DC/DC Power Module
User Manual

BDM11-100WXBXU



Chengdu Ebyte Electronic Technology Co.,Ltd.

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Product Features

- ✧ Voltage step-down type: Synchronous buck-boost
- ✧ Package shape: DIP
- ✧ Temperature range: -40℃ to +85℃
- ✧ Peak efficiency: 97.1%
- ✧ Input range: 5-60VDC
- ✧ Application fields: Industrial equipment, instruments & meters,RF communication,railway transit, transportation, intelligent street lights, smart home, intelligent switches



Product Selection Table

Model Number	Input voltage (VDC)	Output			Efficiency % Max
	Nominal value (Range value)	Power (W)	Voltage (VDC)	Current (mA) Max./Min	
BDM11-100W12B12U	24(5-60)	100	12	8.4	96.9
BDM11-100W24B24U	24(5-60)	100	twenty four	4.2	97.1

Input Parameters

Project	Working conditions			Minimum	Typical value	Maximum	Unit
Input current	BDM11-100W12B12U	24VIN	12VOut	--	4388	--	mA
	BDM11-100W24B24U	24VIN	24VOut	--	4369	--	
Output ripple noise	BDM11-100W12B12U			40	--	240	mV
	BDM11-100W24B24U			40	--	480	
Start-up voltage	BDM11-100W12B12U			5	--	5.5	VDC
	BDM11-100W24B24U			5	--	5.5	
Input low voltage protection	Not.						
Input filter type	C						
External input fuse	It is recommended to select a current rating of 1.5-3 times the actual rated input current, with slow tripping capability.						

Output Parameters

Project	Working conditions	Minimum	Typical value	Maximum	Unit

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Output voltage accuracy	0%-100% load	--	± 2	± 3.5	%
Voltage regulation	Fully loaded	--	±0.3	±0.5	
Load regulation rate	5% - 100% load (balanced load)	--	±1	±2	
Ripple noise	20MHz bandwidth, 100% load An external 470uF solid capacitor is required.	40	--	10 0	mVp-p
Temperature drift coefficient	BDM11-100WXBXU	--	±0.05	--	%/℃
Overvoltage protection		Not.			
Overcurrent protection		110~ 18 0%Io ; Self-recovery			
Short circuit protection		Sustainable , self-recovering			

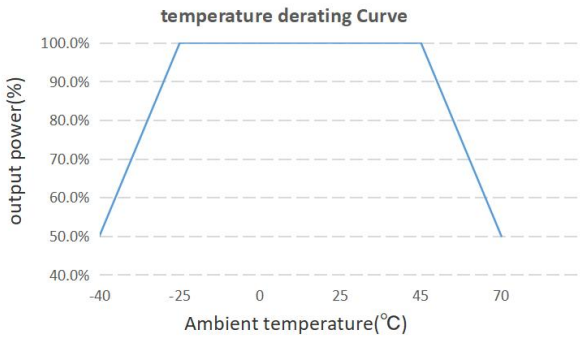
General Features

Project	Working conditions	Minimum	Typical value	Maximum	Unit
Switching frequency	BDM11-100WXBXU	--	245	--	KHz
Ambient temperature	See product reduction design	-40	25	+40	℃
Storage temperature		-40	25	+85	℃
Storage humidity		--	--	95	%RH

Mechanical Specifications

Size	50.8×25.4×10.8mm;
Weight	36g
Cooling methods	Natural air cooling

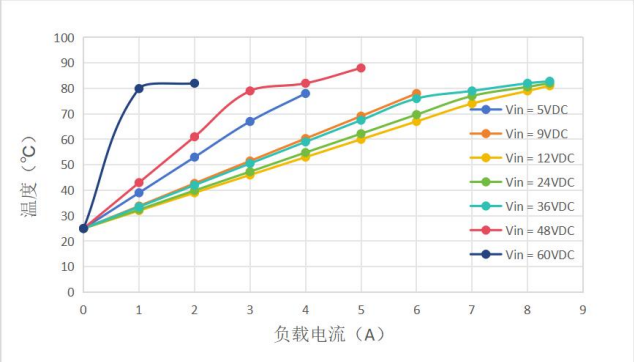
Product reduction design



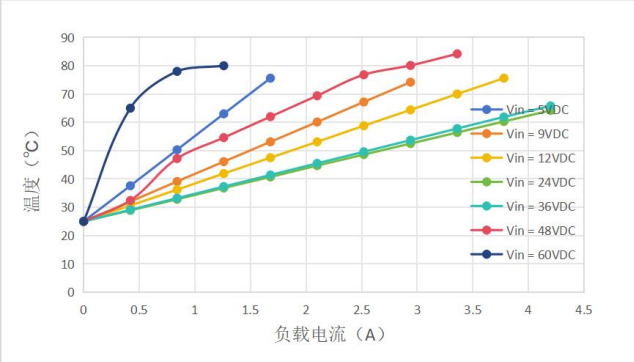
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Module temperature rise test



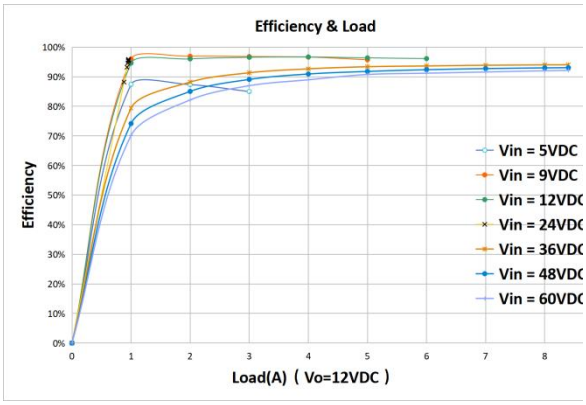
BDM11-100W12B12U



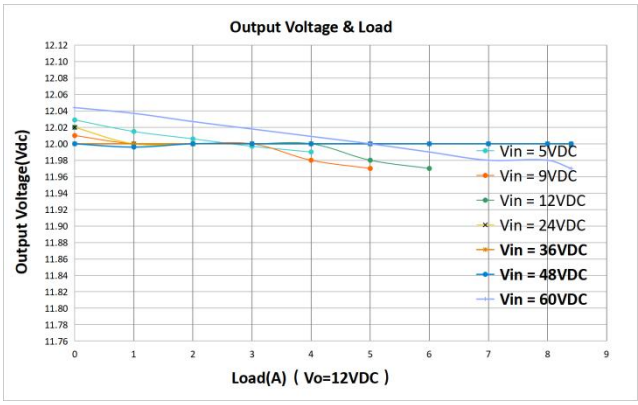
BDM11-100W12B12U

This test was conducted using an HT-9815 temperature tester. At room temperature, the thermocouple probe was placed firmly against the top of the module, and the module was continuously powered on and under load for 30 minutes. Data was then collected and recorded. Due to environmental and operational factors, the test data is for reference only. Actual product operating conditions should be determined based on on-site measurements.

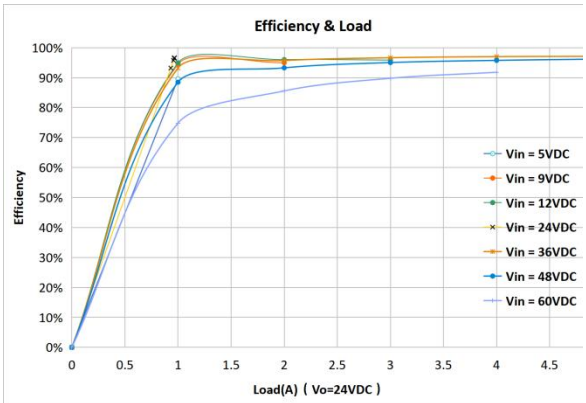
Product Feature Curve Chart



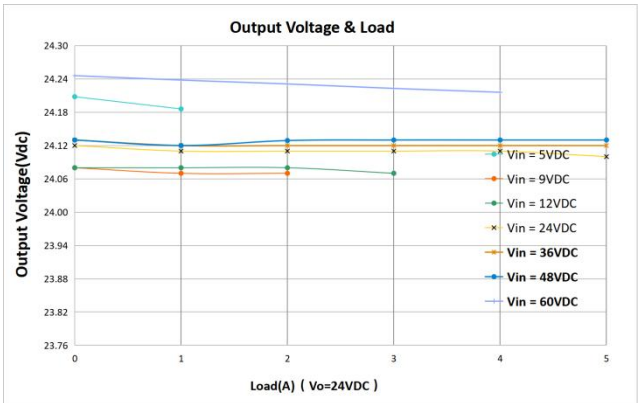
BDM11-100W12B12U Efficiency & Load



BDM11-100W12B12U Output Voltage & Load



BDM11-100W24B24U Efficiency & Load



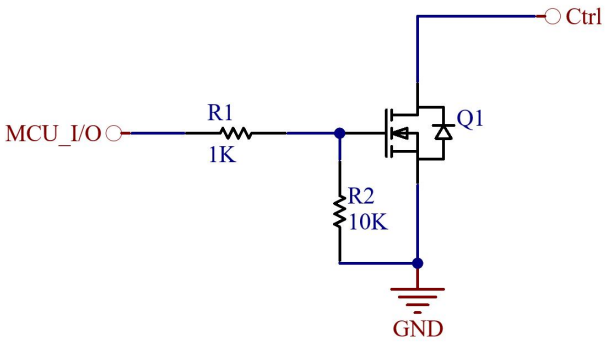
BDM11-100W24B24U Output Voltage & Load

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Ctrl pin usage instructions

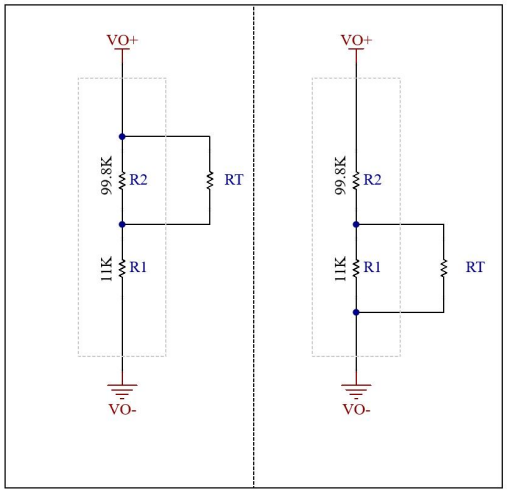
Ctrl pin is used to control the output of the module. This power supply module is positive logic. Floating the pin enables the output (this pin can be left floating if this function is not needed), and pulling it down to ground disables the output.



MCU control application circuit diagram

Trim pin usage and parameter calculation

BDM11-100W12B12U

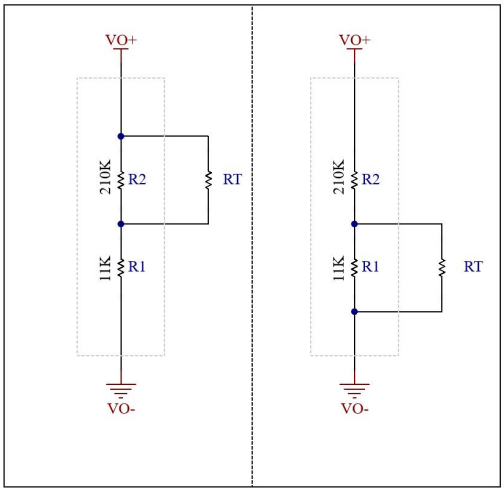


Vo (typical value)	Rt (external resistance)	Output maximum error range
10.8	744.27K (Trim-Vo+)	10.692-10.908
11.04	937.7K (Trim-Vo+)	10.93-11.15
11.28	1246.15K (Trim-Vo+)	11.167-11.393
11.52	1815.59K (Trim-Vo+)	11.405-11.635
11.76	3230.21K (Trim-Vo+)	11.642-11.878
12.087	NC	11.966-12.208
12.24	785.05K (Trim-Vo-)	12.118-12.362
12.48	304.93K (Trim-Vo-)	12.355-12.605
12.72	189.33K (Trim-Vo-)	12.593-12.847
12.96	137.28K (Trim-Vo-)	12.830-13.090
13.2	107.63 (Trim-Vo-)	13.068-13.332

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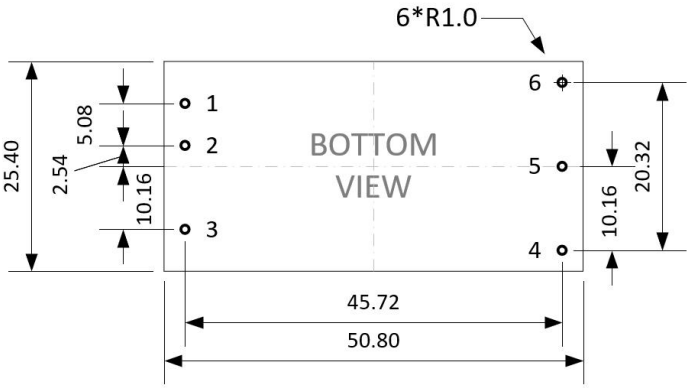
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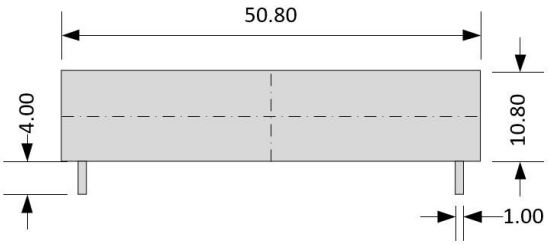
BDM11-100W24B24U



Vo (typical value)	Rt (external resistance)	Output maximum error range
21.6	1707.39K (Trim-Vo+)	21.384-21.816
22.08	2160.97K(Trim-Vo+)	21.859-22.301
22.56	2895.63K(Trim-Vo+)	22.334-22.786
23.04	4290K(Trim-Vo+)	22.81-23.27
23.52	7956.67K(Trim-Vo+)	23.285-23.755
24.109	NC	23.868-24.35
24.48	676.5K(Trim-Vo-)	24.237-24.726
24.96	296.11K(Trim-Vo-)	24.711-25.21
25.44	189.33K(Trim-Vo-)	25.186-25.694
25.92	139.12K(Trim-Vo-)	25.661-26.18
26.4	110K (Trim-Vo-)	26.136-26.664

Size and recommended layout diagram





General dimensional tolerance: ±1 mm

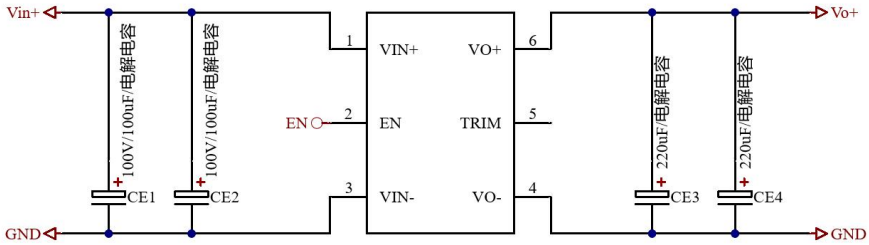
Pin Name	Function	Direction	Full Function Description
1	Vin+	Input	Positive power input terminal. Do not exceed 60 VDC input voltage; overvoltage causes permanent module damage.
2	Vin-	Input	Negative power input terminal (power ground).
3	Ctrl	Input	Positive logic enable pin: floating = output enable; short to Vin- = output disable.
4	Trim	Input	External resistor pin for fine adjustment of output voltage level.
5	VO-	Output	Negative power output terminal.
6	VO+	Output	Positive power output terminal.

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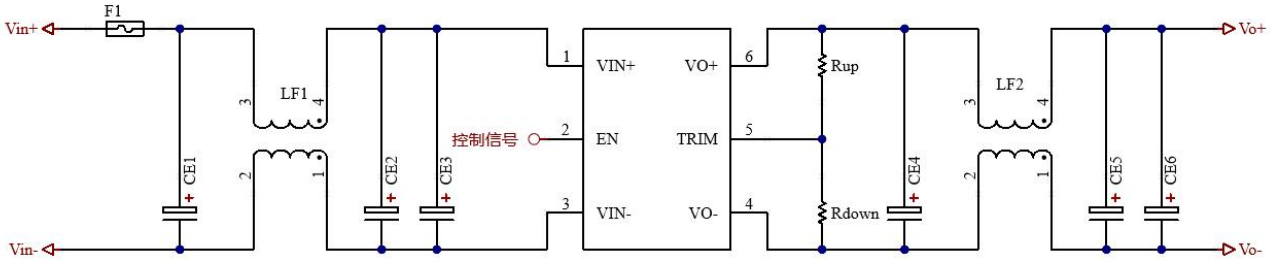
Recommended application circuit

Typical application circuit reference



A typical application circuit is shown in the figure above . The input and output capacitors can be adjusted according to the figure or the actual application.

EMC Application Circuit Reference



The EMC application circuit is shown in the diagram above. This series of modules requires external filtering components to meet EMI requirements . The input filter capacitor is configured to be around 200uF. Due to the internal resistance and heat generation of the capacitor, it is recommended to use multiple small-capacity capacitors connected in parallel . If the input voltage is close to 5V, it is recommended to shorten the trace distance and increase the wire diameter at the input terminal to avoid voltage drop during startup that could cause the module to enter undervoltage protection mode and affect its operation.

Device symbol	Device Description	Remark
F1	Fuse	Select based on 1.5-3 times the actual input current.
CE1, CE2, CE3	100V/100uF electrolytic capacitor	Low ESR electrolytic capacitors
LF1	The rated current of 1mH is not less than 15 A.	Select the appropriate inductance based on the actual input current; the inductance should not be too large. DCR ⩽ 5mΩ
Rup, Rdown	Reserved output voltage fine-tuning resistor	-
CE4, CE5, CE6	For 12V output, a 16V/220uF high-frequency, low-resistance electrolytic capacitor is recommended; for 24V output, a 35V/220uF high-frequency, low-resistance electrolytic capacitor is recommended.	The number of capacitors can be increased or decreased depending on the actual effect; however, attention should be paid to the capacitor's withstand voltage.
LF2	500uH rated current not less than 10 A	If the ripple does not need to be less than 2%, it can be omitted .

Note:

1. The inductors and capacitors in the above recommended circuits should be selected and used based on the final rectification.

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2. When routing the output power lines, ensure that the output current passes through each output capacitor in sequence. Do not suspend the output capacitors outside the output power routing path , as this may affect the performance .

File Version History

Document Version	Modifications	Release date	Modified by
V1.0	First release	2026/6/10	LYX
V1.1	Add typical application references, Trim pinouts, and typical application circuit descriptions.	2026/6/1 1	LYX

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