MEMS Timing Solutions

EV Charging

EMI resilience is a crucial requirement for power related applications such as EV charging – whether the charging station is in a public space with multiple ports or is a single standalone unit typically used in residential locations.

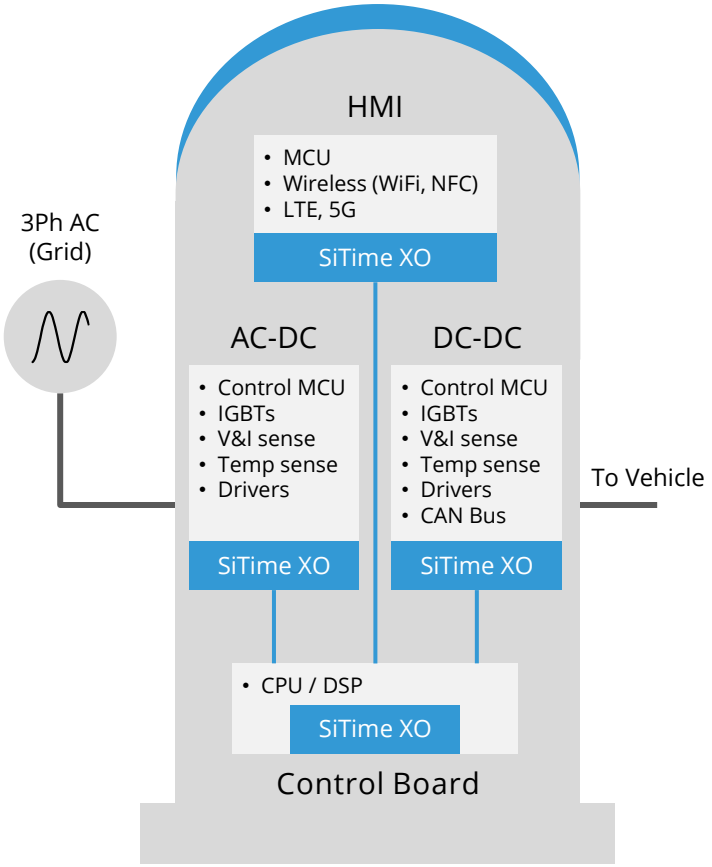
SiTime timing products offer system design engineers unique features to reduce radiated EMI in EV chargers with programmable drive strength and spread spectrum capability.

Key Considerations

- Wide temp range
- EMI resilience
- Temp stability

Electric vehicle supply equipment (EVSE), have three to four main sub-systems depending on the type of equipment, each requiring EMI protection from other sub-systems. Filtering, shielding and improved PCB layout are a means of reducing EMI, but these techniques can be costly and consume extra space. Reducing the noise generated by the clock is a fast and less costly approach. SiTime MEMS products offer such noise reduction benefits.

- Level 1 and 2 chargers (AC chargers) have sub-systems for AC-DC conversion, HMI and system monitoring at a minimum.
- Level 3 charger (DC chargers) have an additional sub-system for DC-DC conversion.
- Battery buffered charging stations allow for the batteries in the EVSE to be charged during off peak hours helping defray the high recurring cost of using electricity during peak hours. Instead of use a DC-DC sub-system, these chargers require a battery management system (BMS) to monitor the health of the batteries and will benefit from SiTime oscillators such as the SiT8021, SiT2001 or SiT9025.



Level 3 EV Charging Station

SiTime Advantages

SiTime devices offer the following advantages over quartz crystals, which are particularly important for industrial applications.

- EMI reduction thru either spread spectrum or programmable drive strength
- Higher reliability and resilience
- No activity dip or cold start issues
- Wide operating temperature range (up to -40°C to 125°C)

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Featured Products

Type	Product	Frequency	Key Features	Key Values
Single-ended Oscillator	SiT8021	1 to 26 MHz	• -40°C to 85°C • ±20 ppm stability • 1.5 x 0.8 package	• High reliability • Extended temperature range • Small footprint
	SiT8008	1 to 110 MHz	• -20 to +70, -40°C to 85°C • ±20, ±25, or ±50 ppm stability • SOT23 package for better board-level reliability	• Programmable drive strength • Fast startup time of 5 ms • *Pin-to-pin replacement to quartz XO
	SiT8009	115 to 137 MHz		
	SiT2001	1 to 110 MHz	• -20 to +70, -40°C to 85°C • ±20, ±25, or ±50 ppm stability • 2016, 2520, 3225, 5031, 7050 packages*	
	SiT2002	115 to 137 MHz		
Spread Spectrum Oscillator	SiT9025	1 to 150 MHz	• Up to -55°C to 125°C • ±25 or ±50 ppm stability • Configurable rise / fall times • 2016, 2520, 3225 packages • AEC-Q100 qualified	• EMI reduction • High reliability • Programmable drive strength • Extended temperature range
	SiT9005	1 to 141 MHz	• ±20 or ±50 ppm stability • -40°C to 85°C • Configurable rise / fall times • 2016, 2520, 3225 packages	
32.768 kHz Oscillator	SiT1811	32.768 kHz	• ±20, ±50, ±100 ppm stability • 1.14 to 3.63 V supply • <490 nA consumption • Up to -40°C to 105°C • 1.2 x 1.1 mm package • <115 ms startup time	• Low power • Small footprint • Excellent stability • Faster start-up time than 32.768 kHz tuning-fork crystal enables faster system start-up

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