

Half Bridge Power Module



Features

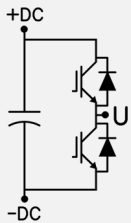
- SiC, IGBT and MOSFET Switches Option
- DC Link Over Voltage Protection
- 350V DC Link, 1.2 kW Output Power
- DC Link Safety Discharge & Indication
- Direct Interface with Gate Drive Modules
- TB & Banana Input, Output Connectors
- Simple & Cost Effective Solution
- Test Points for Easy Testing

Description

The SPM Series of Power Modules are simple and modular blocks that could be used for fast prototyping and validation of popular power converter circuits such as, Single & Multi-Phase Inverters, Buck/Boost Converters, Single & Multi-Phase Active Rectifiers and Modular Multi-Level Converters etc. It can cover wide range of applications such as Variable Frequency Drives (VFDs), BLDC Motor Drives, PV inverters and converters in research and educational environments.

User can connect Input and output terminals using pluggable terminal blocks or banana connectors, providing ease of use in labs. Test points are also available for pain free testing. SPM Power Modules are fully compatible with gate drive modules made by Taraz Technologies. In addition, custom solutions could be provided upon request.

Basic Schematic



Applications

- ❖ Buck/Boost Converters
- ❖ PFC Active Rectifier
- ❖ Resonant Converters
- ❖ MPPT Converters

Ordering Information

SPM-HB-XXX

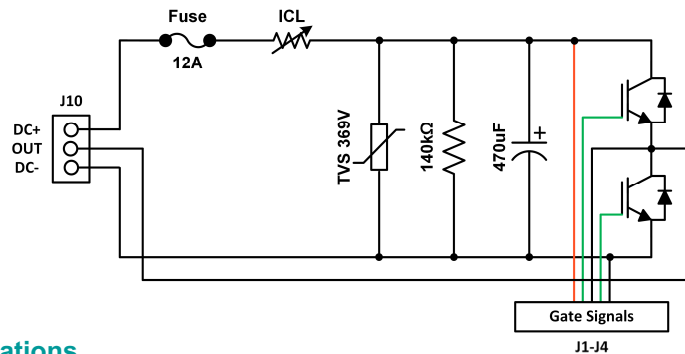
Options

MOS - MOSFET Switch

IGBT - IGBT Switch

SiC - Silicon Carbide Switch

Detailed Schematic



Specifications

Characteristics	Test Conditions/ Note	MOSFET	IGBT	SiC	Unit
DC Input Voltage	25C	350	350	350	V _{DC}
Over-Voltage Protection	Clamping Voltage	370	370	370	V _{DC}
Output Current	@ 2kHz, TA 25C	8.3	9.4	11.2	A _{RMS}
Output Power	@ 2kHz, 25C	0.9	1	1.2	kW
Overload Capacity	@ 2kHz, 25C, 10s	100	100	100	%
Gate Drive Voltage	Recommended	+15/0	+15/-8	+18/0	V
Gate Drive Resistance	Minimum	4.7	10	3	Ω
Switching Frequency	Maximum	100	30	200	kHz
Dead-time	Minimum	0.3	1	0.1	µs
Short Circuit Withstand Time	Maximum	0	10	10	µs
Recommended Gate Driver		GDS	GDA	GDX	-
Weight			310		g

Performance Curves

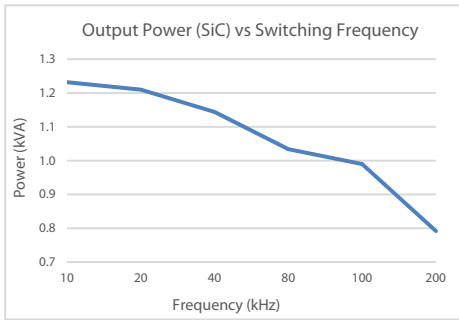


Fig 1: Output Power (SiC) vs Switching Frequency

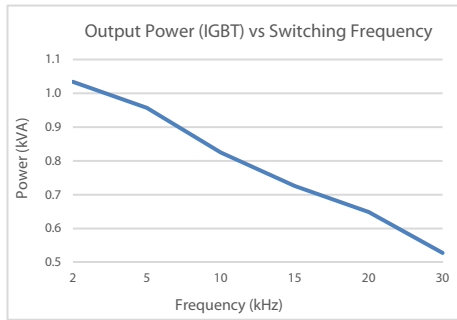


Fig 2: Output Power (IGBT) vs Switching Frequency

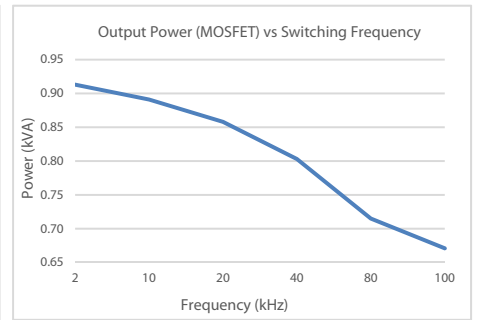


Fig 3: Output Power (MOSFET) vs Switching Frequency

Notes:

- 1) All output power curves are provided for 25°C ambient and 100°C heatsink temperatures.
- 2) Power ratings are for 350V DC-Link voltages, sinusoidal current output.
- 3) At 100 LFM forced cooling, output power is increased by 1.7x factor.
- 4) Temperature derating curve must be used if ambient temperature will go higher than 25°C.

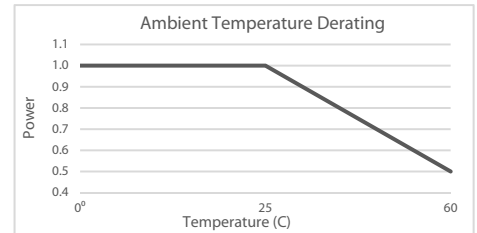
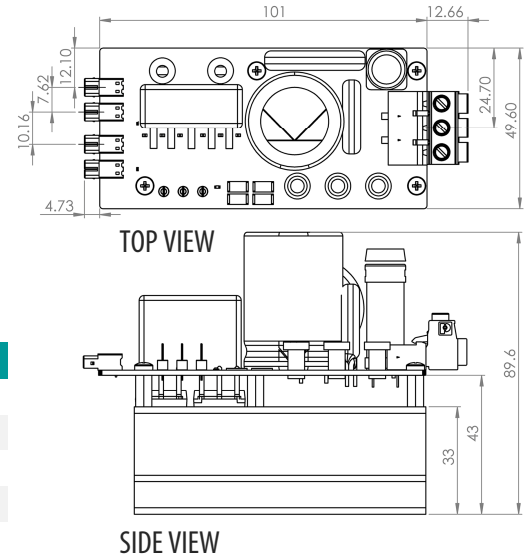
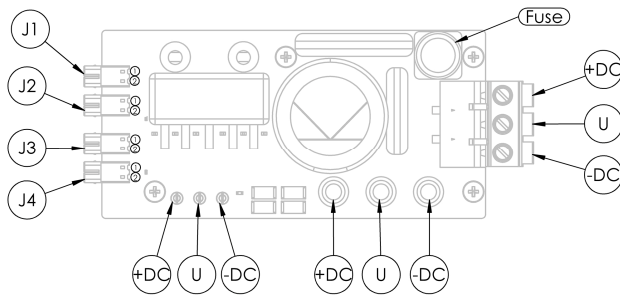


Fig 4: Output power derating factor with ambient temperature

Pin Mapping & Mechanical Drawing



Name	Connector (Pin No.)	Description
Collector	J(1,3) (1)	IGBT/MOSFTE or SiC collector/Drain terminals for connection of signals
Gate	J(2,4) (1)	IGBT/MOSFTE or SiC gate terminals for connection of signals
Emitter	J(2,4) (2)	IGBT/MOSFTE or SiC Emitter/Source terminals for connection of signals
DC Input	+DC,-DC	DC Input Terminal Block
Output	U	Output Terminal Block

SAFETY NOTICE!

ATTENTION PLEASE! THIS DEVICE IS ESD SENSITIVE AND NEEDS TO BE HANDLED WITH CARE. HIGH VOLTAGE CONDITION MAY OCCUR DURING OPERATION OF THE DEVICE, AND HENCE USER IS SOLELY RESPONSIBLE OF EQUIPMENT AND PERSONNEL SAFETY. TARAZ TECHNOLOGIES SHALL NOT BE HOLD LIABLE FOR ANY DAMAGE TO PERSONNEL AND/OR PROPERTIES AS A RESULT OF USING THIS DEVICE. USER MUST TAKE ADEQUATE STEPS TO ENSURE ELECTRICAL AND MECHANICAL SAFETY OF THE DEVICE IN USE.

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