

# SIP20C Series

## Single output

- Updated version of SIP20
- Best-of-class wide output trim range
- Industry standard footprint
- High power density (60 W/in<sup>3</sup>)
- High Efficiency 90%
- Fixed frequency (500 kHz)
- Remote ON/OFF
- Undervoltage lockout (UVLO)
- Remote sense option
- Available RoHS compliant



The SIP20C series are non-isolated dc-dc converters packaged in a single-in-line footprint (2.5 x 0.55 x 0.23 inches) giving designers a cost effective solution for conversion of 5 Vdc to 3.3 Vdc and lower voltages. The SIP20C offers a best-of-class wide output trim range which allows maximum design flexibility and a pathway for future upgrades. Local voltage conversion by the SIP20C from existing 5 V system voltages eliminates the need for redesign of existing power architectures when voltage requirements change. The SIP20C is designed for applications that include distributed power, workstations, computers and file servers. Implementing state of the art surface mount technology and automated manufacturing techniques, the SIP20C offers compact size and efficiencies of 90%. The SIP20C is an updated version of the original SIP20 and is fully compatible with the original model.

**2 YEAR WARRANTY**

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated

### SPECIFICATIONS

#### OUTPUT SPECIFICATIONS

Voltage adjustability	S3V3J S2V5J S1V5J	60% to 115% 60% to 110% 87% to 130%
Set point accuracy	(See Note 1)	±2.7%
Line regulation	V <sub>in</sub> = 4.5-5.5 V	±0.3%
Load regulation	I <sub>o</sub> = 0-6 A	±0.3%
Minimum load		0 A
Overshoot/undershoot		None
Ripple and noise (See Note 8)	0 to 20 MHz BW	100 mV pk-pk, 30 mV rms max.
Temperature coefficient		±0.01%/°C
Transient response (See Note 2)		±2.0% max. deviation 300 μs recovery to within ±1.0%
Remote sense	(See Note 6)	0.5 Vdc compensation

#### INPUT SPECIFICATIONS

Input voltage range		4.5 to 5.5 VDC
Input current	No load	150 mA
Input current	@ I <sub>o</sub> max. and V <sub>in</sub> = 0-5.5 V	5.3 A max.
Input reflected ripple	(See Note 3)	200 mA
Remote ON/OFF		(See Note 5)
Start-up time		1.0 ms
External capacitor	(See Note 4)	100 μF

#### EMC CHARACTERISTICS <sup>(4)</sup>

Radiated emissions	EN55022/11, FCC part 15	Level A
Electrostatic discharge	EN61000-4-2, IEC801-2	

#### GENERAL SPECIFICATIONS

Efficiency		See table
Isolation voltage		Non-isolated
Switching frequency	Fixed	500 kHz typ.
Approvals and standards (See Note 7)		VDE0805, EN60950, IEC950 UL1950, CSA C22.2 No. 950
Material flammability		UL94V-0
Dimensions	(LxWxH)	63.5 x 13.97 x 5.84 mm 2.5 x 0.55 x 0.23 inches
Pin length		0.135 ±0.02 inches (3.43 ±0.5 mm)
Weight		5 g (0.18 oz)
MTBF	MIL-HDBK-217F	>1,000,000 hours

#### ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient, convection cooled Operating ambient, 300 LFM forced air Non-operating	See curve -25 °C to +85 °C See Curve -55 °C to +100 °C
Altitude	Operating Non-operating	10,000 feet max. 40,000 feet max.
Vibration	5-500 Hz	2.4G rms (approx.)

#### International Safety Standard Approvals

VDE0805/EN60950/IEC950 File No. 126328

UL1950 File No. E174104

CSA 22.2 No. 950 and CB Report and Certificate to DE1-31667

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DC-DC CONVERTERS | 9-20 W Non-isolated DC-DC Regulators

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For the most current data and application support visit [www.artesyn.com/powergroup/products.htm](http://www.artesyn.com/powergroup/products.htm)

OUTPUT POWER (MAX.)	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.)	EFFICIENCY (TYP.)	REGULATION		MODEL NUMBER (6, 10, 11)
						LINE	LOAD	
20 W	4.5-5.5 Vdc	3.3 V	0 A	6 A	90%	±0.3%	±0.3%	SIP20C-05S3V3J
15 W	4.5-5.5 Vdc	2.5 V	0 A	6 A	82%	±0.3%	±0.3%	SIP20C-05S2V5J
9 W	4.5-5.5 Vdc	1.5 V	0 A	6 A	75%	±0.3%	±0.3%	SIP20C-05S1V5J

### Notes

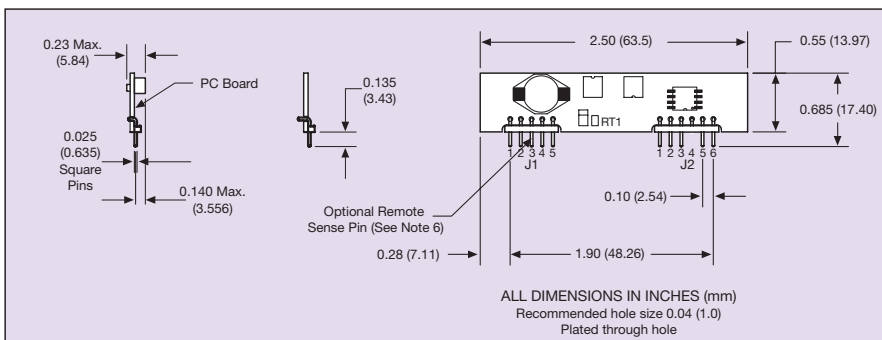
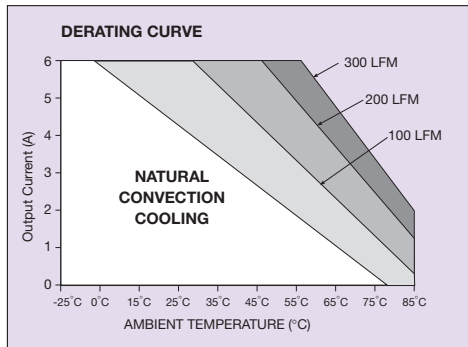
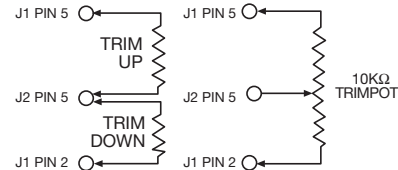
- $V_{in} = 5.0\text{ V}$ ,  $I_o = \text{full load}$ ,  $T_A = 25\text{ }^\circ\text{C}$ . Total error band  $\pm 4.5\%$  over all operating conditions and temperatures until end of life.
- $di/dt = 1\text{ A}/1\text{ }\mu\text{s}$ ,  $V_{in} = 5\text{ Vdc}$ ,  $T_c = 25\text{ }^\circ\text{C}$ , load change =  $0.5 I_o \text{ max.}$  to  $I_o \text{ max.}$  and  $I_o \text{ max.}$  to  $0.5 I_o \text{ max.}$
- With simulated source impedance of  $500\text{ nH}$ .  $5\text{ Hz}$  to  $20\text{ MHz}$ .
- Use a  $100\text{ }\mu\text{F}$  with  $ESR = 0.045\text{ }\Omega \text{ max.}$  at  $100\text{ kHz}$  @  $25\text{ }^\circ\text{C}$ .
- Referenced to ground for shutdown. If pin 6 is high unit will shut down. If pin 6 is open unit will operate as normal.
- Single line sense;  $0.5\text{ Vdc}$  compensation. Designate with the suffix 'R' e.g. **SIP20C-05S3V3RJ**.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- $0\text{ MHz}$  to  $20\text{ MHz BW}$ ,  $0.1\text{ }\mu\text{F}$  ceramic,  $1\text{ }\mu\text{F}$  tantalum on output.
- A short from  $+V_{out}$  to ground of less than  $100\text{ m}\Omega$  may cause the unit to enter a non-destructive latch-up mode. If latch-up does occur the power supply to the unit may need to be cycled.
- The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant. TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- NOTICE:** Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com/powergroup/products.htm> to find a suitable alternative.

### PROTECTION

Short-circuit	Continuous (See Note 9)
Input surge	6 Vdc continuous max.
Undervoltage	UVLO $V_{in} < 3.8\text{ V}$
Thermal	Automatic recovery, unit will shut down if $RT1$ exceeds $85\text{ }^\circ\text{C}$ (See diagram below)

### EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using either method shown below.



### J1 PIN CONNECTIONS

PIN NUMBER	FUNCTION
1	+Vout
2	+Vout
3	Opt. Remote Sense (+)
4	+Vout
5	Ground

### J2 PIN CONNECTIONS

PIN NUMBER	FUNCTION
1	Ground
2	+Vin
3	+Vin
4	No Pin
5	Trim
6	Remote ON/OFF

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