

Ultra wide input voltage, Constant voltage, Constant current isolated & regulated single output DC/DC converter



Patent Protection RoHS

FEATURES

- Ultra wide input voltage range (4:1)
- Constant voltage, Constant current output
- Isolation Voltage: 4.2K VDC
- Output short-circuit protection function
- Remote control function
- Output voltage can be adjusted (Trim)
- Operating temperature range: -40°C to +65°C

URF2428LP-700-NC products with 9-36VDC input voltage, 4200VDC isolation, 700mA Constant current output, which make them widely applied in super capacitor and rechargeable lithium batteries fields.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (%Min./Typ.) @ Full Load
		Output Voltage (VDC)	Constant current (mA)	
URF2428LP-700-NC	24 (9-36)	0 - 28.5	700	86/88

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (95% load / no-load)	Nominal input voltage	--	898/12	919/20	mA
Surge Voltage (1sec. max.)		-0.7	--	50	VDC
Starting Voltage		--	--	9	
Input Filter		Pi filter			
Ctrl*	Module switch on	Ctrl suspended or connected to TTL high level (3.5-12VDC)			
	Module switch off	Ctrl pin connected to GND or low level (0-1.2VDC)			
	Ta=25°C, nominal input voltage, Input current when switched off	--	1.5	2	mA
Hot Plug		Unavailable			

Note: *The voltage of Ctrl pin is relative to input pin GND.

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output current Accuracy	Ta=25°C, 0% - 95%Vo output voltage range	--	±3	±5	%
	0% - 95%Vo output voltage range and operating temperature range	--	±5	±8	
Output Voltage Accuracy	input voltage rang, Io<665mA	--	±1	±3	
Current Line Regulation	Output current constant, the input voltage change from low to high	--	±0.8	±1.5	
Current load Regulation	Output current constant, nominal input voltage, 10%-95% output voltage	--	±1	±2	
Voltage line Regulation	Io=665mA, input voltage range	--	±0.2	±0.5	
Voltage load Regulation	24VDC input, 5%-95% load	--	±0.5	±1	
Ripple & Noise ^①	20MHz bandwidth, 5%-95% load	--	80	200	mV p-p
Trim	Minimum regulated voltage value	25.5	--	28.5	VDC
	Maximum regulated voltage value	28.5	--	31.5	
Output maximum withstand capacity of reverse input voltage ^②		28.5	--	31.5	
Output leakage current	Module stop working, output plus 28.5V reverse voltage	--	0.5	1	mA
Short circuit Protection		Constant current output 700mA, continuous, self-recovery			

Note: ①Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

② Negative reverse input voltage is not allowed. Eg: +Vo connected to negative reverse input voltage, or 0V connected to positive reverse input voltage.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	4200	--	--	VDC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	500	--	pF
Storage Humidity	Non-condensing	5	--	95	RH%
Operating Temperature	See Fig. 1	-40	--	+65	°C
Storage Temperature		-55	--	+125	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	+300	
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			
Switching Frequency	PWM Mode	--	350	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Dimension	51.50*26.50*12.00mm
Weight	25g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMS	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
-----	-----	-----------------	--------------	------------------

Product Characteristic Curve

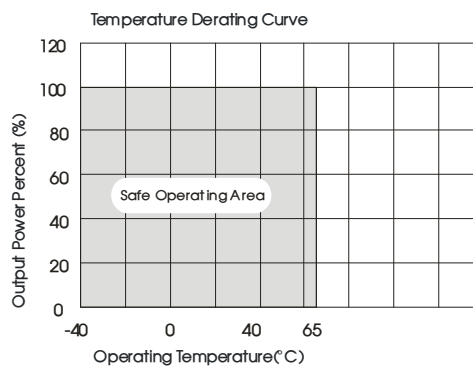


Fig. 1

Design Reference

1. Recommended circuit

All the DC/DC converters of this series are tested according to the recommended circuit (see Fig. 2) before delivery.

If a further decrease of the input and output ripple is required, properly increase the input & output of additional capacitors Cin and Cout or select capacitors of low equivalent impedance, and ensure the capacitance should be lower than the max. capacitive load of the product.



Fig. 2

Cin (μF)	Cout (μF)
100	100

2.Trim

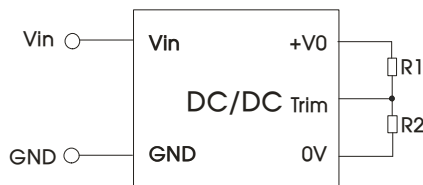


Fig. 3

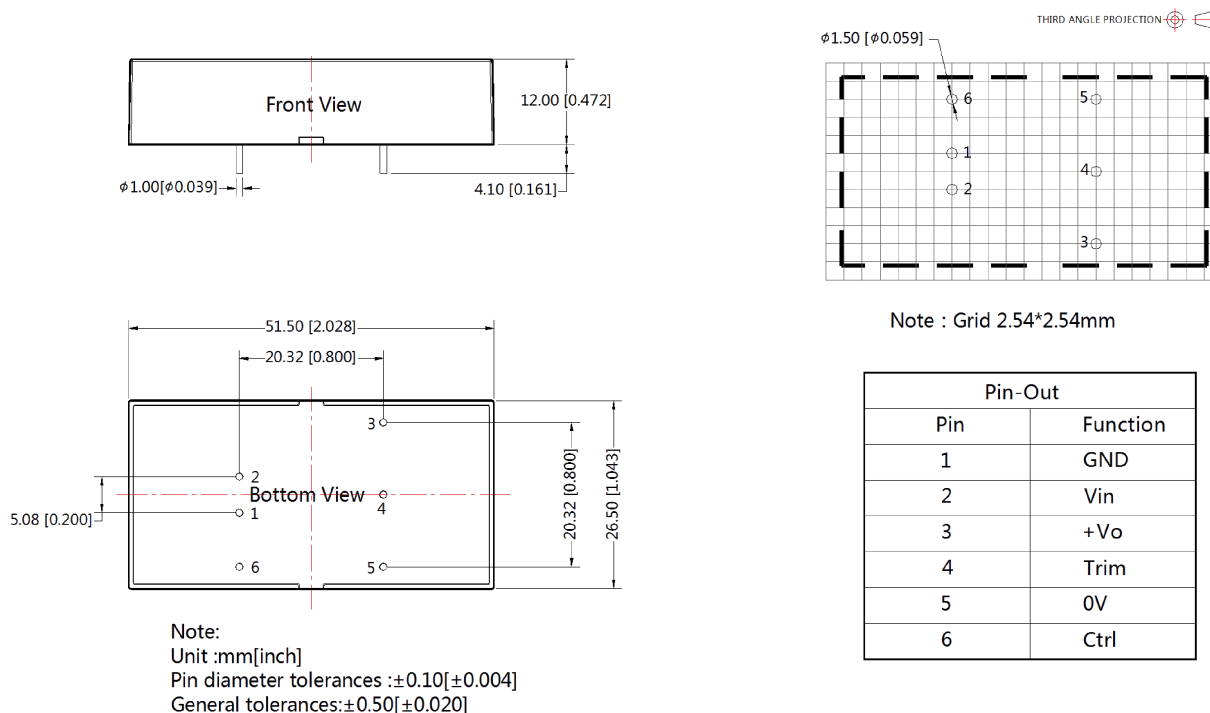
R1(kΩ)	Regulate after Vo(V)	R2(kΩ)	Regulate front Vo(V)
0	13.00	0	32.10
10	13.86	10	31.63
51	16.59	51	30.53
100	18.75	100	29.91
270	22.51	270	29.17
510	24.62	510	28.86
750	25.60	750	28.73
1000	26.20	1000	28.66
2200	27.23	2200	28.53
2700	27.50	2700	28.51

Output voltage (Vo) can be set by selecting suitable value of R1, R2 in Figure 3 according to the table above. To trim down Vo, only R1 need to be connected. To trim up Vo, only R2 is needed. If no need to adjust Vo, Trim pin should be left unconnected.

3.It is not allowed to connect modules output in parallel to enlarge the power

4.For more information please find DC-DC converter application notes on www.mornsun-power.com

Horizontal Package Dimensions and Recommended Layout



Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58210039;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on Company's corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Specifications are subject to change without prior notice.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850-8801 Fax: 86-20-38601272 E-mail: info@mornsun.cn