# S1P02R120HBG-C (Preliminary)

### 1200V / 800A All-Silicon Carbide MOSFET Half-Bridge Module

## Features

Electrical features

$V_{DSS}$ = 1200V

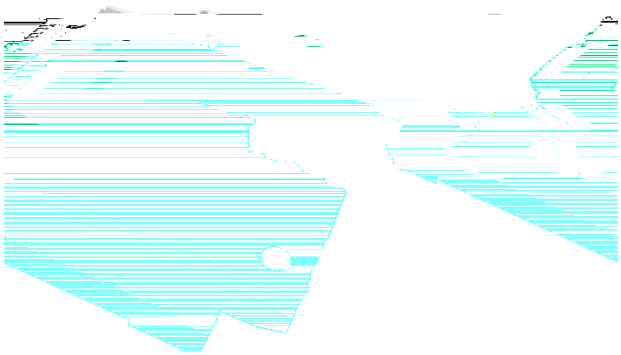
$I_{D,\ nom}$ = 800A

High-speed Switching Possible

High Power Density

High Frequency Operation

Ultra-low Losses



## Applications

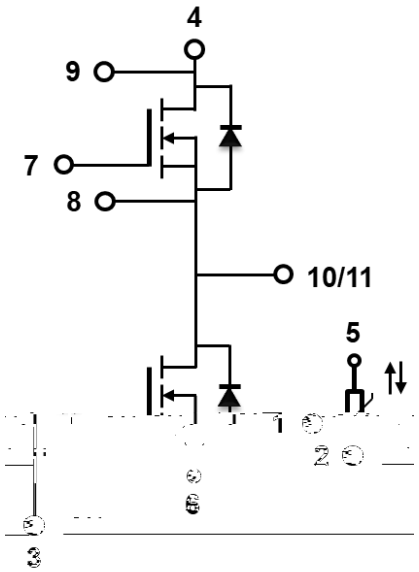
Motor drives

High power converters

Photovoltaics, wind power generation

Induction heating equipment

Electrified vehicle traction inverter



## Table of contents


**Features** ..... 1

**Applications** ..... 1

**Table of contents** ..... 2

**1 à Maximum ratings** ..... 3

**2 à Packaging characteristics** ..... 4

**3 à Electrical characteristics** ..... 5

**4 à Electrical characteristic diagram** ..... 7

**5 à Package drawing** ..... 9

**6 à Test conditions** ..... 10

**Revision history** ..... 11

Attention ..... 11

## 1 à Maximum ratings

**Table 1** **Maximum rating** (Tc = 25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|---|---|---|---|---|---|
| $V_{DS,max}$ | Drain source voltage | 1200 | V | $V_{GS}$ = 0V, $I_D$ | |
| $V_{GS,max}$ | Gate source voltage | -8 /+22 | V | | |

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# 3 à Electrical characteristics

**Table 4 SiC MOSFET characteristics** (Tc = 25°C unless otherwise specified)

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-source breakdown voltage | 1200 | - | - | V | $V_{GS}$ = 0V, $I_D$ = 6 | |
| | | 2.3 | 2.8 | 4.0 | V | $V_{DS}$ = $V_{GS}$, $I_D$ = 224mA | |
| $V_{GS(th)}$ | Gate threshold voltage | | | | | | |

**Table 5 Body diode characteristics** (Tc = 25°C unless otherwise specified)

| Symbol | Parameter |
|---|---|

# 4 à Electrical characteristic diagram



Figure 1. Output Characteristic, $T_{vj}$



Figure 2. Output Characteristic, $T_{vj}$



Figure 3. Transfer Characteristic



Figure 4. On-resistance VS. Junction Temperature



Figure 5. On-resistance VS. Drain to Source Current



Figure 6. Capacitance VS. $V_{DS}$

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**1200V S**

## Revision history

| Document version | Date of release | Description of changes | |
|---|---|---|---|
| V01_00 | 2025-07-03 | Í Í | |
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## Attention

1. **RoHS compliance**

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/ EC (RoHS2), as implemented January 2, 2013.

2. **REACH compliance**

REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Sichain representative to insure you get the most up-to-date REACH SVHC Declaration. REAC

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