



# EV charging

Power supplies for DC EV charging stations

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## What is DC EV charging?

With electric vehicles (EVs), now viable alternatives in some markets to traditional internal combustion engine vehicles, the demand for enhanced power supplies for charging stations is growing. Currently, all eyes are on China where EVs have gained traction in the rapidly-expanding middle class. And also the United States is soon expected to follow suit.

However, for these markets to truly welcome EVs on a large scale they need widespread availability of DC charging infrastructure so that drivers can quickly charge their vehicles. DC charging stations are an attractive choice because they offer much faster charging than a standard AC EV charging pile, which many EV drivers have at home.

Today, a DC charging pile with e.g. 120 kW can charge around 80 percent of an EV's battery in just 30 minutes. As these fast charging technologies improve, the charging time will drop even further.

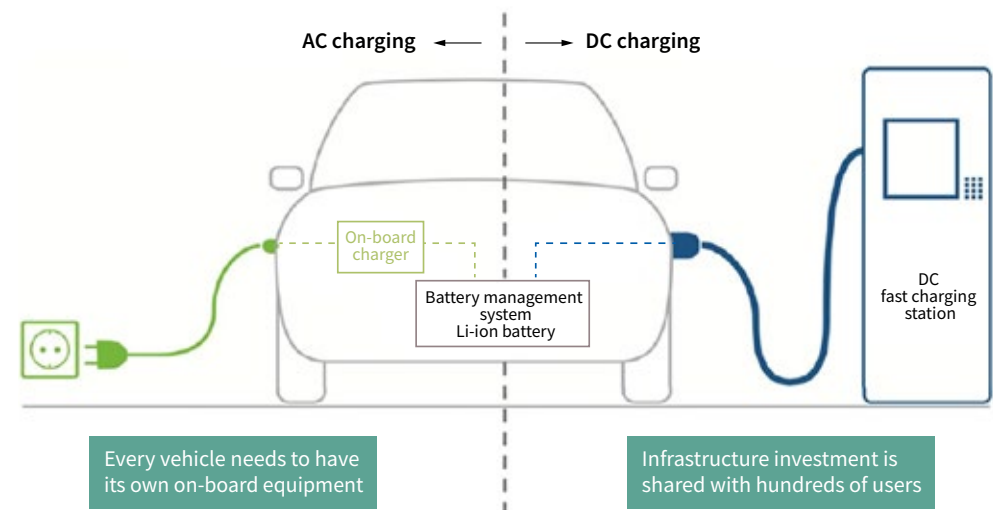
## Challenges on the horizon

Of course, designing a successful DC EV charging power supply presents engineers with many new challenges. For a DC power supply design to be a long term success you must:

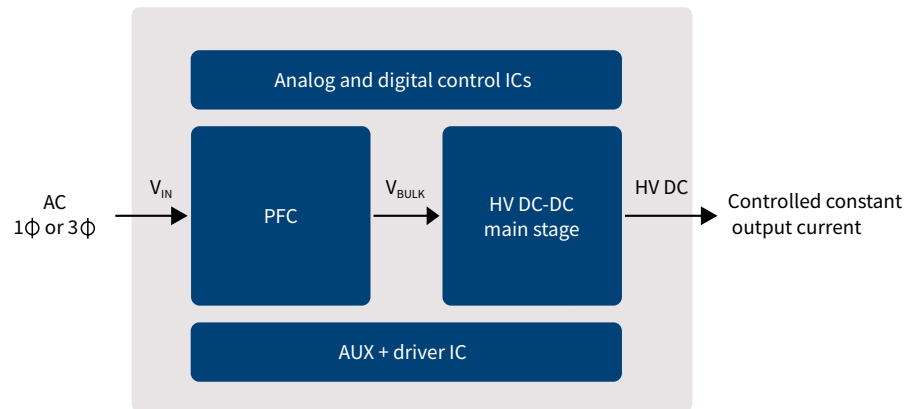
- > Enhance output power to shorten the charging time
- > Boost power density, within the set dimensions of the charging station
- > Increase efficiency by boosting the load and decreasing power dissipation

Simultaneously, ways to reduce the design's cost per watt need to be found. Overcoming all of these matters is possible – with the right partner.

Off-board charging is becoming more attractive on the market



## Block diagram and Infineon offerings



## Turn to Infineon for high efficiency and high power density

Whatever your DC EV charging power supply design needs, Infineon's portfolio of top quality semiconductors features highly-efficient products with a high power density. For a system solution use our MOSFETs and drivers, for example on Vienna Rectifier topology. By partnering with us you gain a market-leader by your side with extensive experience in the area. Let us show you how to make your DC power supply design for EV charging stations a success.

Explore our portfolio of power MOSFETs, driver ICs and more to find exactly what you are looking for.

### Product portfolio

Functional block	Product category	Product family	Product	Additional information
PFC stage (3-phase input Vienna PFC stage)	High voltage MOSFETs	600 V CoolMOS™ P6	IPW60R041P6	600 V, 41 mΩ, TO-247
			IPW60R070P6	600 V, 70 mΩ, TO-247
		650 V CoolMOS™ C7	IPW65R019C7	650 V, 19 mΩ, TO-247
		600 V CoolMOS™ C7	IPW60R017C7	600 V, 17 mΩ, TO-247
		600 V CoolMOS™ P7	IPW60R037P7 IPW60R060P7	600 V, 37 mΩ, TO-247 600 V, 60 mΩ, TO-247
	SiC diodes	CoolSiC™ schottky diode 1200 V G5	IDW15G120C5B IDW20G120C5B	1200 V, 15 A, TO-247 1200 V, 20 A, TO-247
HV DC-DC main stage (Soft switching type full-bridge stage)	High voltage MOSFETs	650 V CoolMOS™ CFD2	IPW65R041CFD IPW65R080CFD	650 V, 41 mΩ, TO-247 650 V, 80 mΩ, TO-247
		600 V CoolMOS™ CFD7	Upcoming	-
	SiC diodes	CoolSiC™ schottky diode 1200 V G5	IDW15G120C5B	1200 V, 15 A, TO-247
			IDW20G120C5B IDW30G120C5B	1200 V, 20 A, TO-247 1200 V, 30 A, TO-247
Analog and digital control ICs	Microcontroller	XMC™	XMC1400 family (PFC stage)	ARM® Cortex® M0 based μC
			XMC4000 family (HV DC-DC/PWM stage)	ARM® Cortex® M4F based μC
AUX	AC-DC power conversion	5 <sup>th</sup> generation quasi-resonant CoolSET™	ICE5QR0680AZ	800 V, 0.8 mΩ, PG-DIP-7
			ICE5QR0680AG	800 V, 0.8 mΩ, PG-DSO-12
Driver ICs (PFC and LLC)	Gate driver ICs for MOSFETs	EiceDRIVER™ 2EDN	2EDN7524F/R	2-channel low-side, non-isolated, 5 A
			2EDN8524F/R	2-channel low-side, non-isolated, 5 A
		EiceDRIVER™ 2EDL	Upcoming	-



# EV charging support

## Support by Infineon

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