



# 住宅太阳能系统解决方案

用于太阳能发电系统的高效和成本优化设计

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# 住宅太阳能应用的完整系统解决方案

近几年,能源消费和电池供电的应用设备迅速增加,电力需求也随之剧增。

一方面,客户希望自行发电供电、降低能源开支,另一方面,官方政策则大力推动使用更清洁、更环保的可再生能源(如太阳能)。由此催生出太阳能应用的三个独特要求:系统效率、系统成本和可靠性。

## 主要优点



英飞凌的行业经验丰富,旗下产品均极为耐用可靠,使用寿命更长。

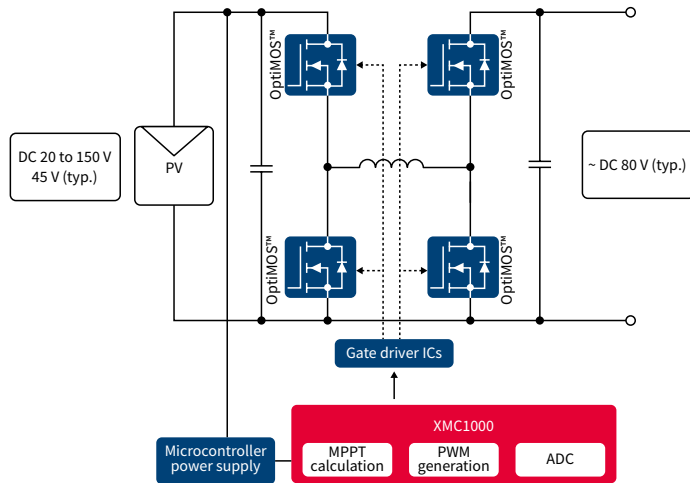


增加开关频率可以降低磁性、外壳、冷却等成本。  
CoolMOS™和OptiMOS™的开关频率更高、开关损耗更低,性价比更胜一筹。



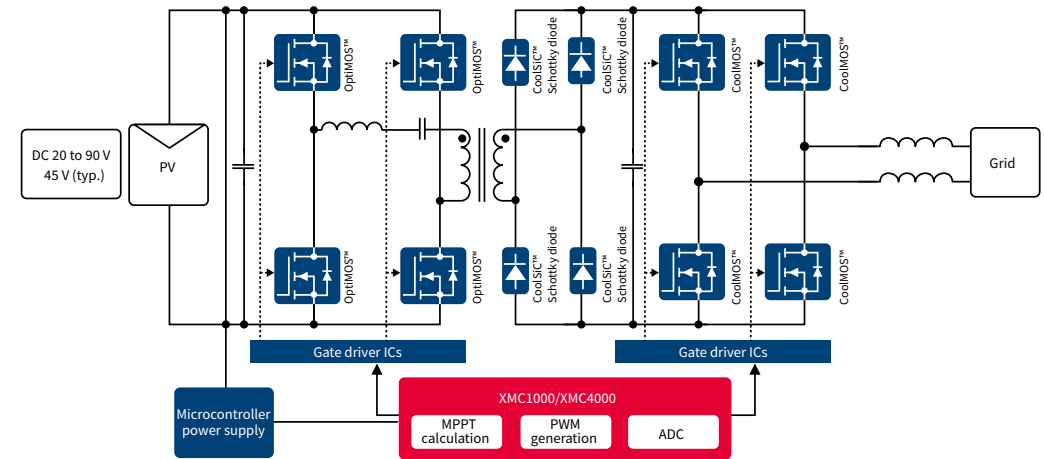
英飞凌的CoolMOS™和OptiMOS™效率为业界最高,投资回报更大。

## 优化器



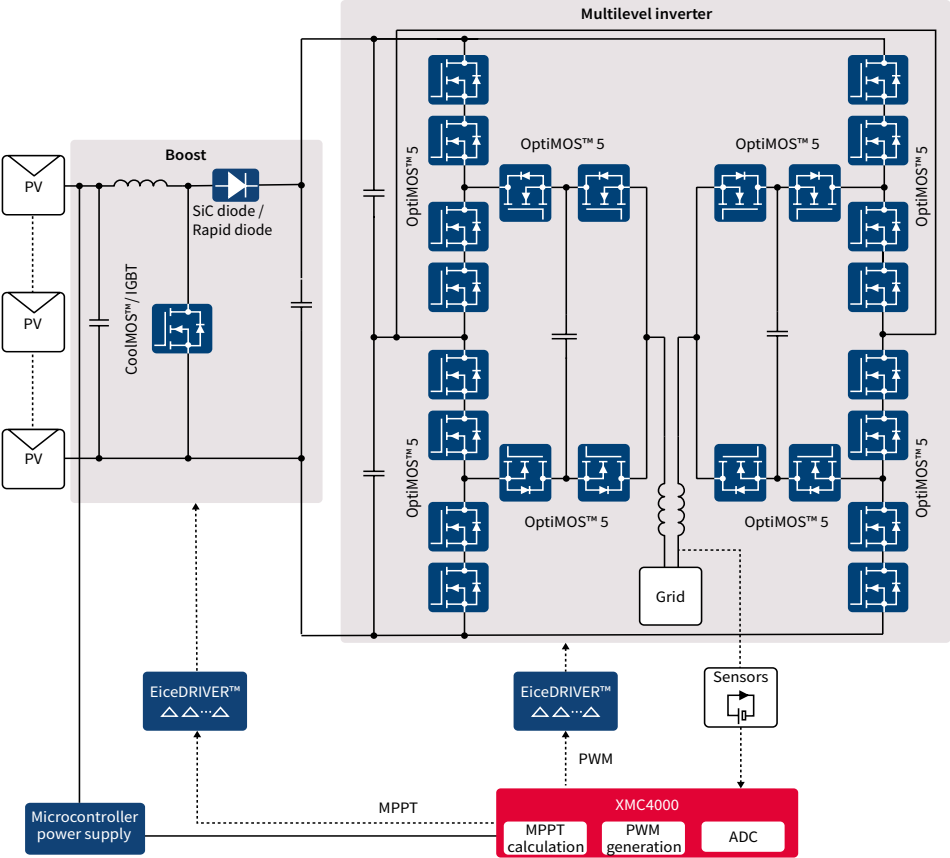
产品系列	拓扑结构	输入电压	电压等级 [V <sub>DS max</sub> ]	封装*	零件型号*	R <sub>DS(on)</sub>
OptiMOS™	降压-升压	最高 48 V	60 V	SuperSO8	BSC012N06NS	1.2 mΩ
				DirectFET™	BSB028N06NN3 G	2.8 mΩ
		最高 64 V	80 V	SuperSO8	BSC021N08NS5	2.1 mΩ
				DirectFET™	BSB044N08NN3 G	4.4 mΩ
		最高 80 V	100 V	SuperSO8	BSC027N10NS5	2.7 mΩ
				DirectFET™	BSB056N10NN3 G	5.6 mΩ
		最高 125 V	200 V	SuperSO8	BSC220N20NSFD	22.0 mΩ
栅极驱动器 IC	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN 系列					
主控芯片	XMC1000					

## 微型逆变器



产品系列	拓扑结构	电压等级 [V <sub>DS max</sub> ]	封装*	零件型号*	R <sub>DS(on)</sub>
OptiMOS™	半桥, 全桥, LLC和其他谐振拓扑	60 V	SuperSO8	BSC012N06NS	1.2 mΩ
		80 V	SuperSO8	BSC021N08NS5	2.1 mΩ
		100 V	SuperSO8	BSC027N20NS5	2.7 mΩ
	反激式	150 V	SuperSO8	BSC093N15NS5	9.3 mΩ
	推挽	200 V	SuperSO8	BSC220N20NSFD	22.0 mΩ
CoolMOS™	电流/电压源	600 V	TO-leadless	IPT60R028G7	28.0 mΩ
		650 V	D2PAK	IPB65R045C7	45.0 mΩ
CoolSiC™ 肖特基二极管	整流器	600 V	DPAK	IDD05SCG60C	
		650 V	D2PAK	IDK02G65C5	
		1200 V	DPAK	IDM02G120C5	
栅极驱动器 IC	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN 系列				
主控芯片	XMC1000, XMC4000				

# 单相串联逆变器 - 多电平拓扑



# 飞跨电容多电平逆变器的优点

在多电平逆变器中，H桥拓扑中的四个高压MOSFET/IGBT由数量更多的低电压MOSFET取代。与传统的H桥逆变器相比，由低压MOSFET组成的多电平逆变器具有以下优点：

- › 较低的 $R_{DS(on)}$ 和开关损耗参数可显著降低导通和开关损耗
- › 开关损耗减少，能提高有效输出频率（磁性更小）
- › 降低开关电压，改善EMC
- › 冷却系统尺寸和重量显著缩减

产品系列	拓扑结构	MOSFET 击穿电压	封装*	零件型号*	$R_{DS(on)}$
OptiMOS™	基于飞跨电容的有源中性点钳位(NPC)	150 V	SuperSO8	BSC093N15NS5	9.3 mΩ
			SuperSO8	BSC110N15NS5	11 mΩ
			DirectFET™	IRF150DM115	11.3 mΩ
			D2PAK	IPB044N15N5	4.4 mΩ
			D2PAK	IPB048N15N5	4.8 mΩ
			TO-220	IPP051N15N5	5.1 mΩ
CoolMOS™	升压	600 V	TO-247	IPW60R017C7	17 mΩ
			TO-247	IPW60R024P7	24 mΩ
			D2PAK	IPB60R045P7	45 mΩ
CoolSiC™ 肖特基二极管	升压	650 V	TO-247	IDW20G65C5	
栅极驱动器 IC	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN 系列				
主控芯片	XMC4000				

产品组合

英飞凌产品组合齐备、技术领先, 为客户的太阳能应用实现最佳效率和可靠性\*, 例如:

	Optimizer 250-750 W	Single/dual/quad microinverter 250-1200 W	Single phase multilevel inverter <10 kW	Single phase string inverter standard <10 kW
MOSFETs	OptiMOS™ SuperSO8/DirectFET™   75-150 V	OptiMOS™ SuperSO8   60-200 V	OptiMOS™ SuperSO8/D²PAK   150 V	
		CoolMOS™ D²PAK/ThinPAK   600-800 V	CoolMOS™ TO-247/D²PAK   600 V	CoolMOS™ TO-247   600/650 V
				CoolSiC™ MOSFET TO-247-3/TO-247-4   650/1200 V
SiC diodes		CoolSiC™ Schottky diodes DPAK/TO-220   600 V/1200 V D²PAK   650 V	CoolSiC™ Schottky diodes TO-247   600 V/1200 V D²PAK   650 V	CoolSiC™ Schottky diodes TO-220/TO-247   600 V/1200 V D²PAK   650 V
IGBTs				TRENCHSTOP™ 5 / TRENCHSTOP™ IGBT6 TO-247-3/TO-247-4   600/650/1200 V
				Easy 1B/2B
Gate driver ICs		2EDN EiceDRIVER™	2EDN EiceDRIVER™	EiceDRIVER™ 1ED Compact EiceDRIVER™ Enhanced
Schottky diode				BA165 Schottky diode
Auxiliary power supply				CoolSET™ 800 V
Microcontrollers	XMC1xxx ARM® Cortex®-M0	XMC1xxx ARM® Cortex®-M0	XMC1xxx ARM® Cortex®-M0	XMC1xxx ARM® Cortex®-M0
	XMC45xx ARM® Cortex®-M4	XMC45xx ARM® Cortex®-M4	XMC45xx ARM® Cortex®-M4	XMC45xx ARM® Cortex®-M4

\* 本手册所述为 <10 kW的太阳能系统。欲了解更高功率的太阳能系统, 请访问:



# 太阳能支持

由英飞凌支持

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