# **Amphenol SOCAPEX**

# PS SERIES PSMDPCBU50P50-X PCB DC/DC POWER SUPPLY

- Miniature
- High density
- Single output

#### **Special Features**

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Remote sense compensation

## **Electrical Specifications**

<u>DC Input</u> Normal range: 18 to 48 V<sub>DC</sub>

Not damaged (may restart) when exposed to surges IAW MIL-STD-1275A (100 V / 50 ms) and IAW MIL-STD-704A (80 V / 0.1 s)

<u>Output Voltage Regulation</u> Better than or equal to  $\pm 1\%$ (low to high line voltage, no load to full load, -55 °C to +85 °C at baseplate).

**Ripple and Noise** 

drops significantly.

Less than 50 mV<sub>p-p</sub>, typical

(max. 1%) without external

capacitance. When connected

to system capacitance ripple

Remote Inhibit (On/Off)

44444444 0

- <u>Fixed</u> switching freq. (250
- kHz)
- External sync. capability
- <u>EMI</u> filters included
- Conduction cooled

#### DC Output

Voltage range: 1.8 to 50 V<sub>DC</sub> Current: 0 to 10 A Power: 0 to 50 W

#### **Efficiency**

Typically 70% to 80%, depending on output voltage.

Up to 83% @ 28  $V_{DC}$  output, 28  $V_{DC}$  input, full load and room temperature.

#### Load Transient Overshoot and undershoot

Output resistance at load change of 50%-100% is 30-70 m $\Omega$  (depending on output voltage). Output back to steady stated within 300-500  $\mu$ s Non-latching protections:
Overload/short-circuit

- $\circ$  Over-voltage
- $\circ$  Over temperature

#### **Isolation**

- DC/DC converter

- Up to 50W

Input to Output: 200  $V_{\text{DC}}$  Input to Case: 200  $V_{\text{DC}}$  Output to Case: 100  $V_{\text{DC}}$ 

#### <u>EMC</u>

Complies with MIL-STD-1686 Indirect 4 kV ESD.

Designed to meet<sup>\*</sup> MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

# <u>Turn on Transient</u>

No voltage overshoot during power on.

 $^{*}$  Compliance achieved with 5 $\mu$ H LISN, shielded harness and static resistive load.

# **Markets & Applications**



Military (Airborne, ground-fix, shipboard)



### Protections <sup>+</sup>

#### Input

- Under-Voltage Lockout Unit may shut down if input voltage drops below 16.5 ± 1 V.
- Over-Voltage Lockout Unit may shut down if input voltage rises above 52 ± 2 V.

#### Output

- Over-Voltage Protection Passive transorb, chosen at 120% ± 10% of nominal voltage.
- Current Limiting Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

#### General

• Over temperature protection: Shutdown if base plate temperature rises above +105 °C  $\pm$  5 °C. Auto recovery when baseplate cools down to +95 °C ± 5 °C.

### **Environmental Conditions**

#### Designed to meet MIL-STD-810F

# **Temperature**

Methods 501.4 & 502.4 Operating: -55 °C to +85 °C (at baseplate) Storage: -55 °C to +125 °C (ambient)

### Altitude

Method 500.4 Procedures I – Storage/Air transport: up to 70,000 ft. (non-operational) Procedure II – Operation/Air Carriage: up to 70,000 ft. (operational)

#### <u>Humidity</u>

Method 507.4 Up to 95% RH

### Reliability

150,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at +85°C baseplate, Ground fixed conditions.

<sup>+</sup> Thresholds and protections can be modified / removed – please consult factory.

#### Vibration Method 514.5

Procedure I 14.76 grms 20-2000 Hz for 500 seconds at each of 3 perpendicular axes.

Shock

Method 516.5 Procedure I 50 g / 11 ms terminal peak half-sine shock pulse

Salt Foq Method 509.4

۲

# Efficiency vs. Load

• 5 V<sub>DC</sub> output:



• 28 VDC output:



Ó

### Pin Assignment

Connector type: RM272-020-322-2900 or eq.

Mates with: RM242-020-571-5900 (crimp removable contacts) or RM242-020-241-5900

Pin #	Function	Polarity		Pin
1	INPUT	+		11
2	INPUT	+		12
3	INPUT RTN	-		13
4	INHIBIT	+	0	14
5	SYNC	+		15
6	SENSE RTN	-	$\oslash$	16
7	OUTPUT RTN	-		17
8	OUTPUT RTN	-		18
9	OUTPUT	+		19
10	OUTPUT	+		20

(solder cup contacts) or eq.

	Pin #	Function	Polarity	
	11	INPUT	+	•
	12	INPUT RTN	-	
	13	INPUT RTN	-	
	14	N.C.		
	15	N.C.		
	16	SENSE	+	$\oslash$
	17	OUTPUT RTN	-	
	18	OUTPUT RTN	_	
	19	OUTPUT	+	•
	20	OUTPUT	+	•



**<u>Note</u>**: All output pins with the same function should be connected together for best performance.

### **Functions and Signals**

#### **INHIBIT signal**

The INHIBIT signal is used to turn the power supply ON and OFF.

TTL "1" or OPEN – will turn on the power supply. (For normal operation leave the signal not connected.) TTL "0" – will turn off the power supply.

Grounding for signal is VIN RTN pin.

#### SYNC signal

The SYNC signal is used to allow the power supply frequency to sync with the system frequency.

SYNC frequency can be 250 ± 10 kHz, TTL level.

When left open, the power supply will work at  $250 \pm 10$  kHz (internal clock).

This signal is referenced to VIN RTN pin.

#### **SENSE**

The SENSE is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load's terminals).

The use of remote sense has a limit of voltage dropout between converter's output and load terminals of

2-10% of voltage output.

When not used connect SENSE to VOUT and SENSE RTN to VOUT RTN.

### Typical Connection Diagram



Ò

### **Outline Drawing**



## Heat Dissipation Surface



۲

### **Standard Variants**

Part number	Input configuration	Output configuration
PSMDPCBU50P50-0	18-48 V <sub>DC</sub>	5 V <sub>DC</sub> / 8 A
PSMDPCBU50P50-1	18-48 V <sub>DC</sub>	12 V <sub>DC</sub> / 3 A
PSMDPCBU50P50-2	18-48 V <sub>DC</sub>	15 V <sub>DC</sub> / 2.5 A
PSMDPCBU50P50-3	18-48 V <sub>DC</sub>	24 V <sub>DC</sub> / 2 A
PSMDPCBU50P50-4	18-48 V <sub>DC</sub>	28 V <sub>DC</sub> / 1.8 A
PSMDPCBU50P50-5	18-48 V <sub>DC</sub>	48 V <sub>DC</sub> / 0.8 A
PSMDPCBU50P50-6	18-50 V <sub>DC</sub>	24 V <sub>DC</sub> / 2 A

\* This Product is REACH Compliant.

\* The aluminum parts comprising this converter are chromate conversion coated per MIL-DTL-5541F, Type II CLASS 1A or eq.

Note: Specifications are subject to change without prior notice by the manufacturer.