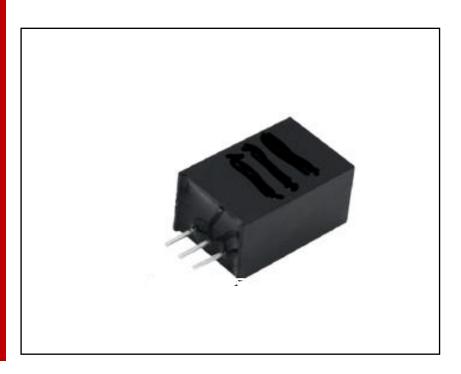


FEATURES

- 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

2369847, 2369848, 2369850, 2369852, 2369853, 2369855



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.

Isolated DC-DC converters



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

Input Voltage (Vdc)	Output Voltage	Output Current (mA) Max	Full Load Efficiency % (Typ) Vin Min./Vin Max.	Capacitive Load (µF) Max.
990 Vdc	3.3V	500mA	82/69	
990 Vdc	5V	500mA	87/75	
990 Vdc	6.5V	500mA	91/78	100
1890 Vdc	12V	500mA	91/83	100
2090 Vdc	15V	500mA	93/84	
3690 Vdc	24V	300mA	93/85	
	990 Vdc 990 Vdc 990 Vdc 1890 Vdc 2090 Vdc 3690 Vdc	990 Vdc 3.3V 990 Vdc 5V 990 Vdc 6.5V 1890 Vdc 12V 2090 Vdc 15V 3690 Vdc 24V	Input Voltage (Vdc) Output Voltage Current (mA) Max 990 Vdc 3.3V 500mA 990 Vdc 5V 500mA 990 Vdc 6.5V 500mA 1890 Vdc 12V 500mA 2090 Vdc 15V 500mA 3690 Vdc 24V 300mA	Input Voltage (Vdc) Output Voltage Current (mA) Max Efficiency % (Typ) Vin Min./Vin Max. 990 Vdc 3.3V 500mA 82/69 990 Vdc 5V 500mA 87/75 990 Vdc 6.5V 500mA 91/78 1890 Vdc 12V 500mA 91/83 2090 Vdc 15V 500mA 93/84

Note: * For input voltage exceeding 80 VDC, an input capacitor of 22uF/100V is required.

Input Specifications

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

Isolated DC-DC converters



Output Specifications

Output Specification						
Item	Operating Condition	Operating Conditions		Тур.	Max	Unit
	10%-100%, input	3.3V output	-	±3.5	±4.5	%
Voltage Accuracy	voltage range	Others	-	±2	±3	
Linear Regulation	Full load, input voltage range 3.3, 5 and 6.5V outputs 12 and 15V out 24V output	, ·	-	±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, full load	20MHz bandwidth, nominal input voltage, full load		40	80	mVp-p
Temperature Coefficient	Operating tempera	ture -40°C to +85°C	-	-	±0.03	%/°C
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		Со	ntinuous,	self-recove	ery
Note: * The "coupled solds" mostly of its condition with a discount of the DC DC Couplest						

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	Тур	Max.	Unit
Operating Temperature	See Fig.1, Fig.2.	-40		+85	
Storage Temperature		-55		+125	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds			+300	C
Storage Humidity	Non-condensing	5		95	%RH
Switching Frequency*	Full load, nominal input voltage		300		kHz
MTBF	MIL-HDBK-217F@25°C	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)	
Emissions	RE	CISPR32/EN55032 CLASS B (see Fig. 6-2) for recommended circuit)	
	ESD	IEC/EN 61000-4-2 Contact ±4kV perf.	Criteria B
	RS	IEC/EN 61000-4-3 10V/m perf.	Criteria B
Immunity	EFT	IEC/EN 61000-4-4 100kHz ± 1 kV (see Fig. 6- $\textcircled{1}$ for recommended circuit) perf.	Criteria B
	Surge	IEC/EN 61000-4-5 line to line ± 1 kV (see Fig. 6- \bigcirc for recommended circuit) perf.	Criteria B
	CS	IEC/EN 61000-4-6 3Vr.m.s perf.	Criteria B

Typical Performance Curves

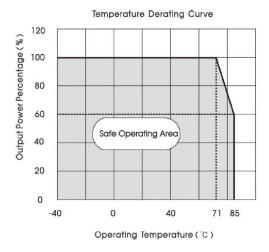
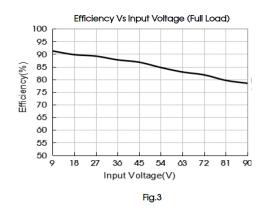


Fig 1. 3.3V, 5V,6.5V,12V,15V 24V (Vin=36V~60V)



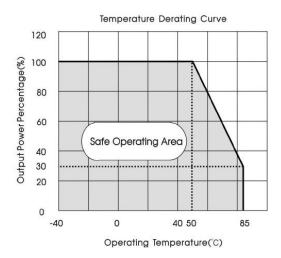


Fig2 24V (Vin≥60V)

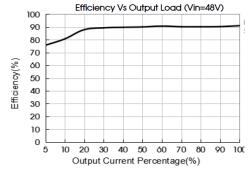


Fig.4



5V output 5V output

Design Reference

Typical application

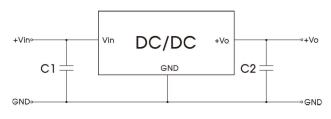


Fig. 5

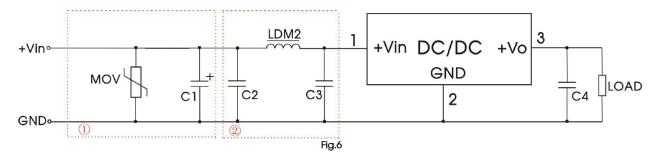
Output	C1	C2
	(ceramic	(ceramic
	capacitor)	capacitor)
3.3 VDC		22μF/10V
5 VDC		22μF/10V
6.5 VDC	10μF/10V	22μF/10V
12 VDC		22μF/10V
15 VDC		22μF/10V
24 VDC		10μF/10V

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



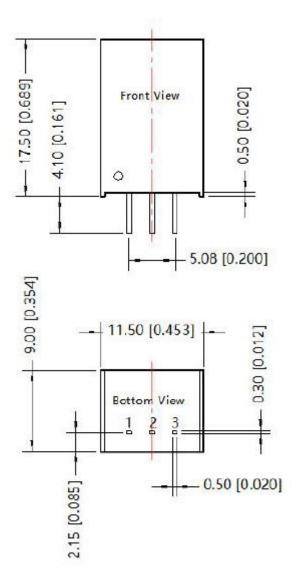
MOV	Cl	C2	LDM2	C3	C4
S20K30	680µF /100V	4.7µF/100V	120µH	4.7µF/100V	10µF/50V



Mechanical Specifications

Case material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	11.50 x 9.00 x 17.50 mm
Weight	3.8g(typ.)
Cooling Method	Free air convection

Dimensions and recommended layout



Isolated DC-DC converters



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°C, 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.