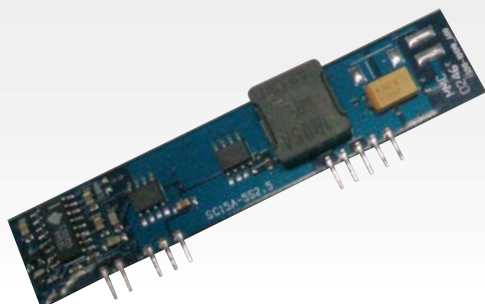


### Description

The SC15A is a low-cost, 15-amp, non-isolated DC-DC converter with an amazingly small footprint of only 0.8 in<sup>2</sup>. Designed for today's high power microprocessors, the SC15A accepts either 5 V or 3.3 V inputs and offers outputs from 1.3 V to 3.3 V. The SC15A also uses an industry-standard pin-out making it easy to increase power in existing designs.

Using Bourns Switch Power's proprietary V<sup>2</sup>™ architecture, the SC15A provides ultrafast transient response, improved line and load regulation, and very high efficiency. It also incorporates short-circuit protection, Enable / Disable control, output voltage trim, and remote sense.



### Features

- Low Cost
- 15-amp Output Current
- 90 % Efficiency
- Industry-standard Pin-out
- Low 0.6 " Profile
- Non-isolated Output
- Remote Sense
- Trim Function
- Enable / Disable
- Short-circuit Protection
- Fast Transient Response
- High-temperature Operation
- Output Precharge Capability

Patents 5,770,940  
5,978,195  
6,127,814

### Common Specifications

|                           | Min | Nom   | Max   | Units                 | Notes                        |
|---------------------------|-----|-------|-------|-----------------------|------------------------------|
| <b>Input</b>              |     |       |       |                       |                              |
| Voltage                   | 4.5 | 5     | 5.5   | Vdc                   | 4.75 V <sub>in</sub> Startup |
| Current                   | 3.0 | 3.3   | 3.6   | Vdc                   |                              |
| Control Voltage           |     |       | 15    | A                     |                              |
| High = Disable            | 2.4 |       |       | Vdc                   | Source 500 mA                |
| Low = Enable              |     |       | 0.4   | Vdc                   | Open=Enable                  |
| E/D Current               |     | 1     |       | mA                    |                              |
| <b>Output</b>             |     |       |       |                       |                              |
| Current                   |     |       | 15    | A                     |                              |
| Voltage Setpoint Accuracy |     |       | ±2    | %V <sub>nom</sub>     |                              |
| Voltage Trim Range        | -10 |       | +10   | %V <sub>nom</sub>     |                              |
| Line Regulation           |     | ±0.1  |       | %V <sub>nom</sub>     |                              |
| Load Regulation           |     | ±0.3  |       | %V <sub>nom</sub>     |                              |
| Current Limit             | 18  | 21    | 30    | A                     |                              |
| Dynamic Response          |     |       |       |                       |                              |
| 0 to 15 A load            |     | 200   |       | mV                    | Δi/Δt = 3 A/μs               |
|                           |     | 19    |       | μs                    |                              |
| 15 to 0 A load            |     | 200   |       | mV                    | Δi/Δt = 3 A/μs               |
|                           |     | 19    |       | μs                    |                              |
| Temperature Regulation    |     |       | ±0.02 | %V <sub>out</sub> /°C |                              |
| <b>General</b>            |     |       |       |                       |                              |
| MTBF                      |     | 1,000 |       | k Hrs                 | Bellcore TR332, 25 °C        |
| Operating Temperature     | -25 |       | 85    | °C                    |                              |
|                           | -40 |       | 85    | °C                    | Optional                     |
| Storage Temperature       | -40 |       | 125   | °C                    |                              |
| Switching Frequency       | 200 | 300   | 400   | kHz                   |                              |



Reliable Electronic Solutions

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Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

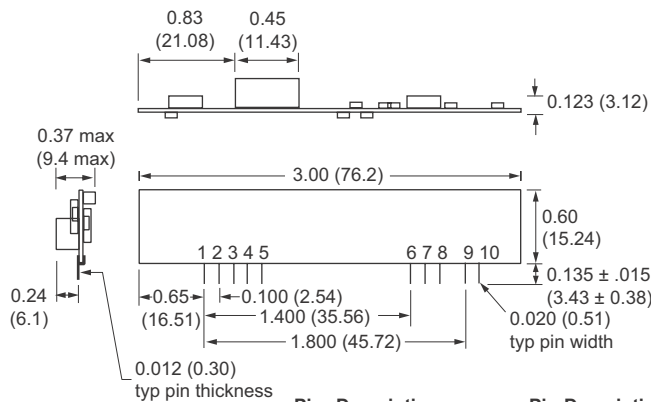
## Electrical Specifications

|             | Nominal<br>Input<br>(V) | Output<br>Voltage<br>(V) | Output<br>Current<br>(A) | Short-circuit<br>Current (A)<br>typ | Noise<br>(mV pp)<br>typ | Efficiency<br>(%)<br>typ |
|-------------|-------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------|--------------------------|
| SC15A-5S3.3 | 5                       | 3.3                      | 15                       | 22                                  | 100                     |                          |
| SC15A-5S2.5 | 5                       | 2.5                      | 15                       | 22                                  | 100                     |                          |
| SC15A-5S1.9 | 5                       | 1.9                      | 15                       | 22                                  | 100                     | 89                       |
| SC15A-5S1.8 | 5                       | 1.8                      | 15                       | 22                                  | 100                     |                          |
| SC15A-5S1.5 | 5                       | 1.5                      | 15                       | 22                                  | 100                     |                          |
| SC15A-3S2.5 | 3.3                     | 2.5                      | 15                       | 22                                  | 100                     |                          |
| SC15A-3S1.9 | 3.3                     | 1.9                      | 15                       | 22                                  | 100                     | 92                       |
| SC15A-3S1.8 | 3.3                     | 1.8                      | 15                       | 22                                  | 100                     |                          |
| SC15A-3S1.5 | 3.3                     | 1.5                      | 15                       | 22                                  | 100                     |                          |

## Standard Options

Add option designators to the end of the part number. Example; SC15A-5S3.3-B

| Option | Description                                            |
|--------|--------------------------------------------------------|
| B      | No Remote Sense option removes sense pin               |
| F      | 1 % Setpoint Accuracy                                  |
| Z      | -40 °C Operation                                       |
| X      | Modified pin length followed by three digits (in mils) |

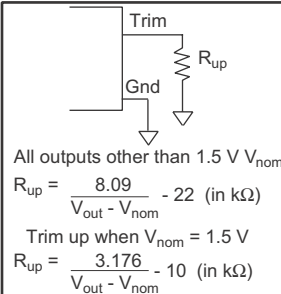


| Pin   | Description                         | Pin | Description     |
|-------|-------------------------------------|-----|-----------------|
| 1,2,4 | V <sub>out</sub>                    | 5,6 | Ground          |
| 3     | Remote Sense (removed for B option) | 7,8 | V <sub>in</sub> |
|       |                                     | 9   | Trim            |
|       |                                     | 10  | Enable          |

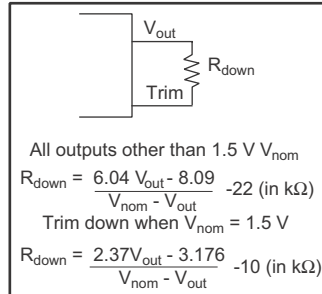
Note: Component placement may change. Recommended keep-out area equals maximum length and width.

### SC15A Trim Circuits

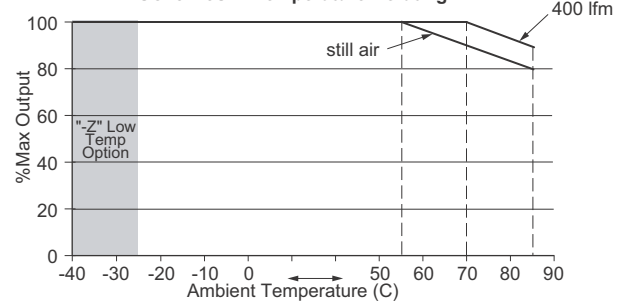
#### Trim Up



#### Trim Down



### SC15A-5Sxx Temperature Derating



### SC15A-3Sxx Temperature Derating

