Fy1300-9.0V-1712

Imax:750mA，Vin:3.3V~20V，1.7cm*1.2cm，Buck-Boost

➤ Description

The Fy1300-9.0V module adopts Buck-Boost DC-DC scheme, which can provide 9.0V power output under a wide voltage input of **3.3V-20V**, with a maximum output current of 750mA, low static current of 200uA @ (Vin=15.0V), and a working frequency of up to 1.2MHz. The module has a small size, high stability, high cost-effectiveness, and a sinking gold and half hole process, which is both beautiful and convenient for SMT. It can also be inserted into bread boards or hole boards, making it convenient for DIY players to use.

➤ Application Scenarios

Microcontroller power system, CNC power supply, communication equipment, toys, aircraft models, home appliances, security monitoring, field collection, street lights, DIY production, etc. Before using the module, please refer to the "Precautions" section to avoid damaging the module due to incorrect operations.

➤ Electrical Characteristics

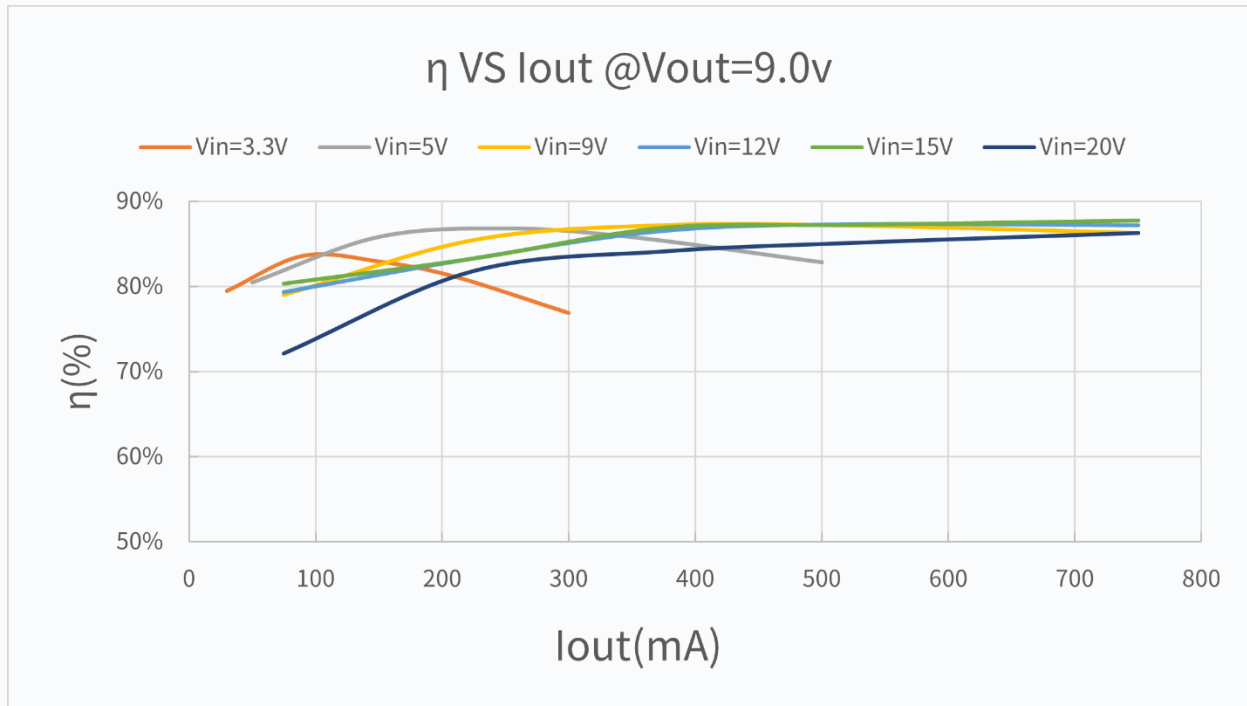| PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	Vin	_	3.3	_	20[①]	V
Output Voltage	Vout	Iout=0 mA	8.90	9.00	9.10	V
Output Current	Iout1	Vin=2.5V	_	_	500	mA
	Iout2	20V≥Vin≥3.3V	_	_	750	mA
Efficiency	η	_	_	_	87	%

[①] The recommended working voltage is less than 20V, and the maximum input voltage of the module is 24V. Once exceeded, the module is easily burned.

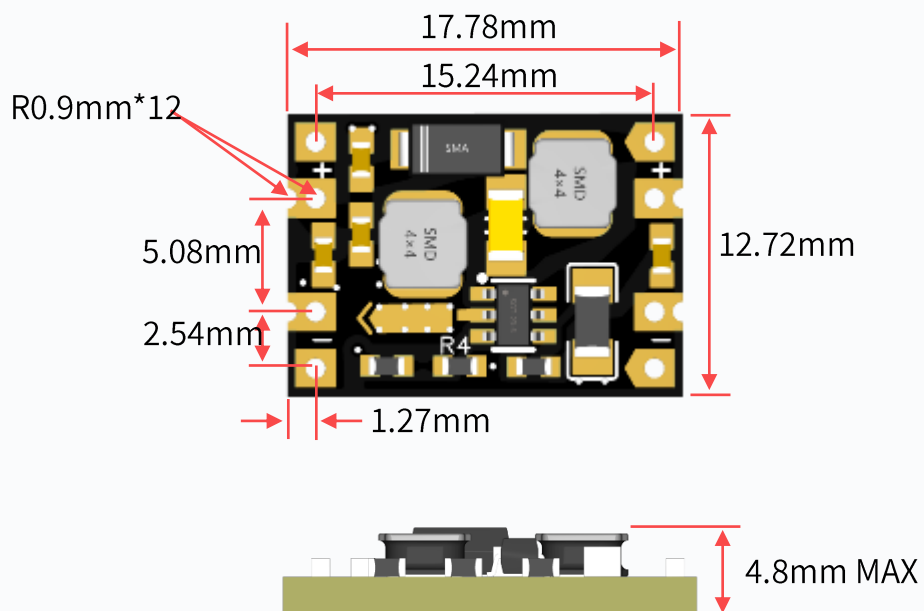| PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Ripple Voltage[2]	Vpp1	Vin=3.3V / Iout=150 mA	_	45	-	mV
	Vpp2	Vin=3.3V / Iout=300 mA	_	70	-	mV
	Vpp3	Vin=5.0V / Iout=250 mA	_	65	_	mV
	Vpp4	Vin=5.0V / Iout=500 mA	_	90	_	mV
	Vpp5	20V≥Vin≥5.0V / Iout=375 mA	_	80	_	mV
	Vpp6	20V≥Vin≥5.0V / Iout=750 mA	_	100	_	mV
QuiescentCurrent	Id1	Vin=3.3V / Iout=0mA	_	420	460	uA
	Id2	Vin=5.0V / Iout=0mA	_	310	350	uA
	Id3	Vin=9.0V / Iout=0mA	_	210	250	uA
	Id4	20V≥Vin>9.0V / Iout=0mA	_	200	230	uA
Input Current	Iin	20V≥Vin≥2.5V	_	_	1.2	A
Load Regulation	_	|Vout(full load)- Vout(no load)|*100% /Vout(no load)	_	_	2	%
Line Regulation	_	|Vout(max)- Vout(min)|[3] *100% /Vout(no load)	_	_	1	%
Temperature Rise	ΔT	@25 °C room temperature without external heat dissipation Run at full load for 10 minutes	_	_	50	°C
Storage Temperature	_	_	-10	_	+50	°C
Operating Temperature	_	_	-40	_	+105	°C

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[2] Using an oscilloscope for testing, use a grounding spring to measure the output terminal. During the test, turn on the 20MHz bandwidth display with a time base of 20ms or 10ms, and measure its peak to peak value.

[3] Vout(max)：When fully loaded, adjust the input voltage to slowly change within the full voltage range, and record the maximum output voltage value. Similarly, Vout (min) is the minimum output voltage value recorded.
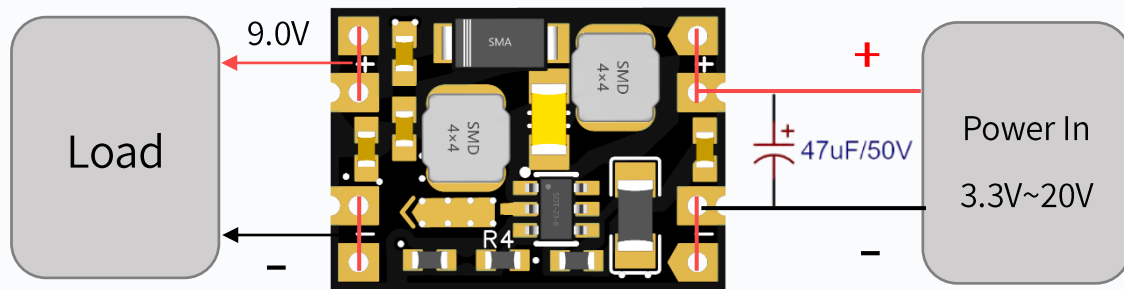
➢ Efficiency VS Iout

η VS Iout @Vout=9.0v

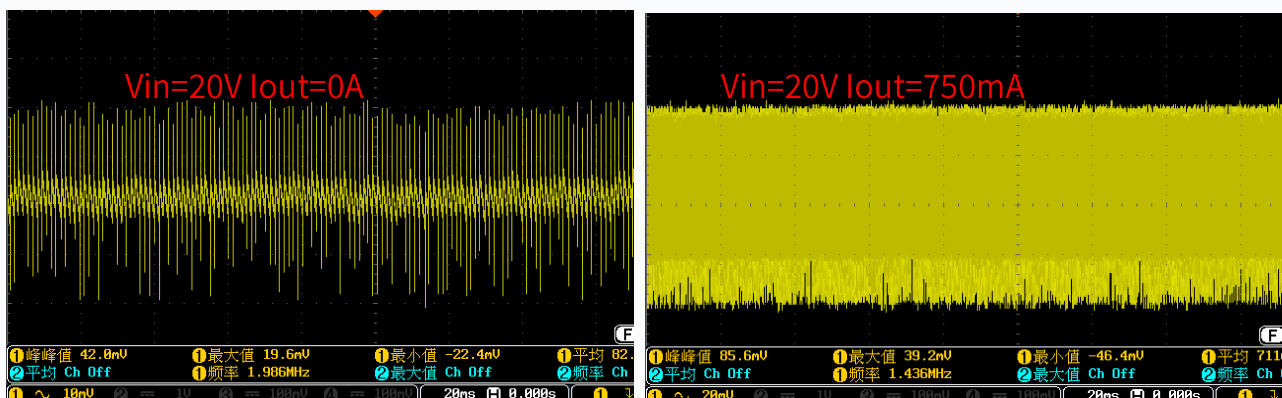— Vin=3.3V   — Vin=5V   — Vin=9V   — Vin=12V   — Vin=15V   — Vin=20V

η(%) vs Iout(mA)

➢ Size

R0.9mm*12

17.78mm

15.24mm

12.72mm

5.08mm

2.54mm

1.27mm

4.8mm MAX

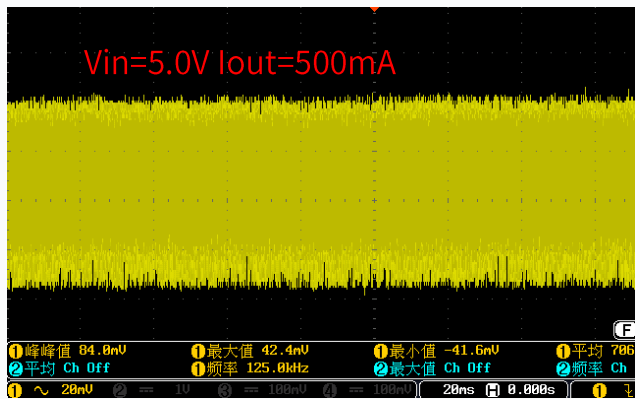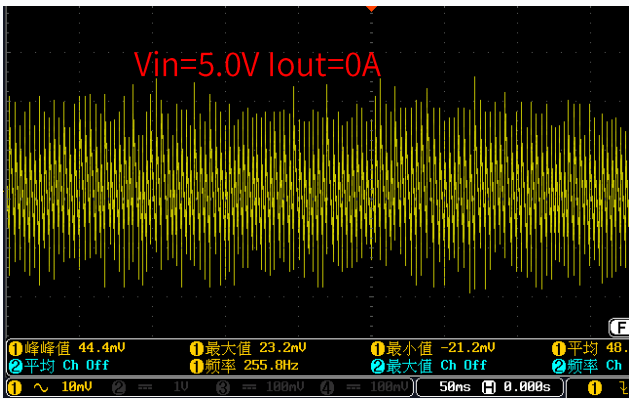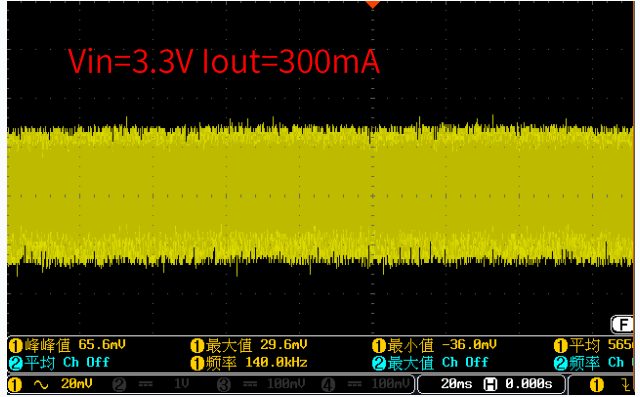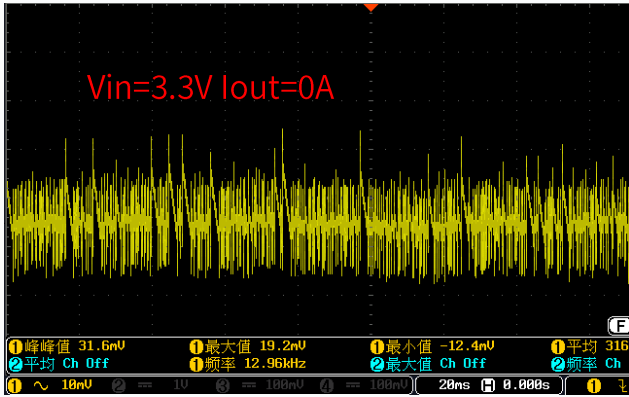➢ Typical applications

➢ Precautions

In actual use, improper power on operation may lead to module burnout. The reason for this is that the voltage at the moment of power on is too high, such as hot insertion, live contact with the access module, and switch on/off connection, which can all cause such problems. If the power quality is poor or the subsequent load is large, it can also exacerbate such situations.
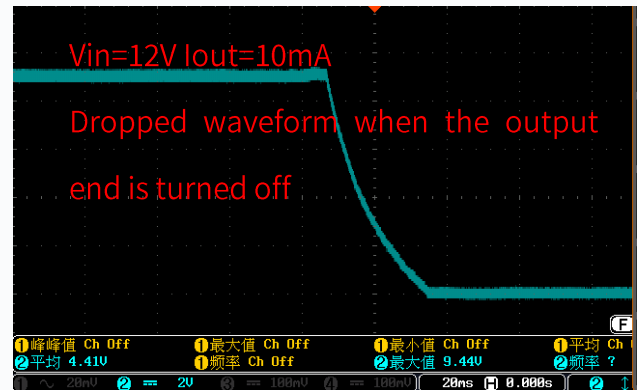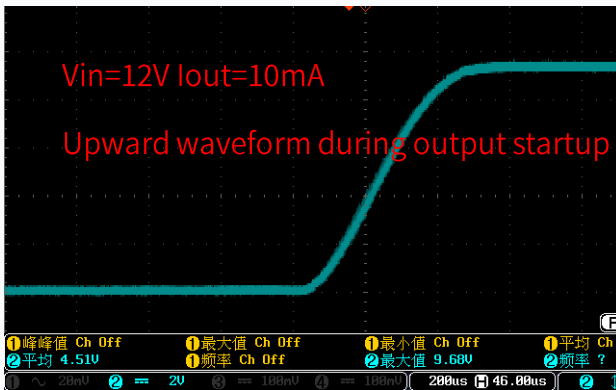
To effectively avoid such problems, it is necessary to limit the voltage during power on.

✧ Method 1 : Parallel connection of a 47uF electrolytic capacitor at the power input terminal.

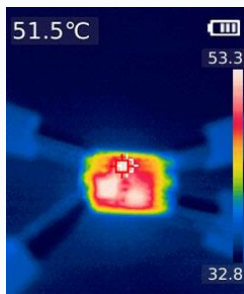✧ Method 2 : Add self recovery fuses and TVS devices to the power input terminal.
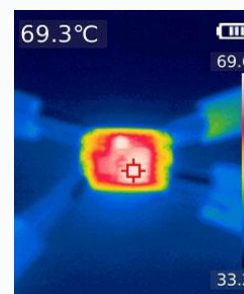
➢ Test Waveform ---Vout=9.0V

Vin=3.3V Iout=0A

Vin=3.3V Iout=300mA

Vin=5.0V Iout=0A

Vin=5.0V Iout=500mA

Vin=12.0V Iout=0A

Vin=12.0V Iout=750mA

Vin=15.0V Iout=0A

Vin=15.0V Iout=750mA

Vin=12V Iout=10mA

Upward waveform during output startup

Vin=12V Iout=10mA

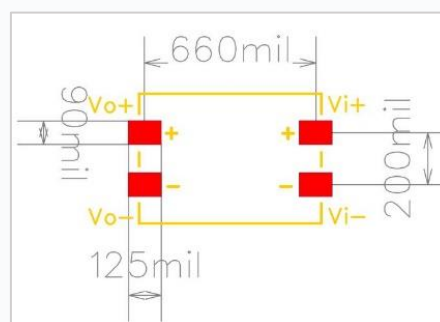Dropped waveform when the output end is turned off
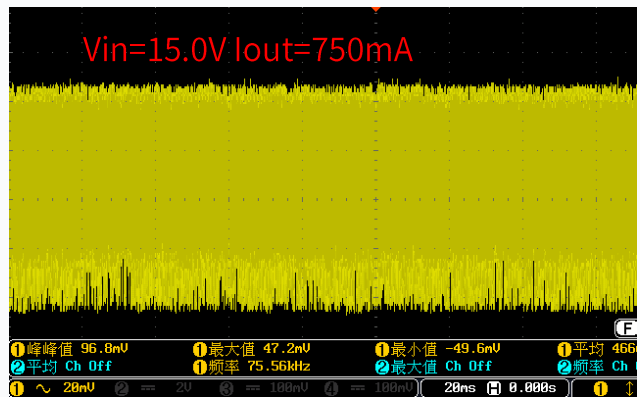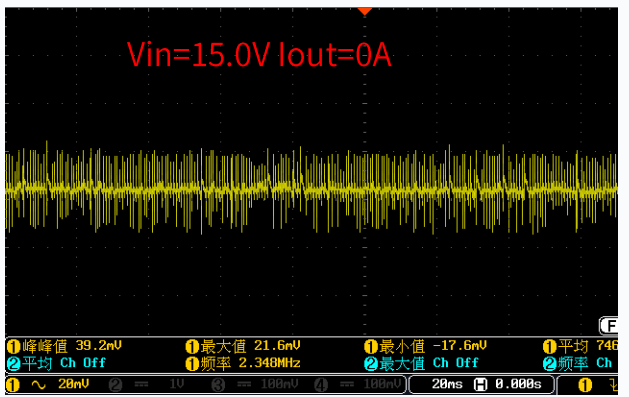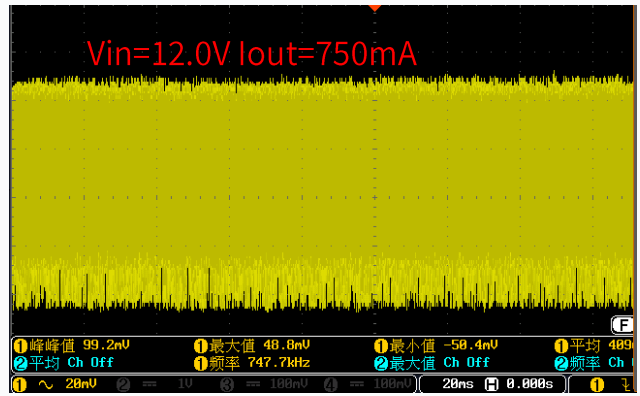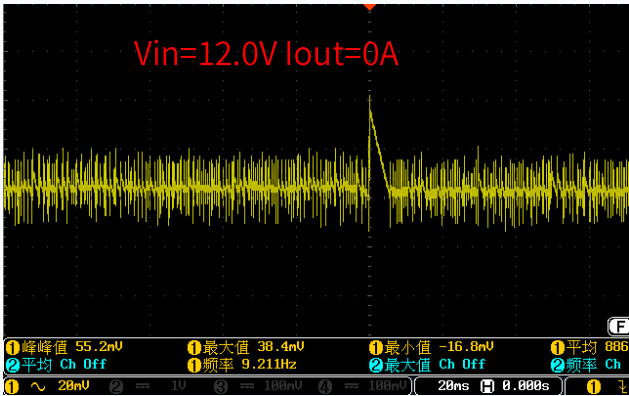
➢ Thermal imaging image

Vo = 9V / Vi = 3V3 / Io = 300mA

Vo = 9V / Vi = 20V / Io = 750mA

➢ PCB packaging reference

➢ Product Selection

Fy1300-3.3V-1712
Fy1300-4.5V-1712[④]
Fy1300-5.0V-1712
Fy1300-6.2V-1712[⑤]
Fy1300-9.0V-1712
Fy1300-12.0V-1712

The pin sizes of the above models are fully compatible and can be replaced with each other.

[④] Customized version for 3.3V LDO

[⑤] Customized version for 5.0V LDO