



SP6LI Ultra-Low Inductance Power Module

The SP6LI mSiC™ silicon carbide power module delivers superior performance in high-power applications. Leveraging the advanced properties of mSiC technology, this ultra-low stray inductance SP6LI power module offers higher reliability and reduced development time, which makes it an excellent choice for modern power electronics systems in the electrification of everything.

The SP6LI power module features a half-bridge configuration with ultra-low 2.9 nH stray inductance. For comparison, the traditional D3 (62 mm) package, which has been in use for over two decades, has a stray inductance of approximately 20 nH in the same configuration. This significant reduction in stray inductance allows the SP6LI power module to have higher power density, efficiency, switching frequency and bus voltage, which enables higher current to handle smaller passive components.

In today's rapidly evolving technological landscape, the demand for efficient and reliable power conversion systems is higher than ever. Traditional silicon-based power modules often fall short in high-temperature and high-frequency applications. The SP6LI power module addresses these challenges by providing:

- **Higher efficiency:** Lower switching losses and voltage overshoot
- **Higher reliability:** Lower thermal stress, optional custom ceramic substrates and baseplates
- **Higher power density:** Higher switching frequency and low-profile package

Applications

The SP6LI power module is versatile and can be used in a variety of applications, including:

- **Heavy-Duty Electric Vehicles:** Efficient power conversion for inverters and chargers
- **Renewable Energy Systems:** Solar inverters and energy storage converters
- **Industrial Power Conversion:** Uninterruptible Power Supplies (UPS), induction heating generators, plasma generation and medical power supplies
- **Aerospace and Defense:** Rugged SP6LI power module versions available on demand for power systems for aircraft and defense equipment
- **Power Grids:** High-voltage AC-DC and DC-DC converters and DC-AC grid-tied inverters

Key Features

- **Wide Voltage Range:** Available in 700V, 1200V and 1700V voltage classes
- **Low Stray Inductance:** Features a minimal stray inductance of 2.9 nH
- **Compact Design:** Lower profile compared to standard 62 mm packages
- **Versatile Substrates:** Offers both standard and custom substrate options
- **Customizable Baseplates:** Available with standard and custom baseplates
- **Integrated Negative Temperature Coefficient (NTC):** Built-in NTC for temperature monitoring
- **Evaluation Board:** Companion Double-Pulse Test (DPT) evaluation board available
- **No End-of-Life Practice:** Facilitates long-term availability with customer driven obsolescence practice

Key Benefits

- **High Power Density:** The high efficiency and switching frequency of the SP6LI power module enable the use of smaller passive components, such as magnetics and filters, which contribute to overall system miniaturization
- **Reduced Development Time:** The module's common building block design for multiple voltages and evaluation tools help reduce development time, allowing for quicker project completion and time to market
- **Increased DC Bus Voltage:** Optimized DC+ and DC- contact placement and ultra-low 2.9 nH stray inductance minimize voltage overshoot, allowing higher DC bus voltage operation
- **Higher Efficiency:** With advanced SiC technology, the SP6LI power module's ultra-low 2.9 nH stray inductance minimizes switching losses, improving efficiency and system performance
- **Higher Reliability:** With lower switching losses and a customizable substrate and baseplate, the SP6LI power module offers higher reliability and longer operational life

Key Messages

- **Faster Time to Market:** The SP6LI power module's comprehensive evaluation tools and user-friendly design facilitate faster development cycles and enable quicker time to market
- **Higher Power Density:** The module's high power density allows for more compact and efficient power solutions, meeting the demands of modern applications
- **Lower System and Lifecycle Costs:** By reducing the need for larger passive components and improving efficiency, the SP6LI power module helps in lowering both system and lifecycle costs

With its ultra-low stray inductance, high reliability and advanced thermal management features, the SP6LI power module is an excellent choice for next-generation power electronics. Whether you are developing electric vehicles, renewable energy systems or industrial power supplies, the SP6LI module provides an innovative solution that offers unparalleled performance and efficiency.

For more information, please visit our [website](#) or contact our [sales team](#).

