SBCC1 DATASHEET

Bidirectional solid state contactor 100/600V

Summary

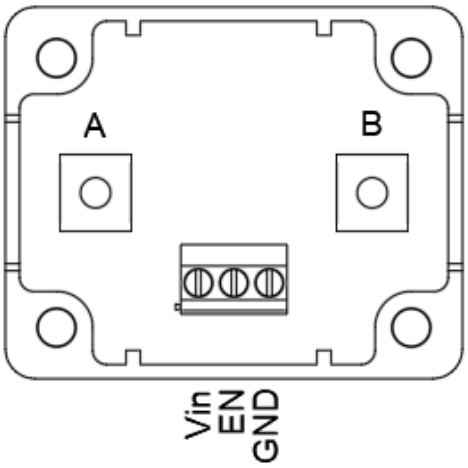
SBCC series solid state contactors are ideal to switch high power DC or AC loads. Our contactors feature semiconductor switches instead of electromagnetic switches which eliminate mechanical wear over time, ensure low power losses, fast turn-on and turn-off times.

Key Features

- Low on-state resistance
- Isolated input
- High input switching frequency

Applications

- Battery sytems
- Industrial automation
- Testing equipment



Technical data

Parameter	Conditions	Value		Unit
		SBCC1-100	SBCC1-600	
Maximum contactor voltage		100	600	V
Maximum continuous contactor current	T_a = 25 °C, no heatsink T_a = 25 °C, with heatsink	100 180	20 33	A
Maximum pulse contactor current	t_{pulse} = 100 us	3600	300	A
Contactor ON state resistance		1.3	36	mΩ
Maximum switching frequency (limited by snubber circuit)		3		kHz
Isolation voltage	DC t_{pulse} = 1min	800 3000		V
V_{in}, EN maximum voltage		30		V
V_{in} input current		30		mA
EN input current		4		mA
EN threshold voltage		2.2		V
Temperature range		-40 to +105		°C
Snubber circuit capacitance		4.7	0.1	uF
Snubber circuit discharge time (6*RC)		28.2		ms

Timing characteristics

Parameter	Conditions	Value	Unit
Startup time	V_{in} = EN = 0 -> 12V	4.8	ms
Turn on propagation delay	V_{in} = 12V, EN = 0 -> 12V	4.5	µs
Turn off propagation delay	V_{in} = 12V, EN = 12 -> 0V	3	µs
Fall time (turn-on)	V_{Supply} = 12V, I = 2A	200	ns
Rise time (turn-off)		90	us

Mechanical parameters

Parameter	Specification
Dimensions LxWxH	64.4x52.4x22.2 mm
Weight	80-85 g
Ingress rating	IP67
Enclosure	Nylon, polyurethane encapsulation
Contact mount	M5 (screws included)

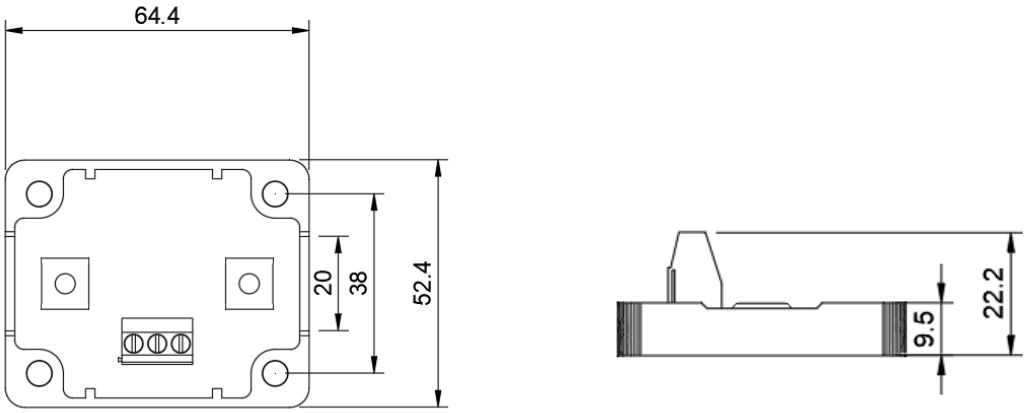


Figure 1. SBCC1 mechanical drawing.

Overview

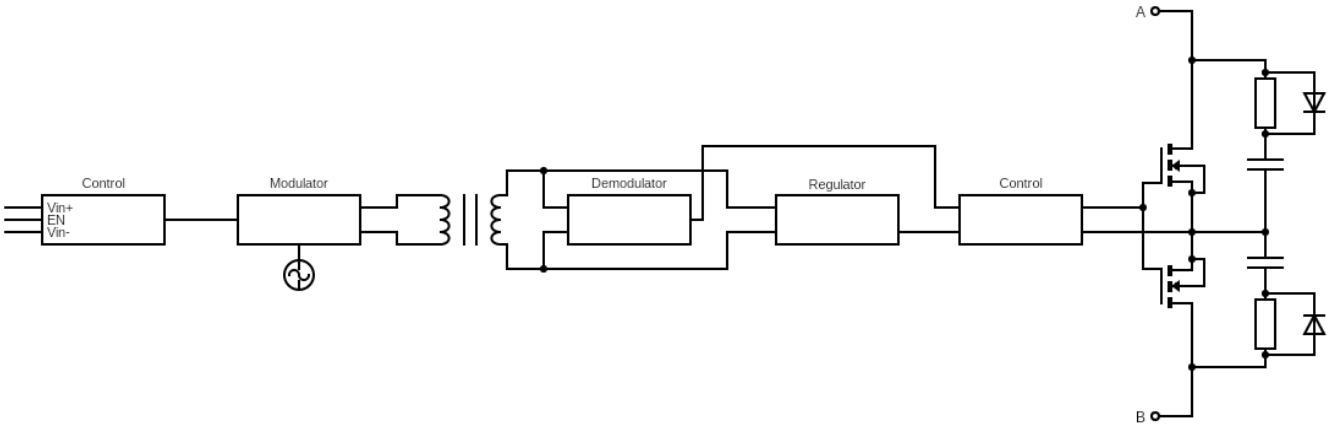


Figure 2. SBCC block diagram

SBCC01 device is a fully isolated solid state switch used to switch resistive loads. The device uses two back to back Si N-channel MOSFETS, which allows use of the device in applications where bidirectional current blocking is required such as battery storage or DC motor controller systems. Additionally, the device has the capability to be switched off at any phase angle in AC systems, compared to thyristor based solid state contactors. To ensure reliability, a snubber circuit is used to dampen inductive transients during contactor turn off. Isolator between control circuit and power transistors ensure safety and ease of use.

Test circuit

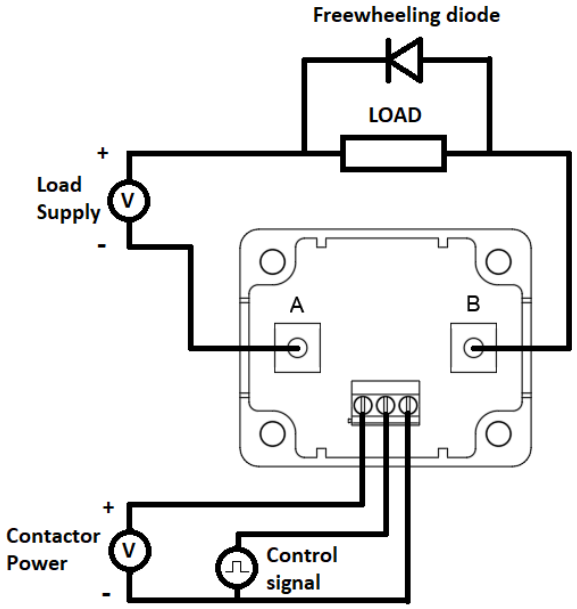


Figure 3. SBCC Test circuit

When switching inductive loads a rule of thumb is to use a freewheeling diode parallel to the load. It ensures that any inductive energy is recirculated through the load itself and dissipated as heat.

During contactor turn-off monitor voltage rise between A and B contacts and make sure not to reach maximum contactor voltage. If voltage is reaching maximum limit, additional snubber circuit or high power clamping device may be used.

Remarks

For additional information or order inquiries please contact at info@amperta.com