FEATURES

- Input voltage upto 90Vdc
- Efficiency up to 93%
- Pin compatible with LMxx linear regulators (SIP-3)
- Excellent line/load regulation
- Operating temperature range - 40°C to +85°C
- No-load input current as low as 1.5mA
- Continuous short circuit protection
- EN 62368-1

RS PRO Wide input switching regulator

2369849, 2369851, 2369854

RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

Non-isolated POL converter series with a 10:1 input voltage range provides a high efficiency drop-in replacement for LMxx Linear regulators. With an input range of up to 90V, this regulated, low loss, cost effective range of switching regulators provides a suitable solution for many battery and distributed power applications.

General Specifications

Model	Non Isolated ultra-wide input 500mA DC-DC converter
Mounting Type	PCB
MTBF	MIL-HDBK-217F@25°C > 2,000,000 hrs
Applications	Battery and distributed power systems

RS Stock#	Input Voltage (Vdc)	Output Voltage	Output Current (mA) Max	Full Load Efficiency % (Typ) Vin Min./Vin Max.	Capacitive Load (µF) Max.
2369849	9…90 Vdc	5V	500mA	87/75	100
2369851	18…90 Vdc	12V	500mA	91/83	
2369854	36…90 Vdc	24V	300mA	93/85	
Note: * For input voltage exceeding 80 VDC, an input capacitor of 22uF/100V is required.					

Input Specifications

Input Specification					
Item	Operating Conditions	Min.	Typ.	Max.	Unit
No-load Input Current	Nominal input voltage	-	-	1.5	mA
Reverse Polarity at Input		Avoid / Not protected			
Input Filter		Capacitance filter			

Output Specifications

Output Specification						
Item	Operating Conditions		Min	Typ.	Max	Unit
Voltage Accuracy	10%-100%, input voltage range	3.3V output	-	±3.5	±4.5	%
		Others	-	±2	±3	
Linear Regulation	Full load, input voltage range	3.3, 5 and 6.5V outputs	-	±0.6	±1.5	
		12 and 15V outputs	-	±0.6	±2.0	
		24V output	-	±1.2	±2.5	
Load Regulation	Nominal input voltage,10% -100% load		-	±1.0	±2.0	
Ripple & Noise*	20MHz bandwidth, nominal input voltage, full load		-	40	80	mVp-p
Temperature Coefficient	Operating temperature -40℃ to +85℃		-	-	±0.03	%/℃
Transient Response Deviation	Nominal input voltage, 25% load step change		-	±0.4	±1.5	%
Transient Recovery Time	Nominal input voltage, 25% load step change		-	0.2	1	ms
Short-circuit Protection	Nominal input voltage		Continuous, self-recovery			
Note: * The “parallel cable” method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information;						

General Specifications

Item	Operating Conditions	Min	Typ	Max.	Unit
Operating Temperature	See Fig.1, Fig.2.	-40	-	+85	℃
Storage Temperature		-55	-	+125	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	-	-	+300	
Storage Humidity	Non-condensing	5	-	95	%RH
Switching Frequency*	Full load, nominal input voltage	-	300	-	kHz
MTBF	MIL-HDBK-217F@25℃	2000	-	-	k hours
Note: *Different output voltage with different switching frequency.					

EMC Specifications

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 6-② for recommended circuit)	
	RE	CISPR32/EN55032 CLASS B (see Fig. 6-② for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±4kV perf.	Criteria B
	RS	IEC/EN 61000-4-3 10V/m perf.	Criteria B
	EFT	IEC/EN 61000-4-4 100kHz ±1kV (see Fig. 6-① for recommended circuit) perf.	Criteria B
	Surge	IEC/EN 61000-4-5 line to line ±1kV (see Fig. 6-① for recommended circuit) perf.	Criteria B
	CS	IEC/EN 61000-4-6 3Vr.m.s perf.	Criteria B

Typical Performance Curves

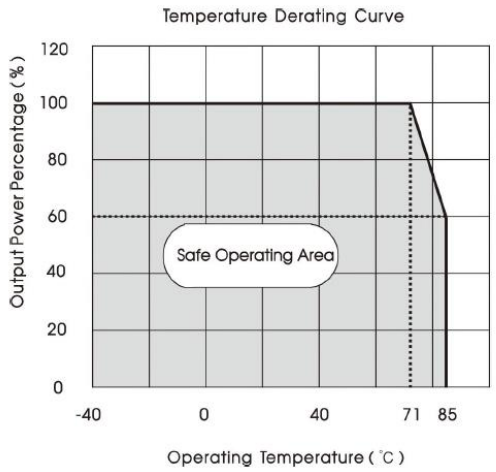


Fig 1. 3.3V, 5V,6.5V,12V,15V

24V (Vin=36V~60V)

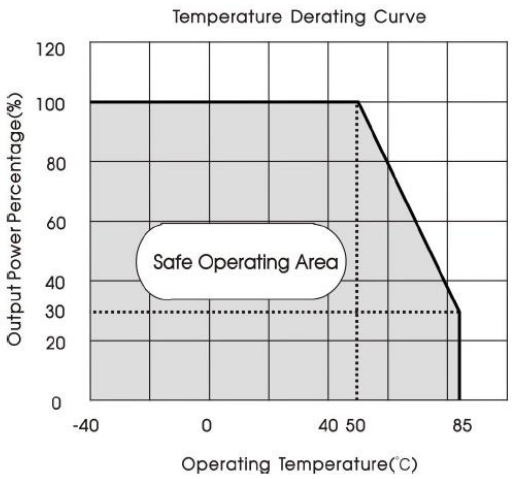


Fig2 24V (Vin≥60V)

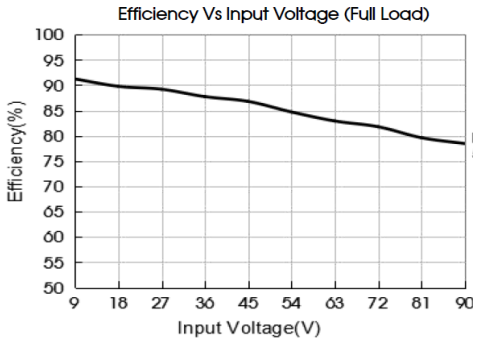


Fig.3

5V output

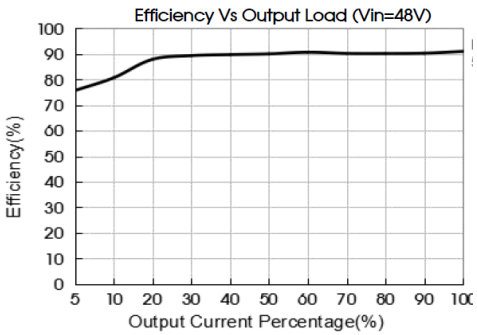


Fig.4

5V output

Design Reference

Typical application

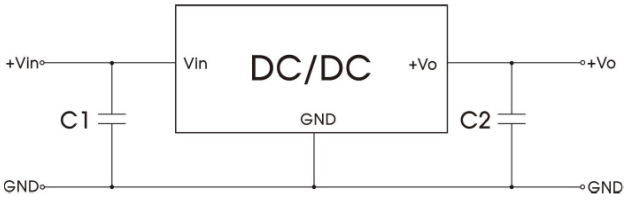


Fig. 5

Output	C1 (ceramic capacitor)	C2 (ceramic capacitor)
3.3 VDC	10μF/10V	22μF/10V
5 VDC		22μF/10V
12 VDC		22μF/10V
24 VDC		10μF/10V

Table 1

Notes:
1. The required C1 and C2 capacitors must be connected as close as possible to the terminals of the module.
2. Refer to Table 1 for C1 and C2 capacitor values. For certain applications, increased values and/or tantalum or low ESR electrolytic capacitors may also be used instead.
3. Converter cannot be used for hot swap and with output in parallel.

EMC solution-recommended circuit

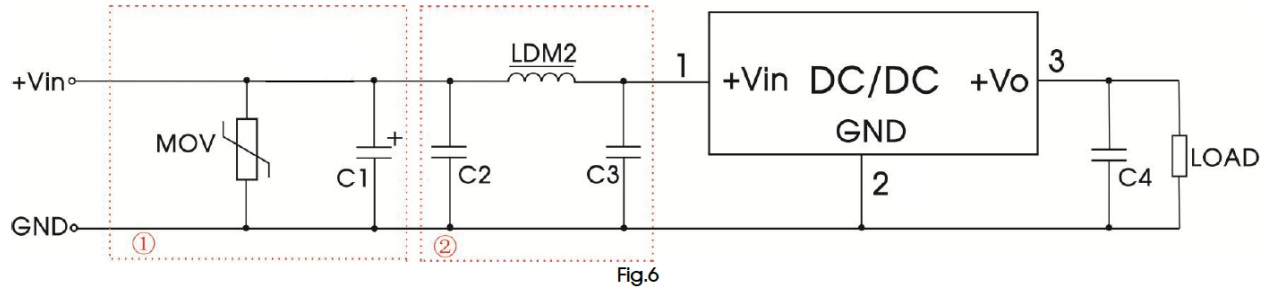


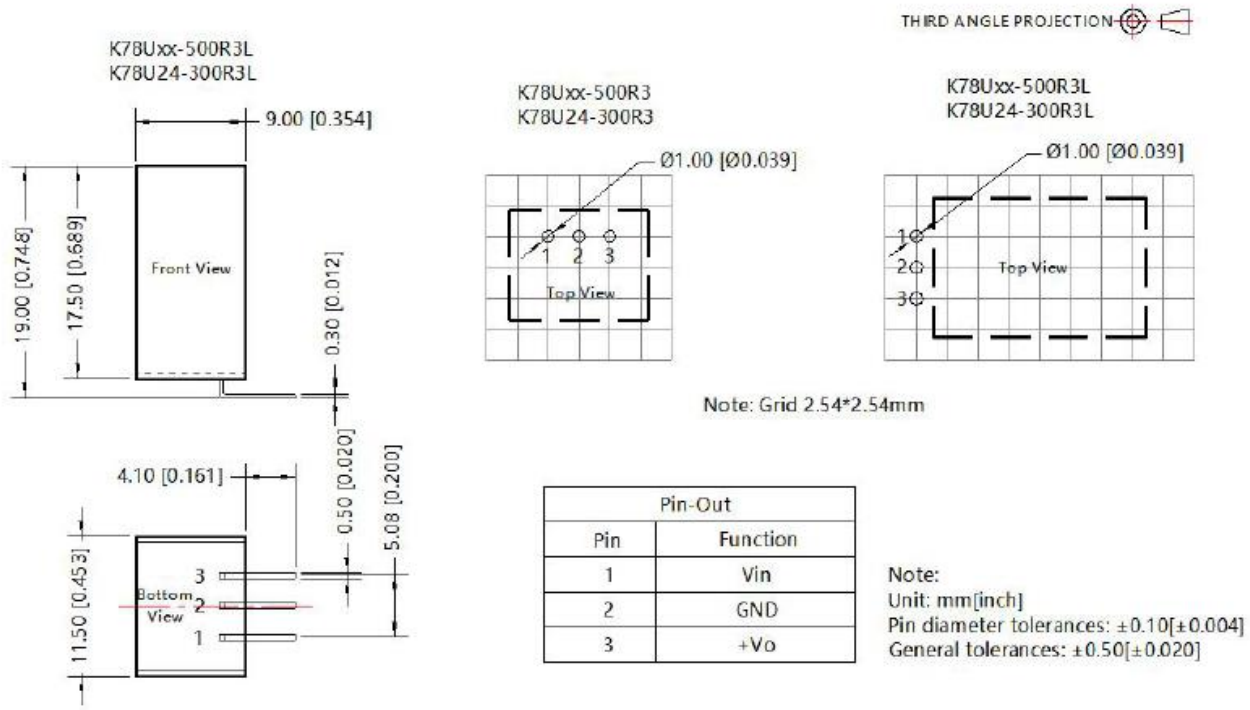
Fig.6

MOV	C1	C2	LDM2	C3	C4
S20K30	680μF /100V	4.7μF/100V	120μH	4.7μF/100V	10μF/50V

Mechanical Specifications

Case material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	19.00 x 11.50 x 9.00 mm
Weight	3.8g(typ.)
Cooling Method	Free air convection

Dimensions and recommended layout



Pin-Out	
Pin	Function
1	Vin
2	GND
3	+Vo

Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

Additional Information

Custom Tariff Number	85044090

1. The maximum capacitive load offered were tested at nominal input voltage and full load
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal
3. All index testing methods in this datasheet are based on our company corporate standards
4. Products are related to laws and regulations: see "Features" and "EMC"
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations.