

SIP20C Series

Single output

- Updated version of SIP20
- Best-of-class wide output trim range
- Industry standard footprint
- High power density (60 W/in³)
- High Efficiency 90%
- Fixed frequency (500 kHz)
- Remote ON/OFF
- Undervoltage lockout (UVLO)
- Remote sense option
- Available RoHS compliant



2 YEAR WARRANTY

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.

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 _{in} = 4.5-5.5 V | ±0.3% |
| Load regulation | I _o = 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 _o max. and V _{in} = 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 ⁽⁴⁾

| | | |
|-------------------------|-------------------------|---------|
| 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 | See curve |
| | Operating ambient, 300 LFM forced air | -25 °C to +85 °C See Curve |
| | Non-operating | -55 °C to +100 °C |
| Altitude | Operating | 10,000 feet max. |
| | Non-operating | 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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For the most current data and application support visit 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

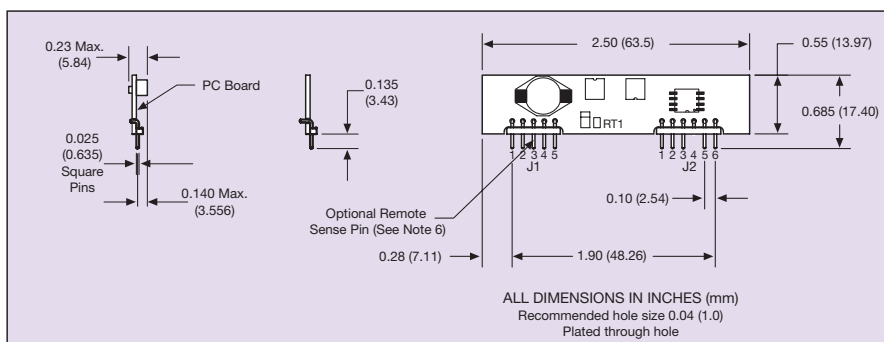
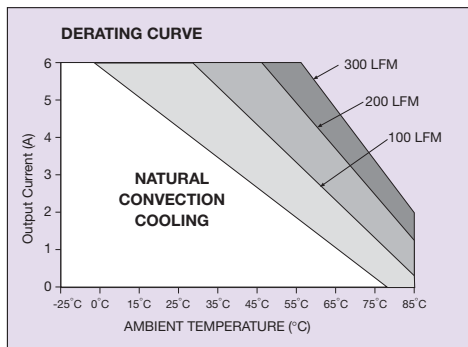
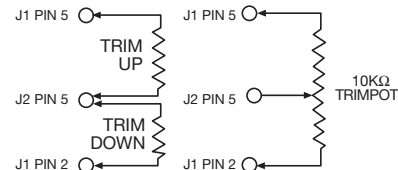
- $V_{in} = 5.0 V$, I_o = full load, $T_A = 25^\circ C$. Total error band $\pm 4.5\%$ over all operating conditions and temperatures until end of life.
- $di/dt = 1 A/1 \mu s$, $V_{in} = 5 Vdc$, $T_c = 25^\circ C$, load change = $0.5 I_o$ max. to I_o max. and I_o max. to $0.5 I_o$ max.
- With simulated source impedance of $500 nH$. 5 Hz to 20 MHz.
- Use a $100 \mu F$ with $ESR = 0.045 \Omega$ max. at $100 kHz @ 25^\circ C$.
- 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; $0.5 Vdc$ 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.
- $0 MHz$ to $20 MHz$ BW, $0.1 \mu F$ ceramic, $1 \mu F$ tantalum on output.
- A short from +Vout to ground of less than $100 m\Omega$ 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 $V_{in} < 3.8 V$ |
| Thermal | Automatic recovery, unit will shut down if $RT1$ exceeds $85^\circ C$ (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 |