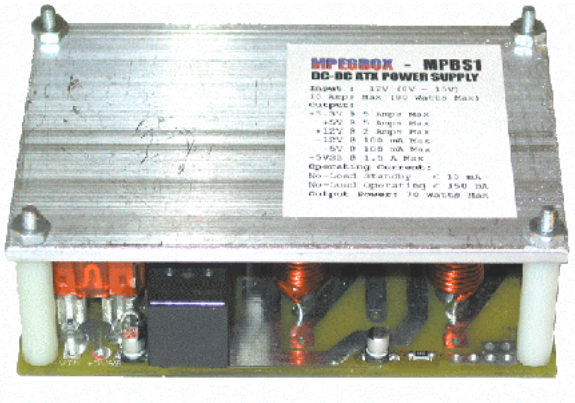
MPBS1 12V DC-DC Power Supply Rev B

Features

- Small and Compact Form Factor
- High Efficiency
- Low Input Voltage:< 8 Volts
- Compatible with Low Power ATX Motherboards
- Soft Power On (PS_ON)
- Power Good (PS_OK)
- 6 Power Supply Outputs
- 70 Watts Max Output Power
- Input Fuse Protection
- Reverse Voltage Protection
- Over Current Protection
- Large Heat Dissipation Area
- Low Standby Current: < 6 mA
- Easy Mounting
- Power LED
- Compatable with Selected Pentium, Celeron, and VIA Processors

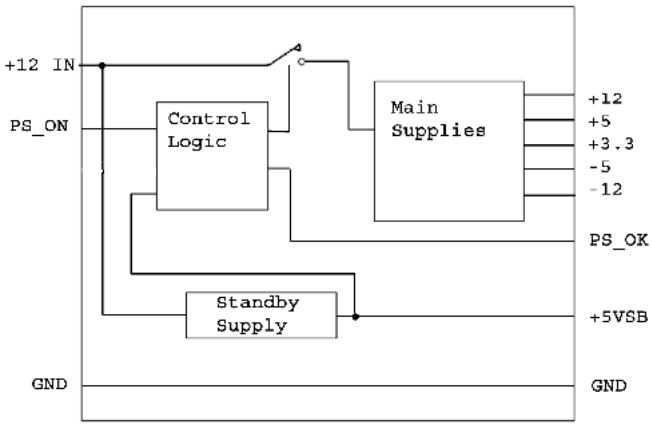


*Connectors Not Shown in Photo

Applications

- Automotive MP3 Computer
- Automotive GPS Navigation
- Embedded Automotive Systems
- Embedded Marine Systems
- 12v Battery-Based Computer Systems
- Solar Computer Systems

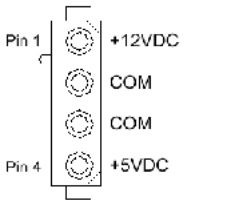
Functional Diagram



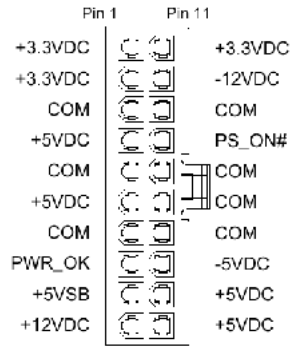
Discription

The MPBS1 12-Volt DC-DC Power Supply is a small form-factor power conversion device. With an unregulated 12-volt input range, it provides output voltages of +12, +5, +3.3, -5, -12, and +5Vstandby. The aluminum open frame design allows the unit to be very compact and versatile. Featuring high power density, the unit can deliver up to 70 Watts of output power. The MPBS1 DC-DC Power supply is compatible with many low power commercially available MicroATX, FlexATX, and Micro-ITX Motherboards. Incorporating signals such as PS_ON and PS_OK, the behavior of the MPBS1 compared to a line powered AC-DC ATX power supply is identical.

Connector Overview



Peripheral Power Connector



Main Power Connector

Mechanical

1.25”	(31.8mm)	High
3.8”	(96.5mm)	Wide
2.5”	(63.5mm)	Deep

The MPBS1 is assembled with an open-frame aluminum chassis. The heatsink is made of machined aluminum stock and is 1/8 inch thick on the top and ¼ inch thick on the back.

1.5 inch (38.1mm) 4-40 screws hold the supply together and allow for mounting to thin metal, plastic, or other material.

When mounting the MPBS1 be sure to take into account that the bottom of the supply has exposed traces. To accommodate the small size of this power conversion unit, a metal chassis was substituted for an open frame design. Care needs to be exercised when integrating this unit into your system. No conductive material should come in contact with the bottom of the supply.

Thermal

Heat generating ICs in this supply are mounted to an aluminum heatsink. Thermal compound and insoluating spacers are used to maximize heat transfer and proper electrical insolation. The high current ICs in this design exibit an operating junction temperature range of –40C to +125C

As a general rule, the supply should be cooled properly such that it is not too hot to touch. The optional CPU fan connector can be used to attach a fan directly to the MPBS1 or in the proxcimity such to provide air flow over the heatsink.

Typical Applications

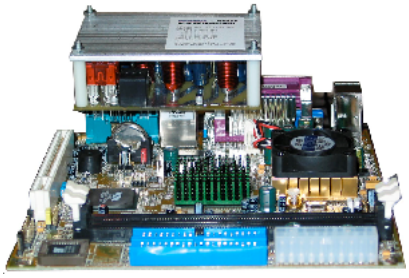
Because most non-P4 Systems get the power for the CPU from the 5 volts, the MPBS1 is limited in the range of CPUs it will support. The MPBS1 will supply 25 Watts typical and 30 Watts peak to the system. As a general rule, the processor should draw no more than 20 peak Watts.

Automotive/Plexiglas Application

Solar Power Application

Marine Application

Book PC Power Supply Application (ATX compliant)



Mirco-ITX Application (VIA EPIA C3 800 MHz)

Size comparison (BookPC, MPBS1, Micro-ITX)

Electrical Specification

	Min	Typ	Max	Units	Discription
DC Input:					
+Vin	8	12	15	V	Nominal Input voltage
	5	6	7	mA	Quiescent Standby Current (main supplies off)
	60	70	80	mA	Quiescent Operating No-Load Current
	0.05	-	10	A	Operating Input Current Range
DC Outputs:					
+12	11.4	12	12.6	V	Nominal Output Voltage
	0	2	3	A	Operating Current Range
			100	mV	Pk-Pk Ripple
+5	4.75	5	5.25	V	Nominal Output Voltage
	0	5	6	A	Operating Current Range
			50	mV	Pk-Pk Ripple
+3.3	3.14	3.3	3.47	V	Nominal Output Voltage
	0	5	6	A	Operating Current Range
			50	mV	Pk-Pk Ripple
-5	-4.75	-5	-5.25	V	Nominal Output Voltage
	0	-50	-100	mA	Operating Current Range
			10	mV	Pk-Pk Ripple
-12	-11.4	-12	-12.6	V	Nominal Output Voltage
	0	-50	-100	mA	Operating Current Range
			10	mV	Pk-Pk Ripple
+5Vsb	4.75	5	5.25	V	Nominal Output Voltage
	0	1	1.5	A	Operating Current Range
			10	mV	Pk-Pk Ripple
PS_ON	3.5	-	-	V	High InputVoltage
	-	-	1.4	A	Low Input Voltage
	-	0.5	1	mA	Low Level Sink Current
PS_OK	4.75	5	5.25	V	High Output Voltage
	-	0	0.1	V	Low Output Voltage
	-	-	10	mA	Output Current