

SC20A SERIES

HDLV
Family

Description

The SC20A is a low-cost, 20-Amp, non-isolated DC-DC converter with an amazingly small footprint of only 0.8 in². 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 V²™ 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 |
|---------------------------|-----|-------|-------|-----------------------|------------------------------|
| Input | | | | | |
| Voltage | 4.5 | 5 | 5.5 | Vdc | 4.75 V _{in} 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 | |
| Output | | | | | |
| Current | | | 20 | A | |
| Voltage Setpoint Accuracy | | | ±2 | %V _{nom} | |
| Voltage Trim Range | -10 | | +10 | %V _{nom} | |
| Line Regulation | | ±0.1 | | %V _{nom} | |
| Load Regulation | | ±0.3 | | %V _{nom} | |
| 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 _{out} /°C | |
| General | | | | | |
| 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.

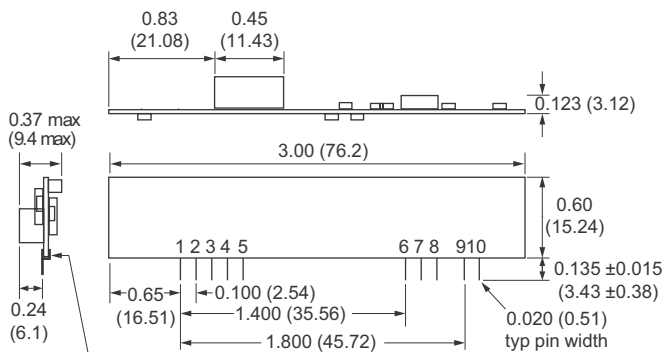
Electrical Specifications

| | Nominal Input (V) | Output Voltage (V) | Output Current (A) | Short-circuit Current (A) typ | Noise (mV pp) typ | Efficiency (%) typ |
|-------------|-------------------|--------------------|--------------------|-------------------------------|-------------------|--------------------|
| SC20A-5S3.3 | 5 | 3.3 | 20 | 27 | 100 | |
| SC20A-5S2.5 | 5 | 2.5 | 20 | 27 | 100 | |
| SC20A-5S1.9 | 5 | 1.9 | 20 | 27 | 100 | 89 |
| 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 | |
| SC20A-3S1.9 | 3.3 | 1.9 | 20 | 27 | 100 | 92 |
| SC20A-3S1.8 | 3.3 | 1.8 | 20 | 27 | 100 | |
| SC20A-3S1.5 | 3.3 | 1.5 | 20 | 27 | 100 | |

Standard Options

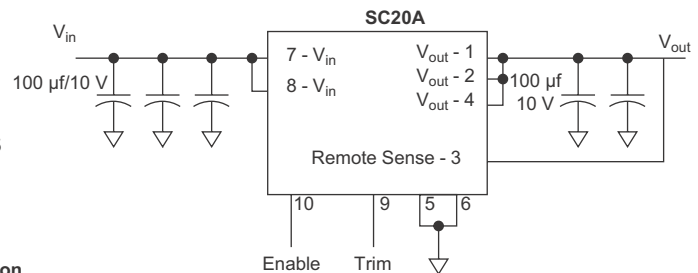
Add option designators to the end of the part number. Example; SC20A-5S3.3-B

| 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) |

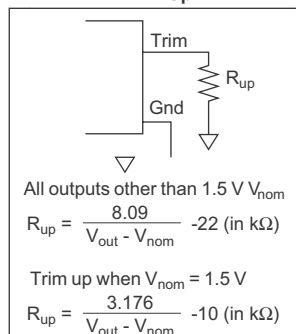


| Pin | Description | Pin | Description |
|-------|-------------------------------------|-----|-----------------|
| 1,2,4 | V _{out} | 5,6 | Ground |
| 3 | Remote Sense (Removed for B option) | 7,8 | V _{in} |
| | | 9 | Trim |
| | | 10 | Enable |

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



Trim Up



Trim Down

