

## Bidirectional Power Converter for Energy Storage PFC

### Description

This is a bidirectional power converter for energy storage PFC reference design.

It comprises of Totem-pole PFC topologies. It operates at high switching frequency with Silicon Carbide (SiC) MOSFET to achieve high efficiency and reduction of size & weight.

It may be used for high power charging system, such as the UPS, Solar system etc. This EVB helps users to speed up SiC MOSFET system designs and shorten product development cycle significantly.



**Advantages:** Approx. 50% reduction in size vs IGBT design, High output power (6.6kW Max.), High efficiency (>98%), Digital control bidirectional output, Reinforced isolation, Workable firmware ready.

### Features

- AC/DC Bidirectional Power Conversion
- Max. Charging Power: 6.6kW
- AC Input Voltage: 200Vac to 265Vac 50Hz
- DC Output Voltage: 380Vdc to 580Vdc
- Max. Inversion Power: 6.6kW
- Inversion Rated Input: 550Vdc
- Inversion Rated Output: 220Vac 50Hz
- Efficiency: >98%

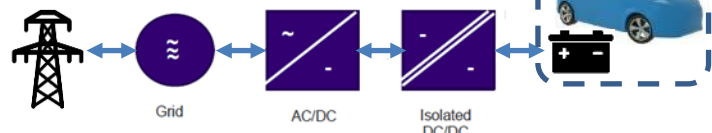
### Core Chip

- MCU control: ST STM32G474VBT6
- PFC SiC MOS: ST SCT040W120G3-4AG
- Isolated gate driver: ST STGAP2SiCS
- Isolated DC-DC module: ST A6986I, VIPER329HDTR
- CAN: ST L9616
- ESD protection: ST HDMIULC6-4SC6Y / ST ESDCAN03-2BWY
- Hi-Precision OP-AMP: ST TSZ181IYLT
- Current sensor: Allegro ACS772LCB-050B-PFF-T, ACS772LCB-100B-PFF-T
- Relay: TE T9VV1K15-12S
- Resonant Capacitive Tank: muRata GCM43D7U3A472JX01L
- Electrolytic Capacitor: KEMET F861DP155K310ZLH0J, R463W510050M1K, EDH477M025A9PAA, C4AE0BU4500A11J
- Magnetic component: knitter-switch ICSC21250700LHM14, ICSI10420700LVM61, ICSI20340700LVM61, ICST14511104LHK61, ICST22311001LHK61, ICSC30330600LVS2, ICSC64415600LHS61, ICST90211100SHSST61



### Applications

- Bidirectional energy storage system
- Bidirectional power converters
- Solar power system
- High power charger
- UPS



## Block Diagram

