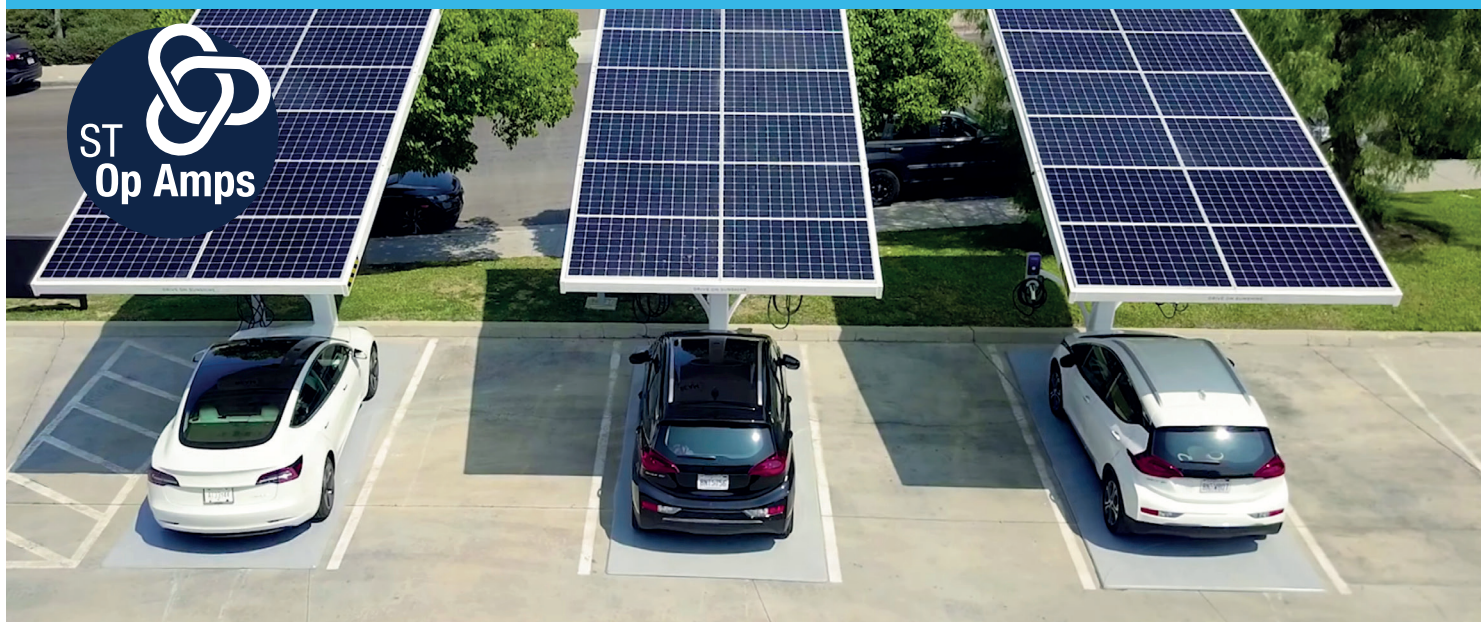




TSB62 SERIES

Upgrade your application with the best-in-class 36 V op amps



Meeting the demand for low power and robustness in renewable energy solutions

ST's flexible **TSB62** high-voltage op amps feature a rail-to-rail output that maximizes dynamic range while the input offset voltage of 1 mV ensures higher precision for low-power devices. A high tolerance to ESD combined with a strong EMI performance makes this series the ideal choice for residential solar inverters in low-side current sensing, voltage-sensing, maximum power point tracking, grid-synchronization and reactive load compensation. Available in single, dual, and quad versions, the TSB62 series offers excellent speed and power consumption.

KEY FEATURES AND BENEFITS

OPERATES RISK-FREE

- Supply voltage span from 2.7 to 36 V
- High ESD tolerance 4 kV HBM
- EMI hardened

DRIVES ADCs

- Rail-to-rail output
- 45° phase margin for 100 pF load
- 1.7 MHz GBW / 295 μ A typ.

INCREASES RELIABILITY

- Extended temperature range -40°C to +125°C
- AEC-Q100 qualified

KEY APPLICATIONS

- Solar inverters
- Uninterruptible power supply
- DC/DC converters
- Industrial I/O modules
- Server power
- Sensor conditioning
- Automotive

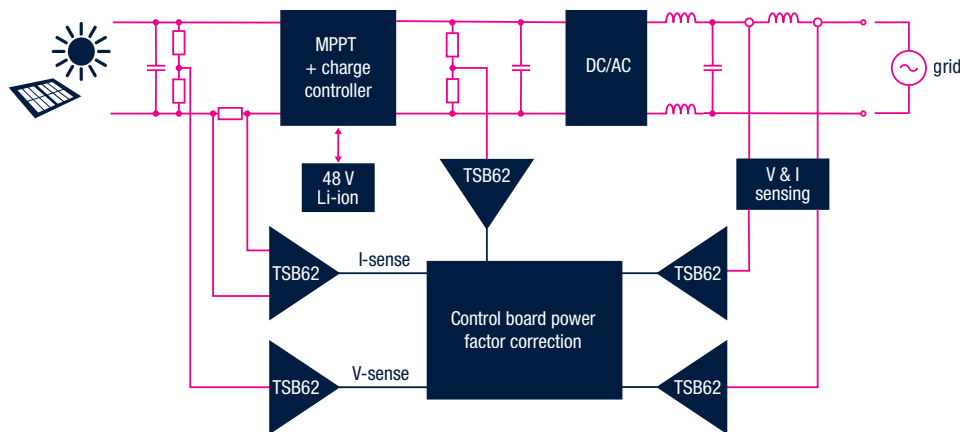
Use cases of the TSB62 series in residential solar energy systems

Grid-connected photovoltaic systems need to meet multiple requirements to minimize distortion, maximize efficiency, and detect faults to guarantee smooth operation with the power grid. ST's operational amplifiers help to pre-condition signals and make them accessible to ADCs and digital signal treatment.

The first example in the block diagram below is low-side current sensing, to measure currents from the PV array, typically in the range from 0.1 to 100 A. Placing a shunt resistor on low-side, rather than high-side, imposes fewer constraints, since the DC voltage is close to ground while PV arrays typically provide between 100 and 1500 V. The rail-to-rail output of the TSB62 series is ideally suited to interface with analog-to-digital converters. Another application for the TSB62 series in solar inverters is high-DC voltage sensing, for example via a parallel-mixed resistor-capacitor voltage divider. Bipolar transistors in the input stage of the TSB62 series operational amplifiers only add negligible parasitic capacitance to the voltage divider.

On a higher level, algorithms for maximum power point tracking (MPPT) and power factor correction (PFC) push the solar converters to maximum efficiency. Currents and voltages can be monitored using the above-mentioned approaches. The TSB62 series of operational amplifiers has been designed for improved EMI performance and can facilitate the board qualification process.

Residential solar energy system block diagram



TSB62 series portfolio

Order code	Automotive grade	Package	Footprint surface mm ²	Supply voltage (V)	Supply current per channel (µA) typ.	GBP (MHz) typ.	SR (V/µs) typ.	Output current (mA) typ.
Single								
TSB621ILT		SOT23-5	8.5	2.7 to 36	310	1.7	0.6	45
TSB621IYLT	•							
Dual								
TSB622IDT		S08	33	2.7 to 36	310	1.7	0.6	45
TSB622IYDT	•							
TSB622IST		MiniS08	16	2.7 to 36	310	1.7	0.6	45
TSB622IYST	•							
TSB622IQ3T		QFN8 WF	12	2.7 to 36	310	1.7	0.6	45
TSB622IYQ3T	•							
Quad								
TSB624IDT		S014	58	2.7 to 36	310	1.7	0.6	45
TSB624IYDT	•							
TSB624IPT		TSSOP14	35	2.7 to 36	310	1.7	0.6	45
TSB624IYPT	•							



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