

## Description

The SC20A is a low-cost, 20-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 SC20A accepts either 5 V or 3.3 V inputs and offers outputs from 1.3 V to 3.3 V. The SC20A 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 SC20A 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
- 20-Amp Output Current
- 90 % Efficiency
- Industry-standard Pin-out
- Low 0.6 " Profile
- Nonisolated Output
- Remote Sense
- Trim Function
- Enable / Disable
- Short-circuit Protection with auto-restart
- 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 |
|                           | 3.0 | 3.3   | 3.6   | Vdc                   |                              |
| Current                   |     |       | 20    | A                     |                              |
| Control Voltage           |     |       |       |                       |                              |
| High = Disable            | 2.4 |       |       | Vdc                   | Source 500 mA                |
| Low = Enable              |     |       | 0.4   | Vdc                   | Open=Enable                  |
| E/D Current               |     | 1     |       | mA                    |                              |
| <b>Output</b>             |     |       |       |                       |                              |
| Current                   |     |       | 20    | 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             | 22  | 25    | 34    | A                     |                              |
| Dynamic Response          |     |       |       |                       |                              |
| 0 to 20 A load            |     | 200   |       | mV                    | Δi/Δt = 3 A/μs               |
|                           |     | 19    |       | μs                    |                              |
| 20 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 |       | kHrs                  | 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.

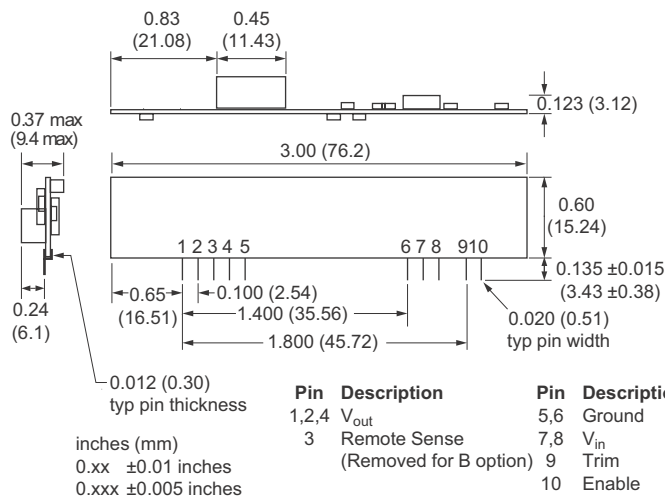
## Electrical Specifications

|             | 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 |
|-------------|-------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------|--------------------------|
| SC20A-5S3.3 | 5                       | 3.3                      | 20                       | 27                                  | 100                     | 89                       |
| SC20A-5S2.5 | 5                       | 2.5                      | 20                       | 27                                  | 100                     |                          |
| SC20A-5S1.9 | 5                       | 1.9                      | 20                       | 27                                  | 100                     |                          |
| SC20A-5S1.8 | 5                       | 1.8                      | 20                       | 27                                  | 100                     |                          |
| SC20A-5S1.5 | 5                       | 1.5                      | 20                       | 27                                  | 100                     |                          |
| SC20A-3S2.5 | 3.3                     | 2.5                      | 20                       | 27                                  | 100                     | 92                       |
| SC20A-3S1.9 | 3.3                     | 1.9                      | 20                       | 27                                  | 100                     |                          |
| SC20A-3S1.8 | 3.3                     | 1.8                      | 20                       | 27                                  | 100                     |                          |
| SC20A-3S1.5 | 3.3                     | 1.5                      | 20                       | 27                                  | 100                     |                          |

## Standard Options

Add option designators to the end of the part number. Example; SC20A-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) |



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

