EMERAL TECH

24Vin 12Vout 50 Watts

Technical Specification
EMV50B24T12

High Efficiency Converter

50 Watts

Description

The EMV50B24T12 brick DC/DC converters is a hgih density, high density, wide input voltage range, high reliability DC/DC converter. The high efficiency DC/DC converters offer a fully enclosed size only is 1.18 X 1.10 X 0.30 inch (30 X 28 X 8 mm) and current levels that exceed all other same size of power converters on the market. With a wide input voltage range of 9-36 VDC , It offer an output 12 VDC. The model features input undervoltage lockout, output overvoltage protection, overtemperature protection, output overload protection and mutil-function.The fully enclosed, encapsulated construction with aluminum heat spreader design achieves efficient heat transfer with no hot spots. The use of patent-pending hybrid planar transformer technology and other patent-pending design concepts facilitate maximum power delivery with the highest efficiency of up to 97%. The converters combine creative design concepts with highly derated power devices to achieve very high reliability, high performance and low cost solution to systems designers requiring maximum power in small footprints.

Applications

- GPS, Comput notobook, Workstation.
- Distributed Power Architecture
- Data Communications, Telecommunications
- Wireless Communications
- Servers, Switches and Data Storage
- Semiconductor Test Equipment
- Aerospace, Aerocraft
- Complex power system
- Portable weaponry

Features

- Wide input voltage range: 9-36V
- 12V output models
- Input surge withstand: 50V < 100ms
- Ripple & Noise (20Mhz BW) <100 mv (pk-pk) typical
- Remote On/Off control
- Output adjustment +/-10% range
- Output Regulation: +/- 0.2% no load to full load
- Output overcurrent and overvoltage protection
- Over Temperature protection
- Input Under voltage protection
- Power density: 100W/Cubic inch
- Efficiency: 97%
- No minimum load required
- Low profile of only 0.30 inch (8mm).
- -40°C to +85°C ambient operation
- MTBF of 1,000,000 hours @ 50°C (Bellcore))

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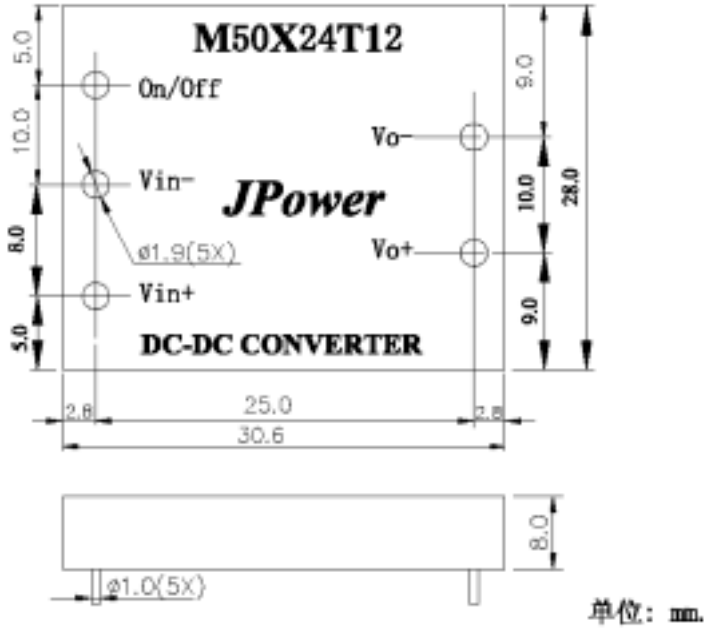
Part Number and Selection Information

Model	Input			Output		Efficiency
	Voltage (Volts)	Current (A)		Voltage	Current	75% Load
Part Number	Nominal	No load	Full load	(Volts)	(Amps)	(%)
EMV50B24T12	24	0.045	2.2	12	4	> 96

Consult factory for other output voltage configurations

Outline Information and Pin-out

Function	Function
Vin +	Positive input voltage
On/Off	TTL input to turn converter on and off, referenced to Vin(-), with internal pull up
Vin -	Negative input voltage
Vout -	Negative output voltage
Vout +	Positive output voltage



Notes:

1). All dimensions are in inches [mm]
0.039" [1.0mm],

2). Pin material: Brass

3). Pin finish: Tin/Lead plated

4). Baseplate material: Aluminum.

5).Outline dimension:
1.18"(30)x1.1"(28)x0.3"(8)

6). Max. Weight: 15g

30mm X 28mm X 8mm

Electrical Specification

Typical operating condition at Ta=25ºC, Vin=24V unless otherwise noted.

PARAMETER	NOTES	MIN	TYP	MAX	UNIT
Absolute maximum rating					
Input voltage		0		32	V
Output current		-40		100	°C
Operating case temperature		-55		150	°C
Storage temperature				95	%
Input characteristics					
Operating input voltage range		9	24	32	V
Turn on voltage threshold		8.2	8.5	8.8	V
Turn off voltage threshold		8.0	8.3	8.5	V
Maximum input current	Maximum load, 24Vin		29	30	A
Off converter input current	24Vin			2.0	mA
Undervoltage turn-on		8.7			
Undervoltage turn-off				0	mA
Overvoltage turn-off/on				33	mA
Output characteristics					
Output voltage	12V Output	11.90	12.00	12.10	V
Output current	12V Output	0		4	A
Output ripple and noise	12V output, 75% full load, 24Vin, 20Mz bandwidth,		100	150	mV(pk-pk)
Output over voltage protection	12V Output	13.8	14.2	14.6	V
Output over current protection	100% full load	110	120	130	%
Over-temperature protection	At 100◗C baseplate temperature	100	105	110	°C
Temperature coefficient				±0.05	%/°C
Capacitive Load	All Output			2,000	µF
Short circuit protection	No Limit				
Output dynamic characteristics					
Startup time	5% 到 95% Output Voltage		3	8	ms
Start up overshoot				200	mV
Transient Peak	Over Voltage (Peak)			300	mV
Transient recovery time	Recover time			250	uS
Efficiency					
Full Load efficiency	24V input, 50W output		96		%
Operation Environment					
Operating temperature		-55		125	C
Ambient air pressure		Vacuum		Normal	
Humidity				95%	
Mechanical shock & vibration	Per customer specification				
Feature Characteristics					
Switching frequency		380	400	420	KHz
ON/OFF control (Positive logic) Converter On Converter Off		 2V		0.8V	 V V
Calculated MTBF	Bellcore @ 50ºC		1,000,000		Hrs
weight				15	gram

Basic operation and functions

Input Power (Pin Vin+, Vin-)

Input power Vin(+) must be connected to Positive input voltage Pin Vin+; Input power common Vin(-) must be connected to Negative input voltage Pin Vin-.

Output Power (Pin Vo+, Vo-)

Output power Vout(+) must be connected to Positive output voltage Pin Vo+; Output power Vout(-) must be connected to Negative output voltage Pin GND.

On/Off (Pin On/Off)

Control input pin to control on/off of the converter unit. Positive logic. On when voltage on this pin is greater than 2.5V and off when below 1.2V.