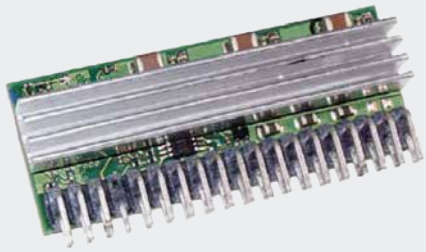
ARTESYN SIL60C2

Dual Row Pins; 60 Amps



Advanced Energy's Artesyn SIL60C2 series 60 amp non-isolated DC-DC converter is designed for cost- and space-sensitive applications. It is available in a through-hole vertically mounting configuration with dual rows of pins. The converter accepts a wide range 4.5 to 13.8 Vdc input and provides an output that is adjustable from 0.8 to 4.0 Vdc to accommodate a wide variety of silicon power needs. Rated at 240 watts, the SIL60C2 is capable of delivering up to 60 amps; it has a typical efficiency of 89% and no minimum load requirement. Standard features include differential remote sense, remote On/Off and remote 'power good' indication. This converter also supports phase shedding to save power under light load conditions, and its output voltage can be adjusted to within 1% by a 2-bit VID signal.

DATA SHEET

Total Power:

240 Watts

Input Voltage:

4.5 - 13.8 Vdc

# of Outputs:

Single

RoHS 6/6 COMPLIANT

SPECIAL FEATURES

- Two bit VID adjustable output voltage
- Phase shedding for power saving during light loads
- High power density desgin means reduced board space requirement
- Power good output signal
- Operating ambient temperature up to +70 °C with suitable derating and forced air cooling
- Remote ON/OFF (active high)
- 0 A minimum load
- Input under-voltage lockout
- EU directive 2002/95/EC compliant for RoHS

SAFETY

- Designed to meet EN60950 when used in end use equipment

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ELECTRICAL SPECIFICATIONS

Input		
Input voltage range		4.5 - 13.8 Vdc
Input current (max.)	Minimum load Remote ON/OFF	65 mA 20 mA
Input current (max.)		20.0 A @ Io max.
Start-up time	Power up Remote ON/OFF	<20 ms <20 ms
Output		
Output voltage	See Note 5	0.8 - 4.0 V
Output setpoint accuracy	with VID	1.0%
Line regulation	Low line to high line	±0.3%
Load regulation	Full load to min. load	±0.2%
Load line		0.225 µΩ
Min/Max load		0 A/60 A
Overshoot	At turn-on	2% max.
Ripple and noise 5 Hz to 20 MHz		<40 mV Vin = 12 V, Vout = 1.5 V
Transient	Deviation (dependent on output capacitance)	20 µs recovery to within regulation band
Output		
Efficiency	Vi = 12 V, Vo = 1.5V, Iout = 60 A	89%
Switching frequency	Fixed/ph	300 kHz
Material flammability		UL94V-0
Weight		TBD
MTBF	12 V @ 40 °C, 100% load Bellcore 332	>5,000,000 hours

ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient temperature Non-operating ambient temperature	-0 °C to +70 °C -40 °C to +125 °C
Protection		
Over temperature protection	Hiccup, non-latching	
Short-circuit	Hiccup, non-latching	
Overvoltage protection	Latching	
Recommended System Capacitance		
Input	Ceramic	3x22 µF
Output		1,500 µF

ORDERING INFORMATION

Model Number [3,5]	Output Power (Max.)	Input Voltage	Output Voltage	Output Current (Min.)	Output Current (Max.)	Efficiency (Typical)	Regulation		Orientation
							Line	Load	
SIL60C2-00SADJ-VDJ	240 W	4.5 - 13.8 Vdc	0.8 - 4.0 V	0 A	60 A	89%	±0.3%	±0.5%	Vertical

PART NUMBER SYSTEM WITH OPTIONS

Product Family	Rated Output Current	Performance	Generation		Input Voltage	Output Voltage		Mounting Option	Pins	RoHS Compliance
SIL	60	C	2	-	00	SADJ	-	X	D	J
SIL = Single In Line	60 = 60 Amps	C = Cost Optimized	2 = Increased current density		00 = 4.5-13.8 V	Single Adjustable Output		V = Vertical H = Horizontal	D = Dual row	J = Pb free (RoHS 6/6 compliant)

SETTING OUTPUT VOLTAGE

Default output voltage is set with the 2 bit VID as follows:

Vid1	Vid0	Vout
1	1	0.8 V
1	0	1.0 V
0	1	1.2 V
0	0	1.4 V

The output voltage may be optionally adjusted with a resistor placed in the series with the sense line, from 0.8 V to 4.0 V.

To trim the output voltage, place a resistor in series with pin 6 (RS+). The formula for calculating the value of this resistor is:

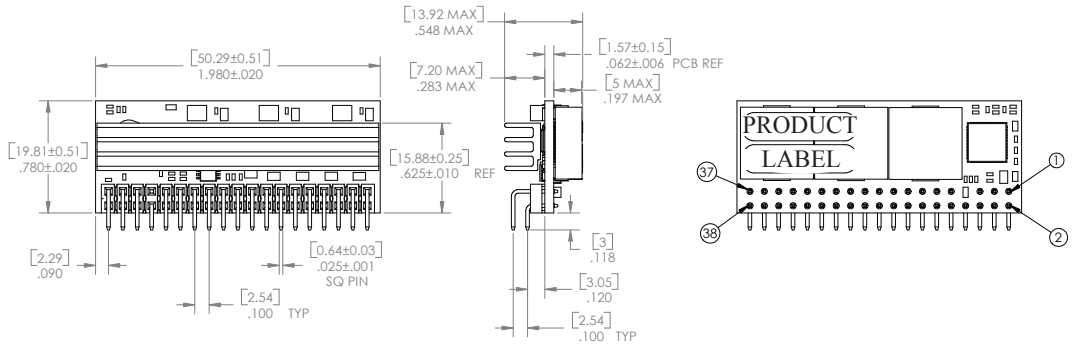
$$Rtrim = 2000 \times \left(\frac{V_{out} - VID_SET}{VID_SET} \right)$$

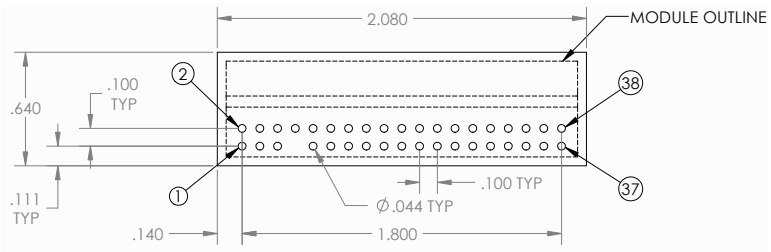
When trimming output voltage, always choose the nearest VID Vout setting.

Notes:

1. Measured as per recommended system capacitance.
2. di/dt = 10 A/ µs, Vin = Nom, Tc = 25 ˚C, load change = 0.50 Io max. and vice versa.
3. External fusing is recommended.
4. Measured with external filter.
5. Uses external resistor from trim pin to (-) trim pin.
6. Airflow dependent, 300 LFM minimum required.
7. No capacitor needed for ripple current capability.
8. No capacitor needed for stability.
9. NOTICE: Some models do not support all options. Please contact your local Artesyn Embedded Power representative or use the on-line model number search tool at http://www.artesyn.com to find a suitable alternative.

MECHANICAL DRAWINGS





Pin Assignments					
Pin	Function	Pin	Function	Pin	Function
1	VID0	14	Vin	27	Vout
2	Viout*	15	Ground	28	Vout
3	VID1	16	Ground	29	Ground
4	Power Good	17	Vout	30	Ground
5	RS-	18	Vout	31	Ground
6	RS+	19	Vout	32	Ground
7	Open	20	Vout	33	Vout
8	Enable	21	Ground	34	Vout
9	Ground	22	Ground	35	Vout
10	Ground	23	Ground	36	Vout
11	Vin	24	Ground	37	Ground
12	Vin	25	Vout	38	Ground
13	Vin	26	Vout		

*Viout is a current monitoring pin. 31 mV / A, ±15% tolerance.

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

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