

# DSX12V

## High Current Automotive 12V to 12V DC-DC Power Supply

### General Description

The DSX12V is a high performance DC-to-DC switching power supply that operates from input voltages above, below, or equal to the output voltage. The constant frequency current mode architecture operates at a frequency of 400kHz. With a wide 6V to 24V operating input range and seamless transfers between operating modes, the DSX12V is ideal for automotive, telecom and battery-powered systems. The DSX12V can provide up to 12 amps sustained (15 amps peak) while maintaining an extremely high efficiency. The output is short circuit protected and over-voltage protected as well.

The DSX12V is the highest efficiency and highest current 12V-12V DC-DC Power Supply available on the market in this small form-factor.

**Product Photo**  
**Figure 1:**



### Features

- Wide Input Voltage Range (6-24V)
- Extremely Efficient (>95%)
- High Output Current (12A Typical)
- Small Profile (1.9" x 3.5" x 0.75")
- 0.25" Spade Faston Connectors
- On/Off Jumper Header
- Fuse Protection
- Reverse Voltage Protection
- Load Dump Input Protection (Over Voltage)
- Short Circuit Protection
- Power On LED
- Very Low standby power (100 uA Typical)
- Does not "Brown Out" during Engine Crank
- Fast Transient Response
- 12V Fan Connector
- Adjustable Output

### Applications

- Automotive Personal Computer Power Supply
- Automotive MP3 Player Power Supply
- Automotive Display Power Supply
- Battery Powered Applications
- OEM Applications
- Solar Powered Systems
- Telematics/GPS Systems

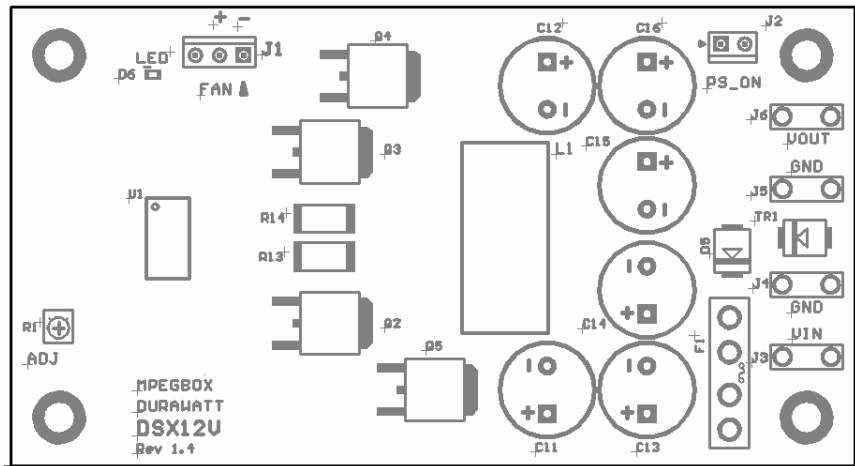
### Operational Overview:

There are two 0.25" Faston connectors for the input connection to a 12-volt source (VIN J3 and GND J4). There are also two 0.25" Faston connectors for the output connections (VOUT J6 and GND J5). Heavy gauge wires should be used to minimize voltage drop on the input wires during high output loads and transients. An automotive mini-fuse is provided at F1. The On/Off connector (PS\_ON J2) is required to turn on and off the supply. The supply is turned **on** by "shorting" the two pins of J2 together, or pulling pin 1 of J2 below 0.5 volts. PS\_ON is an active low signal meaning pulling it to ground turns on the supply. A standard 0.1" shunt jumper can be used for the on/off function. If the J2 jumper is left connected the supply will still turn on properly when voltage at VIN is applied. A red LED (D6) indicates the power supply is on. There is a three-pin 12-volt fan connector at J1 that should be used under high load applications to keep DSX12V from overheating (only available on versions that provide 12 volts at the output). As a rule of thumb, the supply should not get too hot to touch. A trim-pot at P1 (ADJ) is used to fine-tune the output voltage. Please see the table below for adjustment ranges.

**The DSX12V is NOT Recommended to be used with 12V DC-AC inverters as these devices typically have transient current spikes greater than 20 amps.**

## Specifications:

The top view of the DSX12V  
Figure 2:



## User Connections:

J1:FAN	J2:PS_ON
J3:VIN	J4:GND
J5:GND	J6:VOUT
R1:ADJ	F1:Fuse

## Mechanical Specification (Table 1):

Board Dimensions	3.5"L X 1.9"W X 0.75"H	The circuit board is 0.062" thick.
Product Weight	45g / 0.1lbs	
Mounting Holes	4 - 0.125" grounded holes	Mounting holes are located at (0.20",0.20"),(3.30",0.20"),(0.20",1.70") (3.30",1.70")
Power Terminals	0.052"Thick, 0.250"Wide Lug	Lugs use standard off the shelf mating connectors. (VIN, GND, GND, VOUT)
2-pin On/Off Header	1x2, 0.1" Spacing	J2: Pin1 = PS_On, Pin2 = GND
3-pin Fan Header	1x3, 0.1" Spacing	J1: Pin1 = GND, Pin2 = +12V, Pin3=N/C
Operating Temperature	-40C to 85C	As a general rule, the DSX12V should not get too hot to touch. If too hot, use a fan to keep it cool.

## Notes:

Use caution when connecting metal mounting hardware to the DSX12V. Do not short out connections around mounting holes.

## Electrical Specification (Table 2):

Input (VIN)	<b>12V</b>	Output (VOUT)	<b>12V</b>
Rated Output Power	<b>144W</b>	Nominal Output Current	<b>12A</b>
Operating Input Range	8-16V	Peak Output Current	15A
Current Limit	15A	Output Adjustable Range	<i>Special Order</i>
Fuse	15A/32V Mini-Auto	Output Regulation	2%
Input Protection Clamp	24V	Output Ripple	100mV p-p Max
Standby Current (OFF)	< 120uA (PS_ON > 0.5V)	Efficiency	>95% Typical
Standby Current (No Load)	< 40mA (PS_ON < 0.4V)		

## Notes:

The DSX12V will operate over a larger input range (6-24V), but the output current has to be de-rated accordingly as the supply becomes less efficient and generates more heat.

Always use caution when working with automotive power systems. Use this product at your own risk.