

SIL/SMT20C2 Series

4.5 Vin to 13.8 V Single Output



August 27, 2008

DC-DC CONVERTERS

C Class Non-isolated

1

NEW Product



- 20 A current rating
- Input voltage range: 4.5-13.8 V
- Output voltage: 0.59-5.1 V
- Industry leading value
 - Cost optimized design
- Excellent transient response
- Output enable
- Output voltage adjustability
 - Pathway for future upgrades
 - Supports silicon voltage migration
 - Resulting in reduced design-in and qual time
- Current sink capability
- RoHS compliant



The SIL/SMT20C2 series is a new high density, open frame, non-isolated converter for space sensitive applications. This model has a wide input range (4.5-13.8 Vdc) and offers a wide 0.59-5.1 V output voltage range with 20 A load capability. An external resistor adjusts the output voltage from its pre-set value of 0.59 V to any value up to the 5 V maximum. Typical efficiencies for the models are 93% for the 12 V input version. The series offers remote ON/OFF and over-current protection as standard.

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

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Output voltage	(See Note 5)	0.59-5.1 V
Output setpoint accuracy	0.1% trim resistors	±1.0%
Line regulation	Low line to high line	±0.2%
Load regulation	Full load to min. load	±0.5%
Min/max load		0 A/20 A
Overshoot	At turn-on	0.5% max.
Undershoot	At turn-off	100 mV max.
Ripple and noise 5 Hz to 20 MHz	(See Note 1)	30 mV Vin = 5 V, Vout = 2.5 V
Transient response	(See Notes 1, 2)	130 mV max. deviation 50 µs recovery within regulation band

INPUT SPECIFICATIONS

Input voltage range		4.5-13.8 Vdc
Input current	Minimum load Remote OFF	50 mA 5 mA
Input current (max.)	(See Note 3)	18 A @ Io max.
Start-up time	Remote ON/OFF	3 ms

GENERAL SPECIFICATIONS

Efficiency	Vin=5 V, Vo=2.5 V, Io=20 A	90%
Switching frequency	Fixed	750 kHz
Approvals and standards (pending)		EN60950 UL/cUL6950
Material flammability		UL94V-0
Weight		8.50 g/0.3 oz.
MTBF	12 V @ 40 °C 100% load Bellcore 332	6,721,853 hours
Coplanarity		150 µm

ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Note 5)	Operating ambient, temperature Non-operating	0 °C to +70 °C -40 °C to +125 °C
-------------------------------------	---	-------------------------------------

PROTECTION

Short-circuit	Hiccup, non-latching
Overvoltage protection	Hiccup, non-latching

RECOMMENDED SYSTEM CAPACITANCE

Input capacitance	(See Note 6)	0 µF
Output capacitance	(See Note 7)	0 µF

International Safety Standard Approvals



UL/cUL CAN/CSA 22.2



TÜV Product Service (EN60950)
CB report and certificate to IEC60950

SIL/SMT20C2 Series

4.5 Vin to 13.8 V Single Output

OUTPUT POWER (MAX.)	INPUT VOLTAGE	MOUNT	OUTPUT VOLTAGE	OUTPUT CURRENT (MIN.)	OUTPUT CURRENT (MAX.)	EFFICIENCY (TYP.)	REGULATION		MODEL NUMBER ^(8, 9)
							LINE	LOAD	
100 W	4.5-13.8 Vdc	Horizontal	0.59-5.1 V	0 A	20 A	93%	±0.2%	±0.5%	SIL20C2-00SADJ-HJ
100 W	4.5-13.8 Vdc	Vertical	0.59-5.1 V	0 A	20 A	93%	±0.2%	±0.5%	SIL20C2-00SADJ-VJ
100 W	4.5-13.8 Vdc	Horizontal Surface	0.59-5.1 V	0 A	20 A	93%	±0.2%	±0.5%	SMT20C2-00SADJJ

Part Number System with Options

SXX20C2-00SADJ-VJ

Product Family
SMT = Surface Mount
SIL = Single In Line

Rated Output Current
06 = 6 A
15 = 15 A
20 = 20 A
30 = 30 A
40 = 40 A

Performance
C = Cost Optimized

Generation
Blank = Standard Part
2 = Increased Current Density

RoHS Compliance⁽⁸⁾
J = Pb-free (RoHS 6/6 compliant)

Mounting Option
-V = Vertical
-H = Horizontal
Blank = Horizontal Surface

Output Voltage
Single Adjustable Output

Input Voltage
00 = 4.5-13.8 V

Output Voltage Adjustment of the SIL/SMT20C2 Series

The ultra-wide output voltage trim range offers major advantages to users who select the SIL/SMT20C2. It is no longer necessary to purchase a variety of modules in order to cover different output voltages. The output voltage can be trimmed in a range of 0.59-5.1 V. When the SIL/SMT20C2 converter leaves the factory, the output has been adjusted to the default voltage of 0.59 V.

Notes

- 1 Measured as per recommended system capacitance.
- 2 $di/dt = 10 \text{ A}/\mu\text{s}$, $V_{in} = \text{Nom}$, $T_c = 25^\circ\text{C}$, load change = 0.75 Io to full Io and full Io to 0.75.
- 3 External input fusing is recommended.
- 4 Additional part numbers may be available with different output voltages.
- 5 Airflow dependent, 100 LFM minimum required.
- 6 No capacitor needed for ripple current capability.
- 7 No capacitor needed for stability.
- 8 TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- 9 NOTICE: Some models may not support all options. Please contact your local Emerson Network Power representative or use the on-line model number search tool at <http://www.powerconversion.com> to find a suitable alternative.

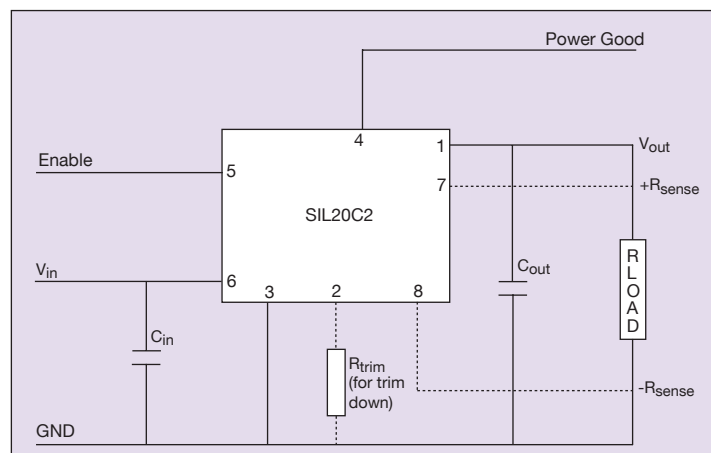


Figure 1: Standard Application Drawing

SIL/SMT20C2 Series

4.5 Vin to 13.8 V Single Output

PIN CONNECTIONS	
PIN NO.	FUNCTION
1	Vout
2	Trim
3	Ground
4	Power good
5	Enable
6	Vin
7	Remote Sense (+)
8	Remote Sense (-)

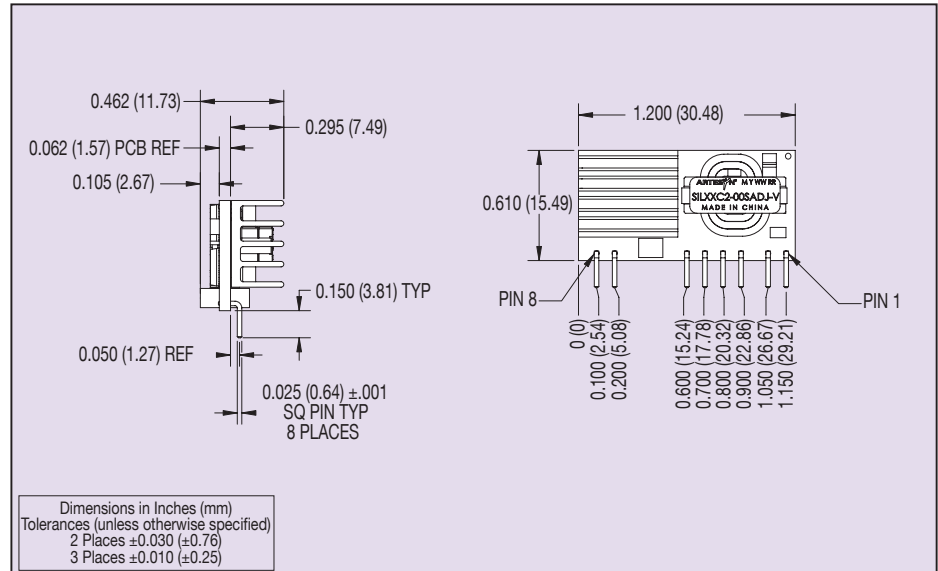


Figure 2: Vertical Mount Mechanical Drawing

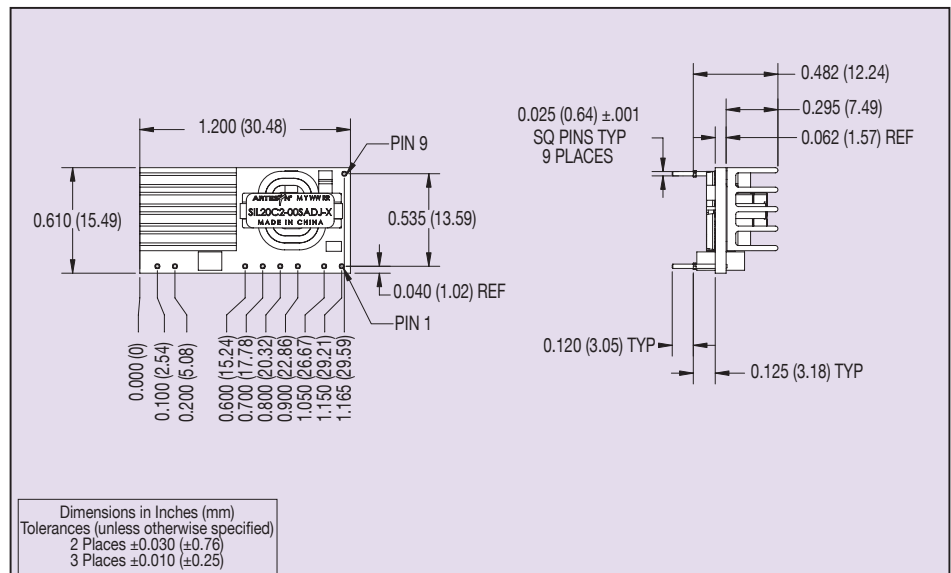


Figure 3: Horizontal Mount Mechanical Drawing

SIL/SMT20C2 Series

4.5 Vin to 13.8 V Single Output

PIN CONNECTIONS	
PIN NO.	FUNCTION
1	Vout
2	Trim
3	Ground
4	Power good
5	Enable
6	Vin
7	Remote Sense (+)
8	Remote Sense (-)
9	*Mech Support
10	*Mech Support

* Horizontal version only

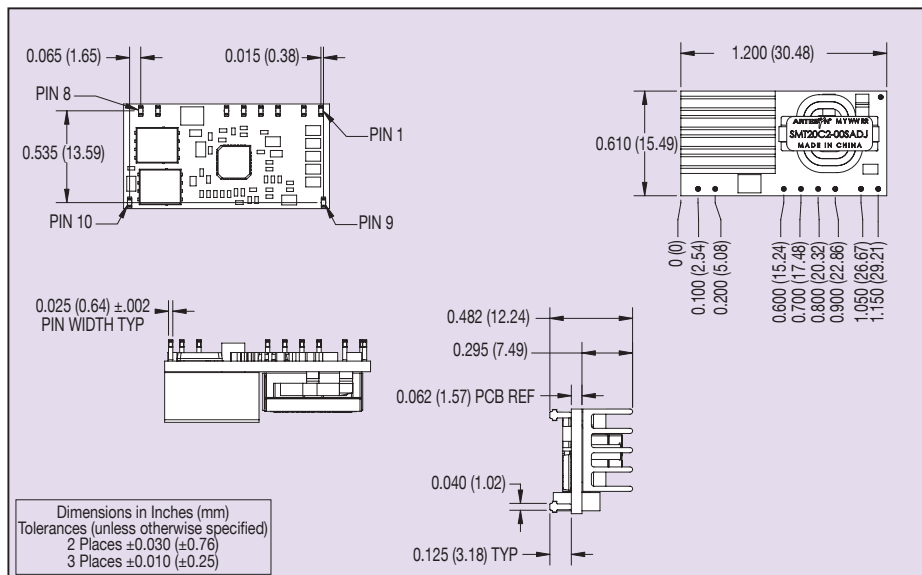


Figure 4: Surface Mount Mechanical Drawing