

Description

The SC5A is a 5-amp, full-featured, non-isolated DC-DC converter. Designed for 12 V distributed power systems, the SC5A comes in a SIP form factor to minimize board space and maximize power density. It combines an industry-standard pin-out with a mounted height of only 0.5 inches. Using Bourns Switch Power's proprietary V²™ architecture with a 12 V input, the SC5A provides ultrafast transient response, improved line and load regulation, and very high efficiency.

Features

- 5-amp Output Current
- 94 % Efficiency
- Industry-standard Pin-out
- Low 0.5 " Profile
- Non-isolated Output
- Remote Sense
- Remote Enable
- Short-Circuit Protection with Auto restart
- Trim Function
- Fast Transient Response
- High-temperature Operation
- 60 W/in³ Power Density

Patents 5,770,940
5,978,195

Common Specifications

	Min	Nom	Max	Units	Notes
Input					
Voltage	9	12	16	Vdc	10-16 V for SC5A-12S5
Current			3	A	
Remote Enable					
High = Disable	2.4		5.5	Vdc	Source 500 μA
Low = Enable			0.7	Vdc	Open=Enable
Current			20	mA	Disabled
Output					
Current	0		5	A	
Sense Compensation			50	mV	
Voltage Setpoint Accuracy		±1.4	±2.3	%V _{nom}	
Voltage Trim Range	-10		+10	%V _{nom}	
Line Regulation		±0.2		%V _{nom}	
Load Regulation		±0.1		%V _{nom}	
Temp Regulation		.005		%V _{nom} /°C	
Current Limit	6			A	
Dynamic Response					
0 to 100 % load		200		mV	Δi/Δt = 3 A/μs
		19		μs	
100 to 0 % load		200		mV	Δi/Δt = 3 A/μs
		19		μs	
Temperature Regulation			±0.02	%V _{out} /°C	
General					
MTBF		1,878		k Hrs	25°C, 80 % load, 100 lfm
Operating Temperature	-25		85	°C	
Storage Temperature	-55		125	°C	
Switching Frequency		500		kHz	



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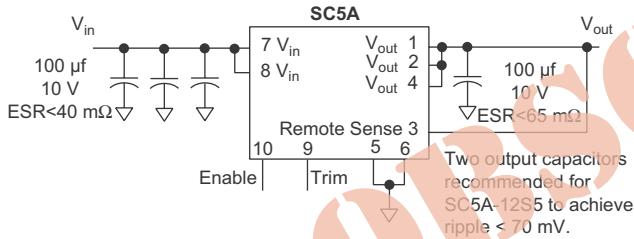
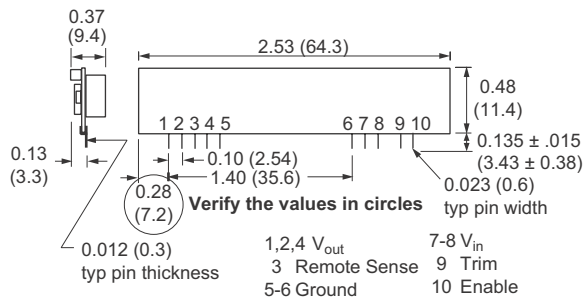
Electrical Specifications

	Nominal Input (V)	Output Voltage (V)	Output Current (A)	Ripple (mV pp) typ	Efficiency (%) typ
SC5A-12S5	12	5.0	5	120	93
SC5A-12S3.3	12	3.3	5	100	90
SC5A-12S2.5	12	2.5	5	100	88
SC5A-12S1.8	12	1.8	5	100	85

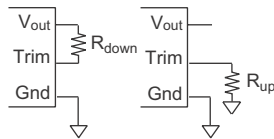
Standard Options

Add option designators to the end of the part number. Example; SC5A-12S3.3-Z

Option	Description
Z	-40 °C Operation



SC5A Trim Circuits



$$R_{down} (\Omega) = \frac{[(1000V_{out} - 1300) * (R_1 + R_2)] - (R_1 * R_2)}{1300 - 1000V_{out} + R_1}$$

$$R_{up} (\Omega) = \frac{R_1 * 1690}{1300V_{out} - 1690 - 1.3R_1} - R_2$$

V_{out} = Desired output voltage

V_{nom}	R_1 (Ω)	R_2 (Ω)
5.0	3,740	10,000
3.3	2,000	4,120
2.5	1,210	2,550
1.8	499	432

SC5A Temperature Derating

