Vincotech

满足中功率段需求的新封装

新型适于工业控制，太阳能光伏以及UPS应用的紧凑型封装

EMPOWERING **YOUR IDEAS**

VINco E3
满足中功率段需求的新封装

VINco E3 - Vincotech最新的适于中功率应用的封装。凭借采用行业标准低剖面紧凑封装的SLC（Solid Cover）技术，VINco E3的封装能使工程师在工业驱动器、太阳能发电、UPS等应用领域设计出输出电流更大和能量密度更高、可靠性更好的中功率段逆变器。

用户获益

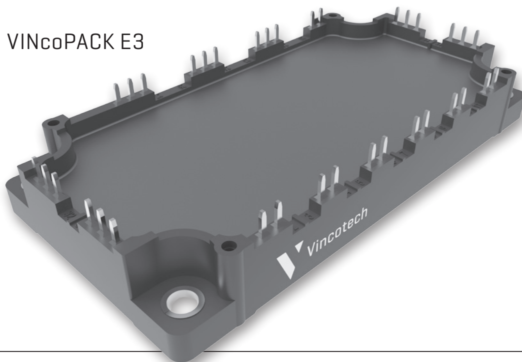
基于**新型SLC和IMB（绝缘金属基板）技术**，延长了模块的使用寿命

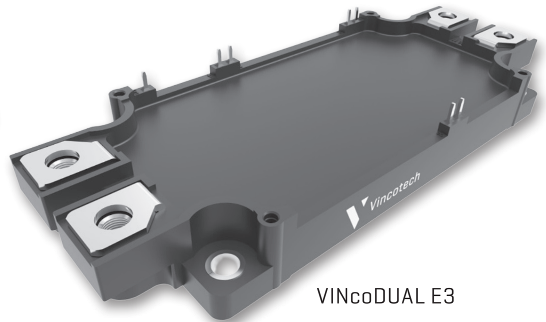
- 具有匹配CTE值（IMB、树脂填充以及封装具有非常匹配的热膨胀系数）可实现更高功率循环以及热循环能力
- 基板无明显翘曲，因此这是一种无“pumping-out”失效风险的封装。

能量密度更高

- **低损耗第7代芯片技术**
- 相同芯片尺寸，热阻R_{th} [j-c]更低
- IMB具有更厚的顶部铜层，因此没有传统方案在于尺寸上的限制，进而能够获得更高的内部芯片密度

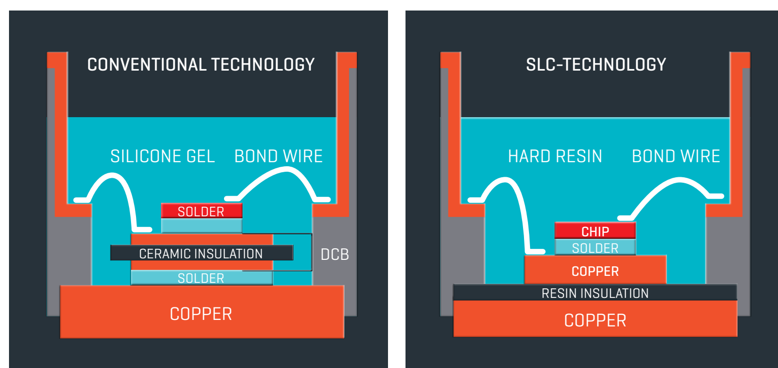
VINcoPACK E3





VINcoDUAL E3

VINco E3
新型SLC技术



传统技术与新型SLC技术的结构对比

VINco E3是一种基于固体覆层技术（SLC）而新开发的封装技术。

新型的IMB（绝缘金属基板）将绝缘树脂层与其顶部及底部的铜层直接结合到了一起。

使用IMB可以替换传统方案中的基板焊接层与独立的底板，从而实现了:

- 更高热量循环能力
- 更低热阻
- 更高能量密度和更低杂散电感

相较于硅凝胶，直接灌封树脂具有更为均匀的机械应力分散能力，从而实现了:

- 更高的功率循环能力

VINco E3

VINco E3

新型M7 IGBT

主要特征

/ 超薄晶圆工艺（更薄的N漂移层）

/ 优化的晶胞设计（门极电容）

主要优势

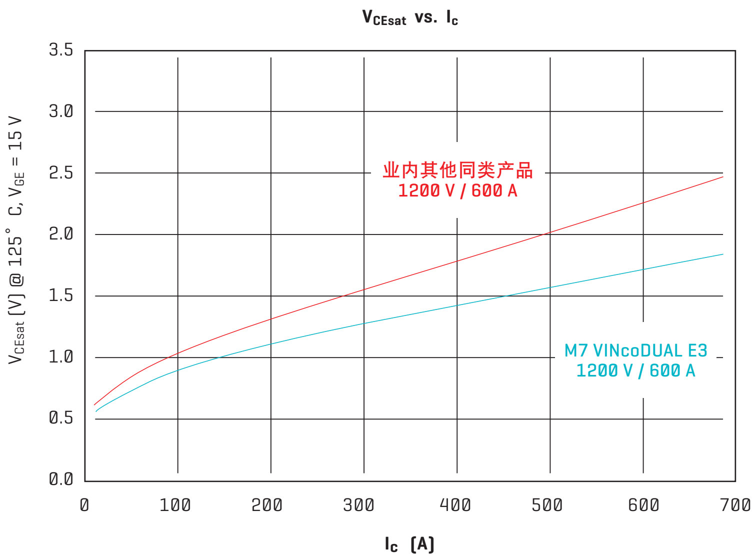
/ V_{CEsat}

/ 低开关损耗

/ 提升了SOA（safe operation area）性能

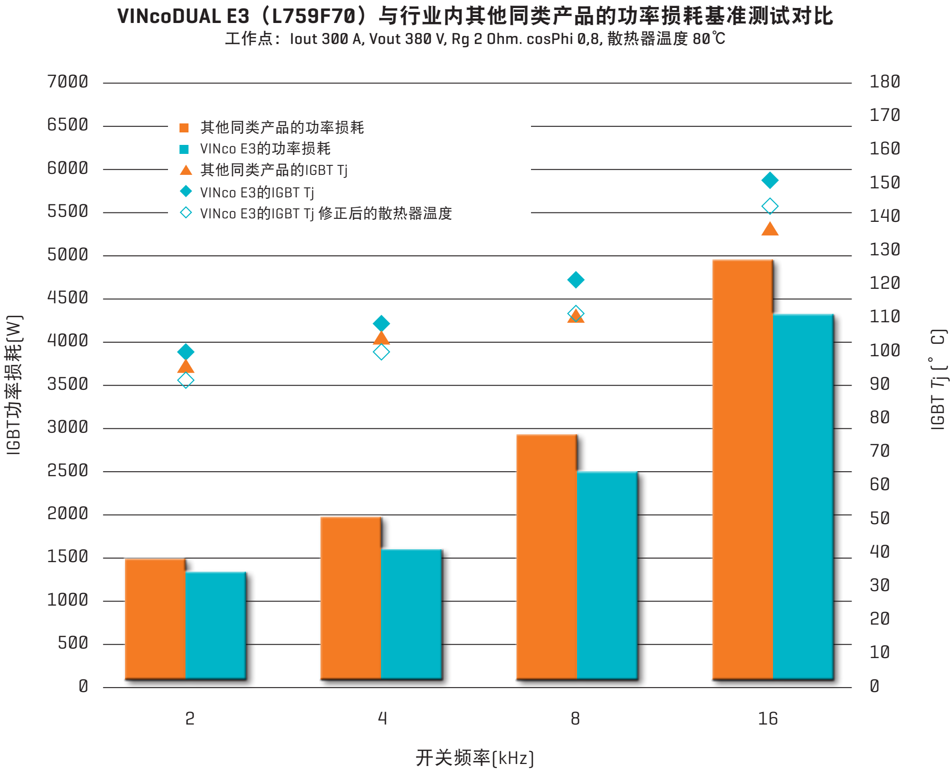
/ 更优的du/dt可控性（调整Rg即可）

在Ic=600A情况下，VINcoE3 的V_{CEsat}比同类产品降低了23%，显著地降低了静态损耗



VINco E3
基准对比 - 应用

VincotechISE – 一款集成式仿真环境软件，已经可用于基准测试对比半桥拓扑配置下的VINco E3及其它同类产品的总损耗。所有的功耗以及温度计算都是基于对每款模块的实测。



与行业内最好的同类产品相比，**VINcoE3系列产品的总损耗降低了15%以上。**

需要注意的是，更低的散热器温度实际上会导致Tj与业内同类其他产品处于同一水平。

VINco E3
产品系列一览

/ VINcoE3可提供650V,1200V和1700V规格的适于不同功率等级的模块，完美匹配可扩展的平台产品设计要求

/ 从供应链安全角度考虑，该系列产品可提供IGBT M7和Trench IGBT4两个芯片源

拓扑	封装	V_{CES} 650 V	V_{CES} 1200 V	V_{CES} 1700 V	芯片技术
Half-Bridge	VINcoDUAL E3	300 A*	300 A	300 A*	IGBT M7 / Trench IGBT4*
Half-Bridge	VINcoDUAL E3	450 A*	450 A	450 A*	IGBT M7 / Trench IGBT4*
Half-Bridge	VINcoDUAL E3	600 A*	600 A	600 A*	IGBT M7 / Trench IGBT4*
Half-Bridge	VINcoDUAL E3		690 A		IGBT M7
SIXPACK	VINcoPACK E3	100 A*	100 A	100 A*	IGBT M7 / Trench IGBT4*
SIXPACK	VINcoPACK E3	150 A*	150 A	150 A*	IGBT M7 / Trench IGBT4*
SIXPACK	VINcoPACK E3	200 A*	200 A		IGBT M7 / Trench IGBT4*

* 研发中的产品

VINco

E3

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www.vincotech.com

Vincotech

PACKAGED TO MEET **YOUR MIDPOWER NEED**

The new low-profile package for motion control, solar and UPS applications

EMPOWERING **YOUR IDEAS**

VINco E3

PACKAGED TO MEET YOUR MID-POWER NEED

VINco E3 – Our Latest Mid-power Package. Featuring the SLC (SoLid Cover) technology in the industry-standard low-profile package, VINco E3 package enables engineers to design mid-power inverters with higher output current, higher power density and improved reliability for industrial drives, solar power, UPS and other applications.

User Benefits

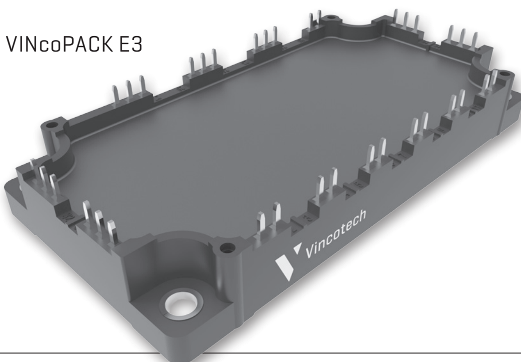
Extended module lifetime based on the **new SLC- and IMB (Insulated Metal Baseplate) Technology**

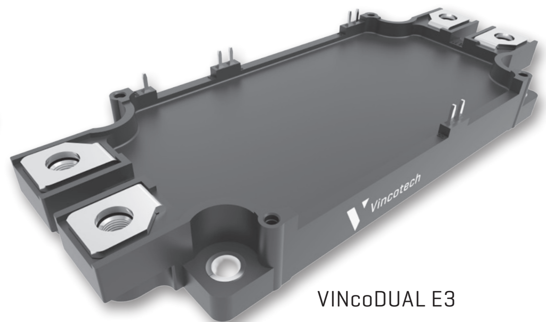
- Higher thermal and power cycling capability with matched CTE-values (IMB, Resin, Case)
- No significant warpage of the base plate, thus „pumping-out-failure“ free package

Improved power density

- **Low loss gen 7 chip technology**
- Low thermal resistance R_{th} (j-c) for same chip size
- Thicker top side Cu-Layer, no size limitation, higher chip mounting density

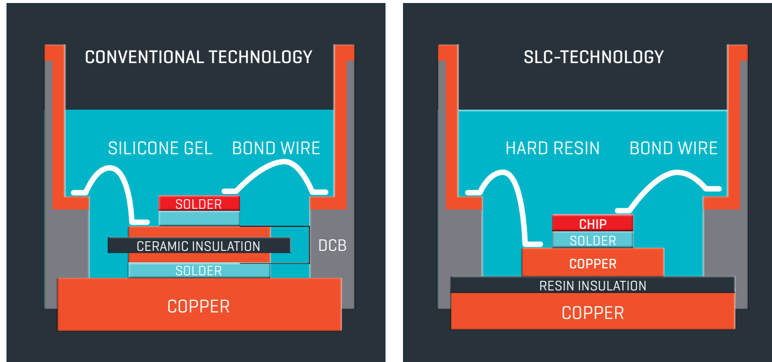
VINcoPACK E3





VINcoDUAL E3

VINco E3
New SLC Technology



Structure comparison between conventional technology and the new SLC technology

The VINco E3 is based on Solid Cover Technology (SLC), a newly developed package technology.

The new IMB (Insulated Metal Baseplate) combines an electrically insulating resin layer with a direct-bonded top- and bottom-side copper layer.

It replaces the substrate solder layer and separate baseplate to achieve:

/ High thermal cycling capability

/ Reduced thermal resistance

/ High power density and low stray inductance

Direct potting resin distributes the mechanical stress more uniformly than silicone gel for:

/ Improved power cycling capability

VINco E3

VINco E3

New M7 IGBT

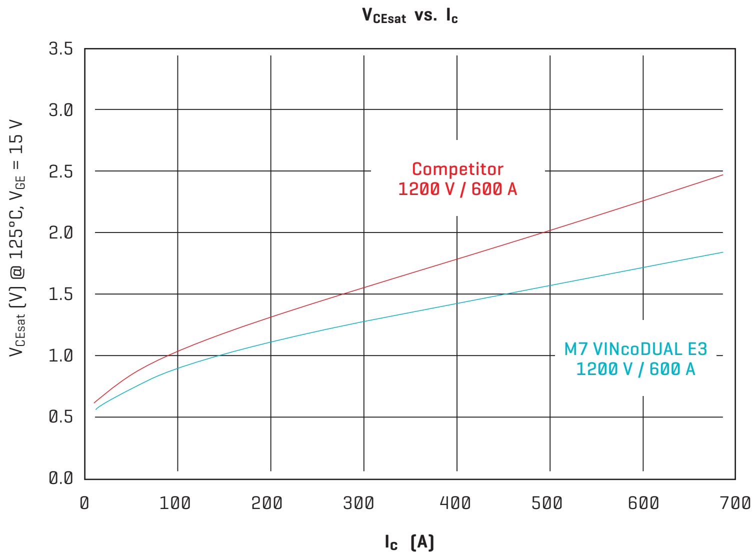
Key features

- Ultra-thin wafer processing technology (N-drift layer)
- Optimized cell design (gate capacitance)

Benefits

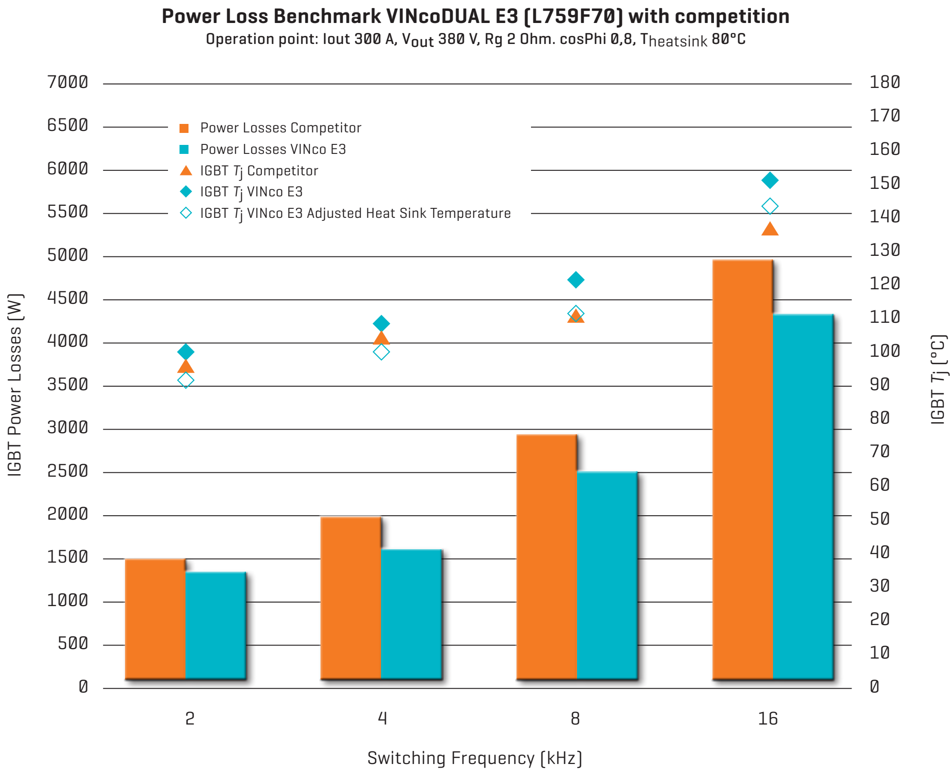
- Superior low V_{CEsat}
- Low switching losses
- Improvement of SOA capability
- Better controllability of dv/dt with Rg

Superior low V_{CEsat} -23 % @ I_C 600 A compared with competition, reducing significantly the static losses



VINco E3
Benchmark – Application

VincotechISE – The Integrated Simulation Environment, have been used to benchmark the total power losses of the VINco E3 in half-bridge configuration compared with the competition. All power loss and temperature calculations are based on actual measurements taken of each module.



More than 15 % lower total losses compared to best competition.

Taken this into account lower heat sink temperature has to be consider that leads to similar *Tj* as competition.

VINco E3
Line-up at a glance

/ For scalable platform designs VINco E3 will be available in a power rating line-up of 650 V, 1200 V and 1700 V

/ For high supply chain safety multiple chip sourcing will be available with IGBT M7 and Trench IGBT4

Topology	Housing	V_{CES} 650 V	V_{CES} 1200 V	V_{CES} 1700 V	Chip Technology
Half-Bridge	VINcoDUAL E3	300 A*	300 A	300 A*	IGBT M7 / Trench IGBT4*
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SIXPACK	VINcoPACK E3	150 A*	150 A	150 A*	IGBT M7 / Trench IGBT4*
SIXPACK	VINcoPACK E3	200 A*	200 A		IGBT M7 / Trench IGBT4*

* Products under development

VINco

E3

德国威科电子有限公司上海代表处

中国上海浦东新区张杨路838号华都大厦12楼J室

电话：+86 21 689 118 53 / 传真：+86 21 689 118 53 - 610 / 邮编：200120

Vincotech Shanghai Rep. Office

Room J, 12F / Huadu Tower / No.838 Zhangyang Road / Pudong district

Shanghai / China / 200120

T +86 21 689 118 53 / F +86 21 689 118 53 - 610

www.vincotech.com

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