Solutions for residential solar systems

Introducing high efficiency and cost-optimized designs for solar power systems

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Full system solution for residential solar applications

During the last years, the energy consumption and the number of battery powered applications rapidly increased, so did the need for electrical power.
Customers desire lower energy costs and independence in their energy generation, in addition governmental policies go for cleaner and greener energy in form of renewables, such as solar. Consequently, solar applications have three distinctive requirement: system efficiency, systems costs and reliability.

Key benefits

Infineon's long industry experience and products with the highest reliability secure long application lifetime.

Increased switching frequencies enable cost reduction on magnetics, housing, cooling, etc. CoolMOS™ and OptiMOS™ offer increased switching frequencies, lower switching losses and superior price performance.

Bigger return on investments with Infineon's CoolMOS™ and OptiMOS™ that offer industry highest efficiency.

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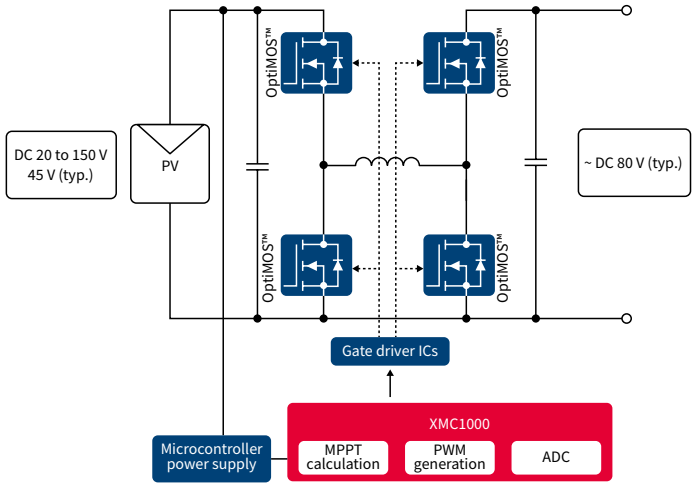
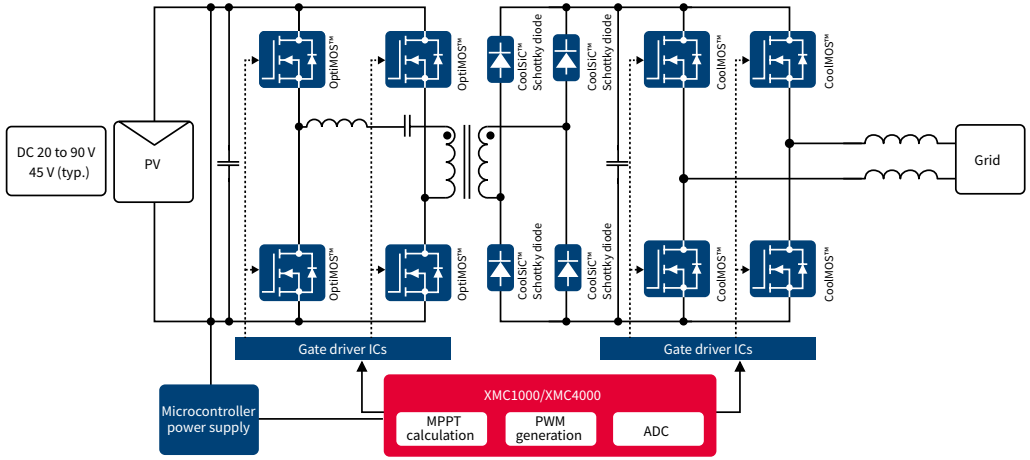
Optimizer



Product family	Topology	Input voltage	Voltage class [V_{DS} max]	Package*	Part number*	$R_{DS(on)}$
OptiMOS™	Buck-boost	Up to 48 V	60 V	SuperSO8	BSC012N06NS	1.2 mΩ
				DirectFET™	BSB028N06NN3 G	2.8 mΩ
		Up to 64 V	80 V	SuperSO8	BSC021N08NS5	2.1 mΩ
				DirectFET™	BSB044N08NN3 G	4.4 mΩ
		Up to 80 V	100 V	SuperSO8	BSC027N10NS5	2.7 mΩ
				DirectFET™	BSB056N10NN3 G	5.6 mΩ
		Up to 125 V	200 V	SuperSO8	BSC220N20NSFD	22.0 mΩ
Gate driver ICs	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN Family					
Microcontroller	XMC1000					

Microinverter



Product family	Topology	Voltage class [V_{DS} max]	Package*	Part number*	$R_{DS(on)}$
OptiMOS™	Half-bridge, full-bridge, LLC and other resonant	60 V	SuperSO8	BSC012N06NS	1.2 mΩ
		80 V	SuperSO8	BSC021N08NS5	2.1 mΩ
		100 V	SuperSO8	BSC027N20NS5	2.7 mΩ
	Flyback	150 V	SuperSO8	BSC093N15NS5	9.3 mΩ
	Push-Pull	200 V	SuperSO8	BSC220N20NSFD	22.0 mΩ
CoolMOS™	Current/voltage source	600 V	TO-leadless	IPT60R028G7	28.0 mΩ
		650 V	D²PAK	IPB65R045C7	45.0 mΩ
CoolSiC™ Schottky diode	Rectifier	600 V	DPAK	IDD05SCG60C	
		650 V	D²PAK	IDK02G65C5	
		1200 V	DPAK	IDM02G120C5	
Gate driver ICs	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN Family				
Microcontroller	XMC1000, XMC4000				

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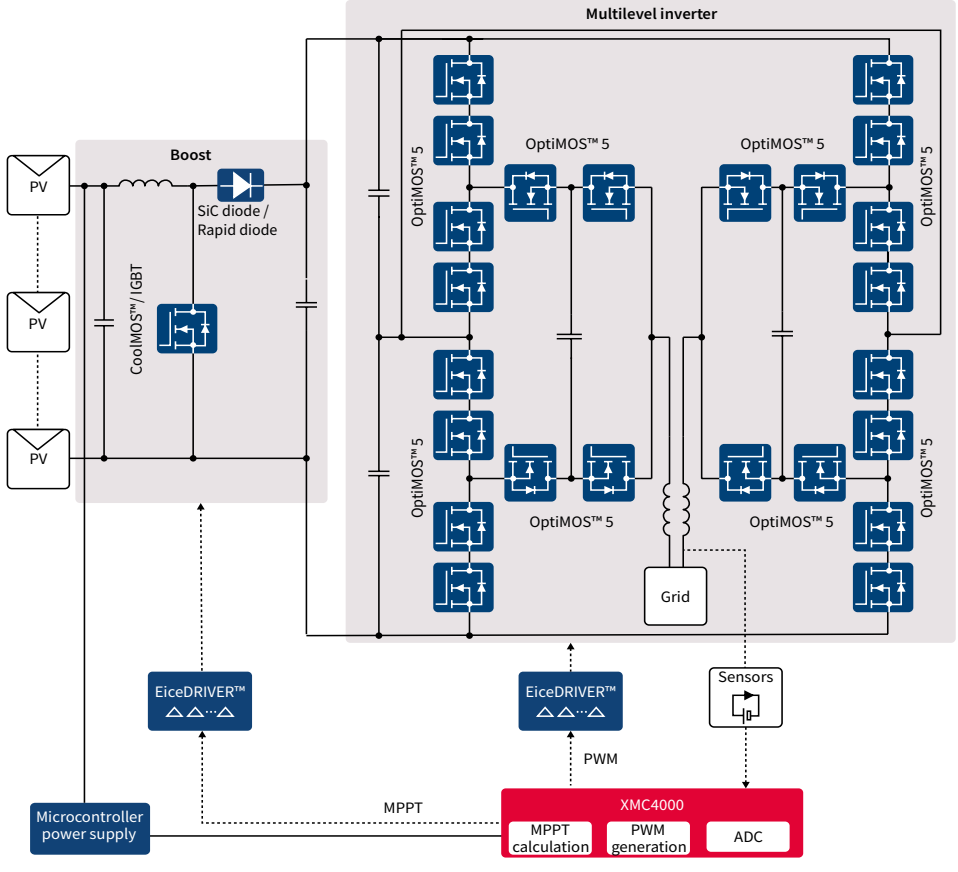
*Recommended & best-in-class packages and parts. Full package portfolio on Infineon's web site or on request.

Single-phase string inverter – multilevel topology



Benefits of flying capacitor multilevel inverter

In multilevel inverter, four high voltage MOSFETs/IGBTs in H-bridge topology are replaced with a higher number of lower voltage MOSFETs. Compared to a conventional H-bridge inverter, a multilevel inverter, composed of lower voltage MOSFETs, offers several advantages:

- Lower $R_{DS(on)}$ and switching loss parameters considerably reduce conduction and switching losses
- Lower switching losses enable higher effective output frequency (smaller magnetics)
- Improved EMC due to reduced switching voltages
- Significant reduction in cooling system, size and weight

Product family	Topology	MOSFET Breakdown voltage	Package*	Part number*	$R_{DS(on)}$
OptiMOS™	Flying-capacitor-based active neutral-point-clamp (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™	Boost	600 V	TO-247	IPW60R017C7	17 mΩ
			TO-247	IPW60R024P7	24 mΩ
			D²PAK	IPB60R045P7	45 mΩ
CoolSiC™ Schottky diode	Boost	650 V	TO-247	IDW20G65C5	
Gate driver ICs	EiceDRIVER™ 1ED Compact, EiceDRIVER™ 2EDN Family				
Microcontroller	XMC4000				

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*Recommended & best-in-class packages and parts. Full package portfolio on Infineon's web site or on request.

Product portfolio

With Infineon's comprehensive portfolio of leading products we enable our customer to deliver the best efficiency and reliability in solar applications* such as:

	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

* This brochure covers solar systems <10 kW.
For higher power solar systems visit:

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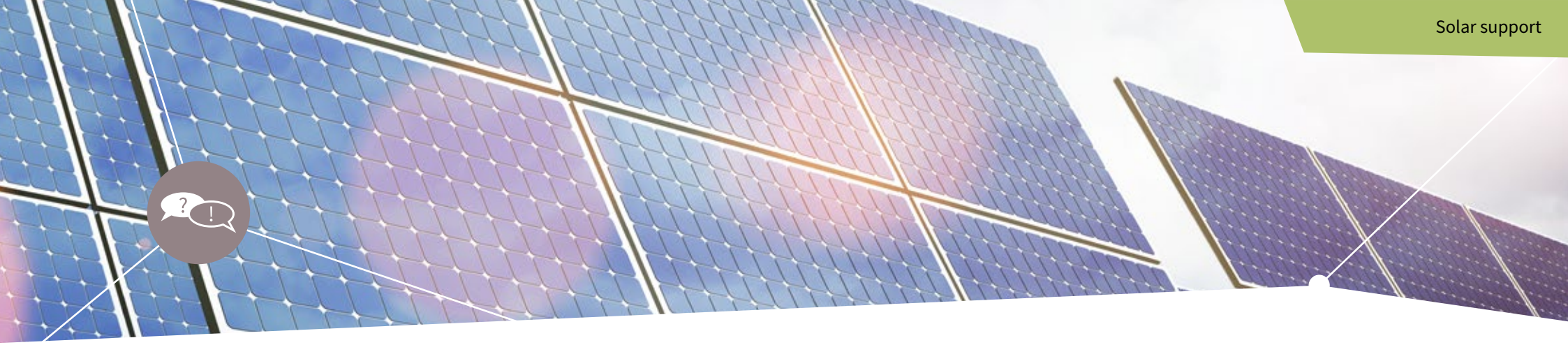

Solar support

Support by Infineon

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