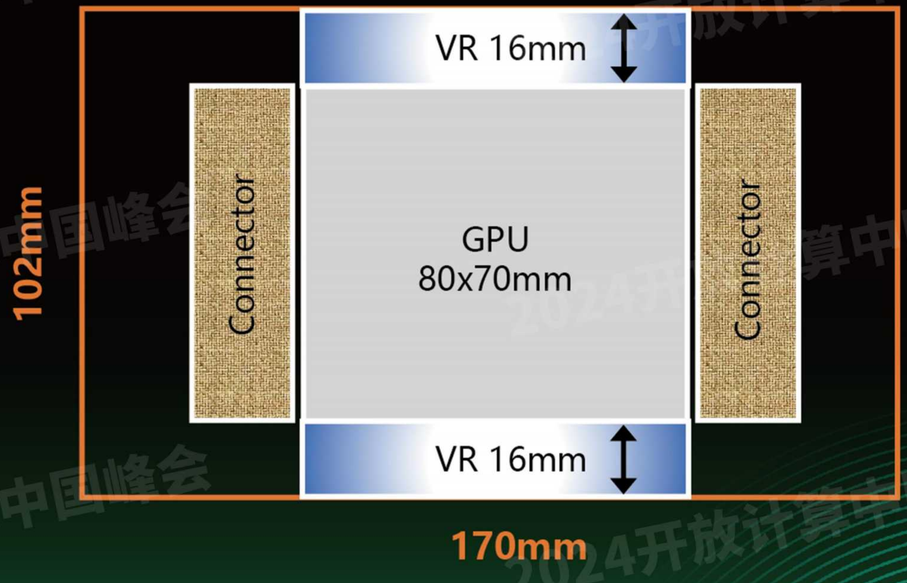
5V系统提升功率密度的layout展示



在同样的输出功率下，5V系统占板尺寸只是12V系统的42%

OAM 2.0 尺寸规范



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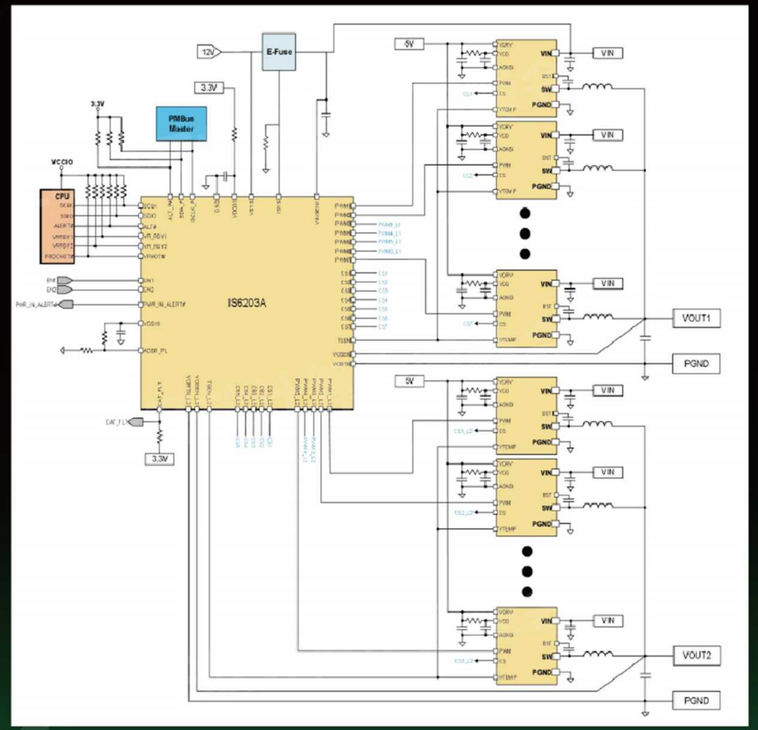
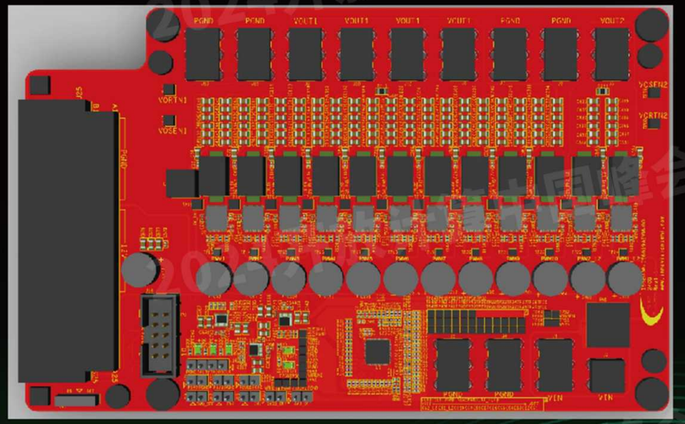
IS6203A——新12相VRM控制器



产品特性

- 12相双路输出（12+0~6+6）
- 丰富的数字接口协议
- 每相开关频率200kHz~3MHz
- 专利的效率和动态优化技术
- 封装兼容业界主流产品（6x6 QFN）



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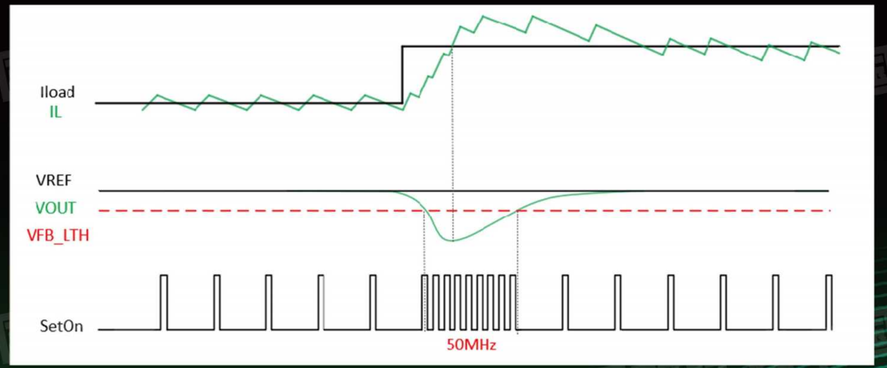
IS6203A——新12相VRM控制器的动态表现

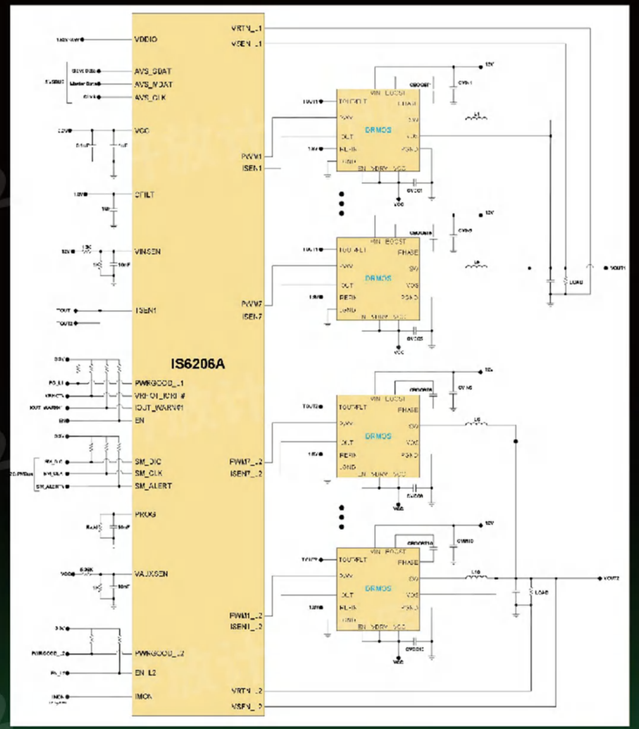
Innovision Semiconductor

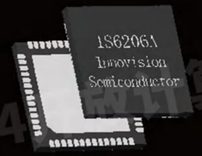
V_{in}=12V, V_{out}=1.8V, F_{sw}=900kHz, L=0.1uH,
DC_LL=0.5mΩ, Load: 60A~430A (960A/us, 2kHz, 50% duty)

Load Transient加载时，当输出电压VOUT低于设定的VFB_LTH的阈值之后，控制器加快PWM的主时钟频率至50MHz，让PWM的开关频率瞬间加快，从而加快动态响应速度。



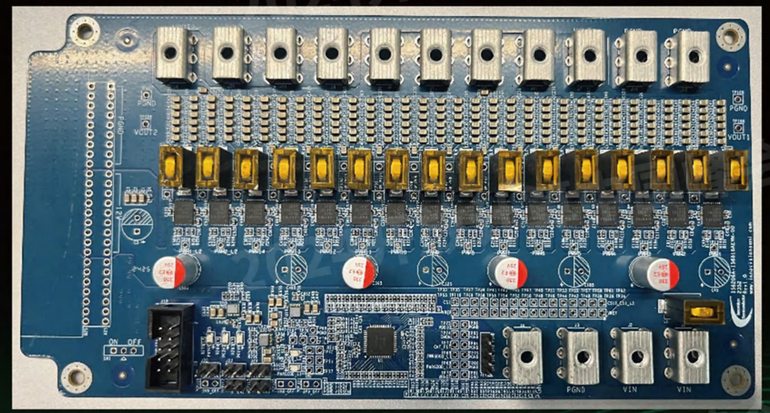
IS6206A——新16相VRM数字控制器



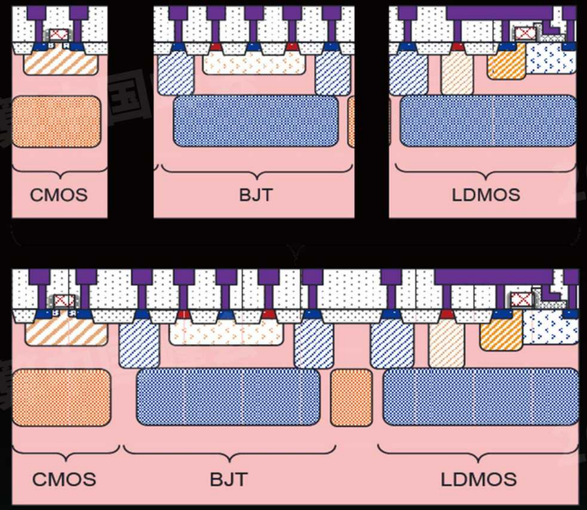


产品特性

- 16相双路输出（16+0~8+8）
- 基于数字控制环路的新型控制器
- 丰富的数字接口协议
- 每相开关频率200kHz~2MHz
- 专利的效率和动态优化技术
- 封装兼容业界主流产品（7x7 QFN）

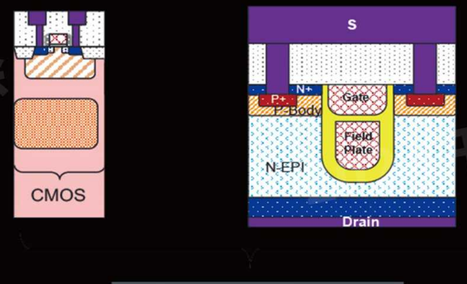


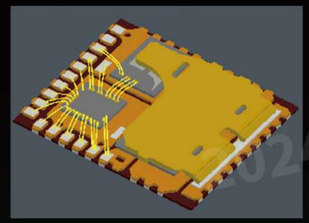
长工微功率器件在两个工艺路线上同时发力



BCD工艺

大厂BCD工艺合作伙伴，多款大电流Power Stage产品达到领先水平。





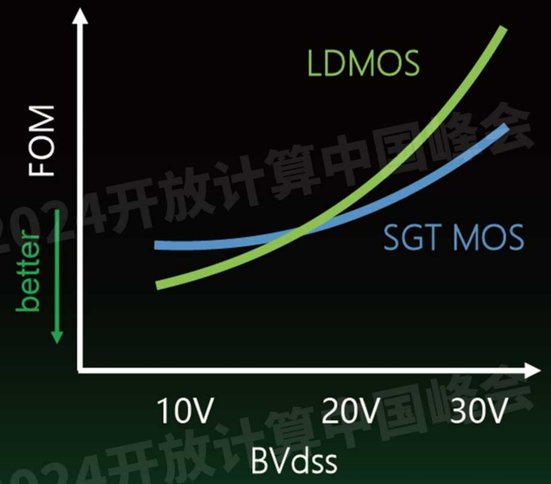
MCM工艺

与国内外领先Trench MOSFET公司合作，定制并量产多款MCM封装的Power Stage。

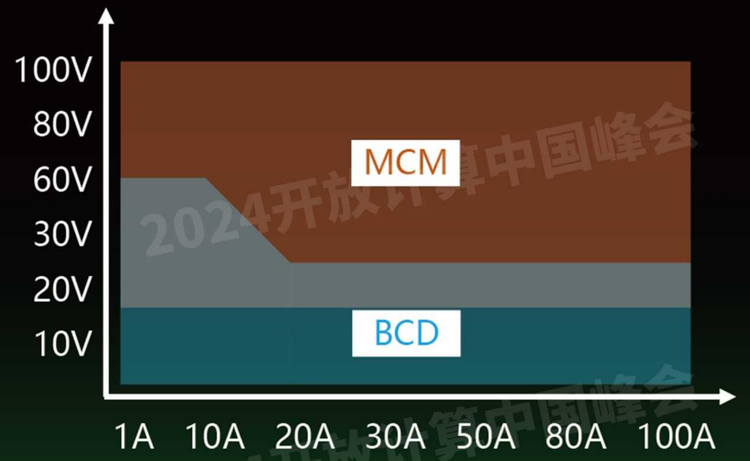
单芯片集成工艺 VS 多芯片模组工艺

Innovision Semiconductor

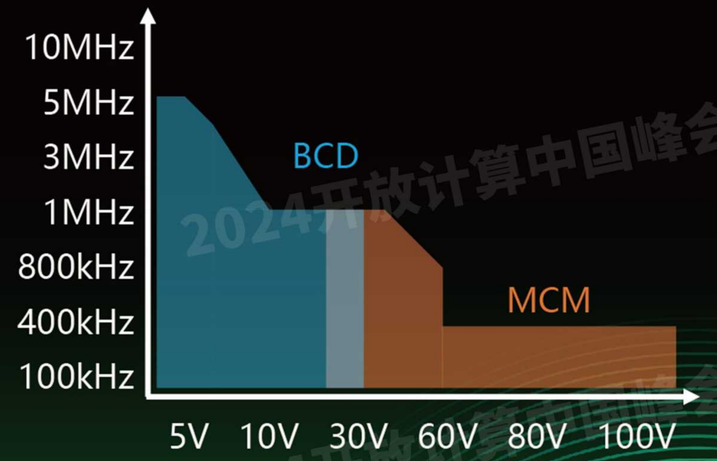
Figure-of-Merit（FOM）比较



最高工作区间的比较



开关频率的比较



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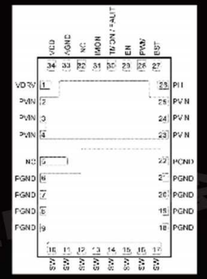
12V中间总线下的Power Stage新选择

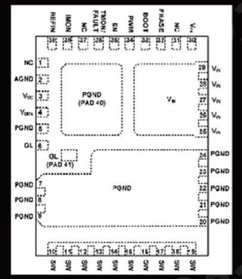
Innovision Semiconductor

IS6821A——90A Power Stage
单晶元产品



- 4x6标准封装
- 开关频率高至2MHz
- 精确的电流和温度汇报能力
- 可与长工微多相控制器完美适配

IS6816A——90A Power Stage
MCM产品



- 5x6标准封装
- 业界领先的大电流下效率
- 完善的保护功能
- 可与长工微多相控制器完美适配

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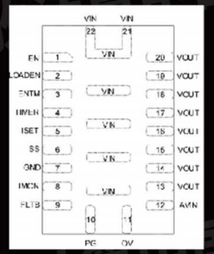
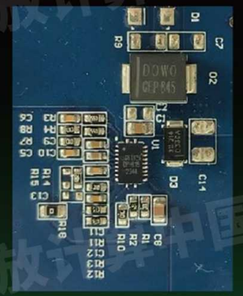
Efuse 新品

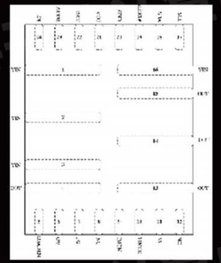
Innovision Semiconductor

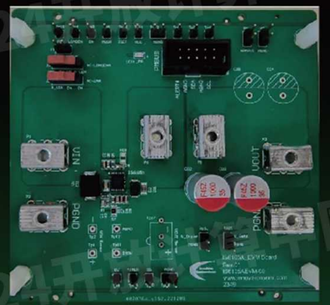
IS6102A——15A Efuse



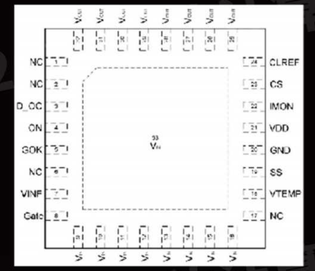


IS6105A——50A带PMBus

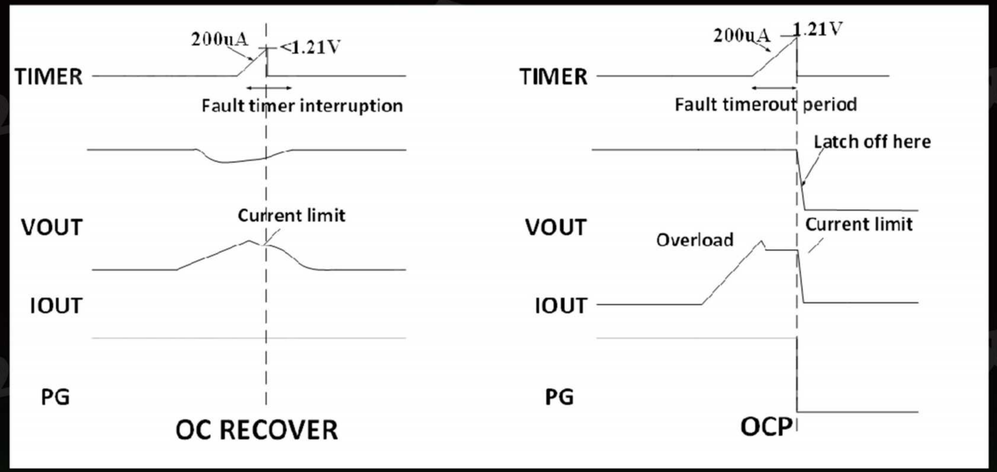




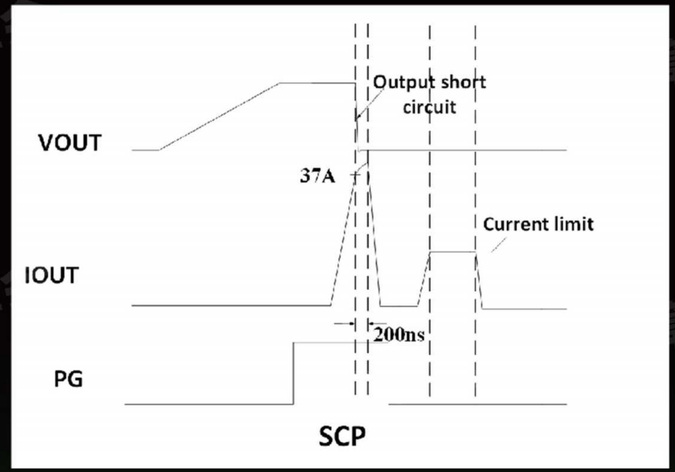
IS6108A——50A可并联



IS6102A保护设计理念



正常限流以及过流保护



大电流下的快速过流保护

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长工微计算类电源产品列表

Innovision Semiconductor

POL Converter

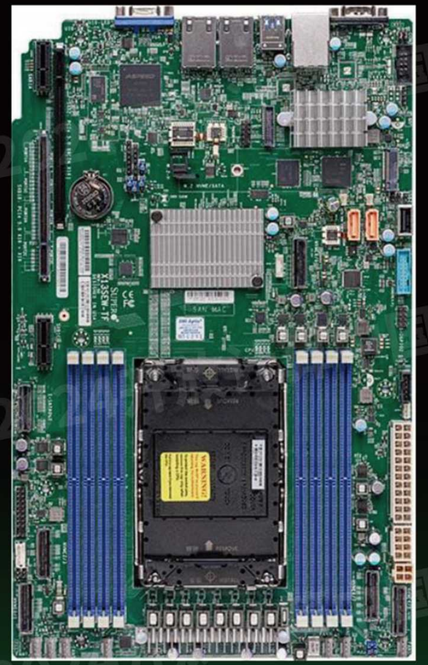
IS6605A/H, IS66066/H, IS6607A/H, IS6608A, IS6609A, IS6615A, IS6620A, IS6630A, IS6631A, IS6302A, ···

Power Stage

IS6806A, IS6809A, IS6811A, IS6812A, IS6816A, IS6819A, IS6819B, IS6820A, IS6821A···

Multi-phase Controller

IS6201A, IS6202A, IS6203A, IS6204A, IS6205A, IS6206A, IS6207A, IS6210A···



Hot Swap/Efuse

IS6101A, IS6102A, IS6103A, IS6105A, IS6107A, IS6108A, ···

Power Module

ISM6401A, ISM6402A, ISM6403A, ISM6405A, ISM6636x, ···

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THANKS

长于工匠 - 见微知著