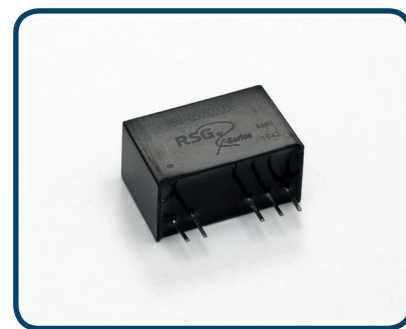


- 7 Pin SIL Package
- $\pm 10\%$ Input Range
- Reinforced 4200 VAC / 6000 VDC Isolation
- EN60601-1, ANSI / AAMI ES60601-1 medical safety (1 x MOPP / 2 x MOOP)
- Efficiency up to 81 %
- Operating Temperature Range: $-40\text{ }^{\circ}\text{C} \sim +85\text{ }^{\circ}\text{C}$
- Leakage current max. 2 μA (@250 VAC, 50 / 60 Hz conditions)
- Low Ripple and Noise
- Non Conductive Black Plastic Case

Picture similar



RoHS

Output Specifications	
Voltage Accuracy	See tolerance envelope graph
Maximum Output Current	See table
Line Regulation	$\pm 1.2 \sim 1.5\%$ max.(per $\pm 1\%$ V_{in} Change)
Load Regulation	from 10 % to 100 % Load: 15 % to 20 % max.
Cross Regulation (Dual Output)	–
Short Circuit Protection	3 s
Ripple & Noise (20 MHz Bandwidth)	80 mV typ., 150 mV pk-pk max.
Temperature Coefficient	$\pm 0.02\%$ / $^{\circ}\text{C}$

Input Specifications	
Voltage Range	See table
Start-up Time	–
No-Load / Full-Load Input Current	See table
Input Filter	C / L (see filter details on following pages)
Input Reflected Ripple Current	200 mA typ.
Surge Voltage (100 ms) ¹⁾	
3.3 V Models	7 VDC max.
5 V Models	9 VDC max.
12 V Models	18 VDC max.
15 V Models	21 VDC max.
24 V Models	30 VDC max.

General Specifications	
I/O Isolation Voltage (60 sec)	4200 VAC; 6000 VDC
Out1 / Out2 Isolation Voltage (Dual Separate)	–
I/O Isolation Capacitance	5 pF typ.
I/O Isolation Resistance	1000 M Ω , min.
Switching Frequency	100 kHz typ.
Humidity	95 % rel H
Reliability Calculated MTBF	> 3.5 Mhrs (MIL-HDBK-217 f)
Safety Standard(s)	EN60601-1, ANSI / AAMI ES60601-1

Environmental Specifications	
Operating Temperature Range	$-40\text{ }^{\circ}\text{C} \sim +85\text{ }^{\circ}\text{C}$ (see Derating Curve)
Maximum Case Temperature	–
Storage Temperature	$-55\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$
Cooling	Natural Convection
Soldering Profile and Peak Temperature	Wave Flow: 300 $^{\circ}\text{C}$ (1.5 mm from case), 10 s, max.

Physical Specifications	
Case Material	Black flame-retardant, heat-resistant Plastic (UL94V-0 rated)
Pin Material SIP Case	–
Pin Material DIP Case	–
Potting Material	–
Weight SIP Case	4.2 g typ.
Weight DIP Case	–
Dimensions SIP Case	0.77" x 0.39" x 0.49"
Dimensions DIP Case	–

EMC Specifications	
Radiated / Conducted Emissions	CISPR22 / EN55022 Class B see EMI Filter
ESD	IEC 61000-4-2 Contact $\pm 8\text{ kV}$ Perf. Criteria B
Rad. RF	–
EFT	–
Surge	–
Cond. RF	–
PFMF	–
VD / SI / VV	–

¹⁾ These are stress ratings; exposure of devices to any of these conditions may adversely affect long-term reliability.

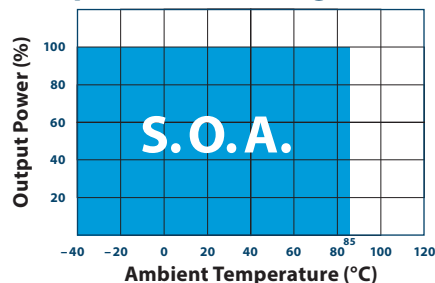
All specifications typical at $T_a = 25\text{ }^{\circ}\text{C}$, nominal input voltage and full load, unless otherwise specified.

The information and specification contained in this data sheet are believed to be correct at time of publication. However, Acal BFi accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.

Number structure RSM Series

RSM	–	12	15	S	10	D	6	(v2)
Name / package		V-input nom.	V-output	Output type	Power	Int. Code	Isolation (VDC)	
RSM = SIL7 Medical		03 = 3.3 V 05 = 5 V ... 24 = 24 V	03 = 3.3 V 05 = 5 V ... 15 = 15 V	S = Single D = Dual	10 = 1 W 20 = 2 W	Logistics Code	6 = 6.0 k	

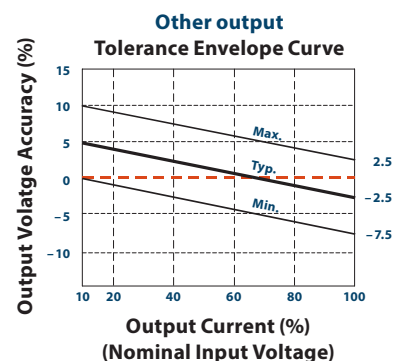
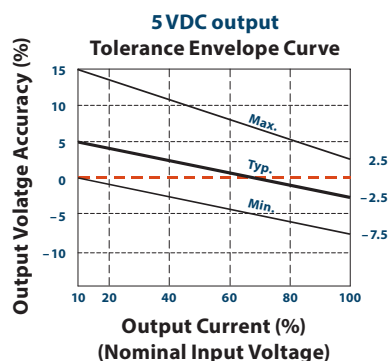
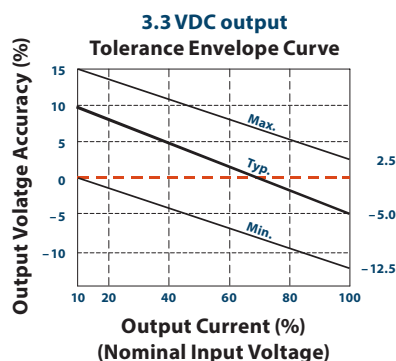
Temperature Derating Curve



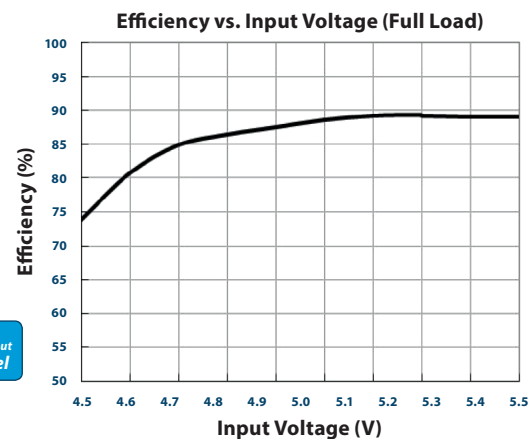
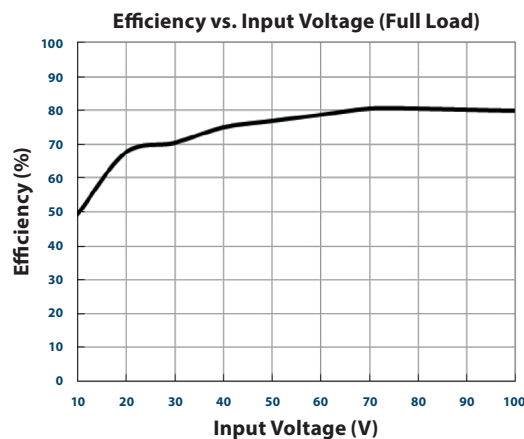
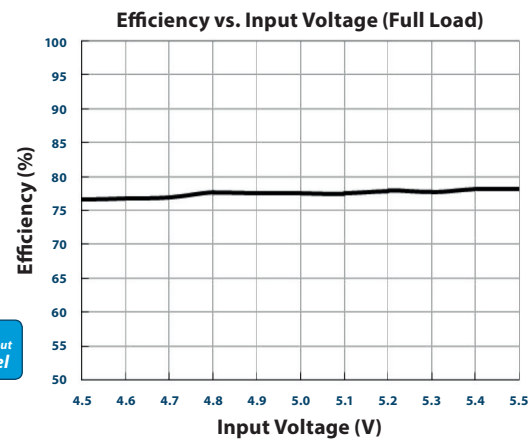
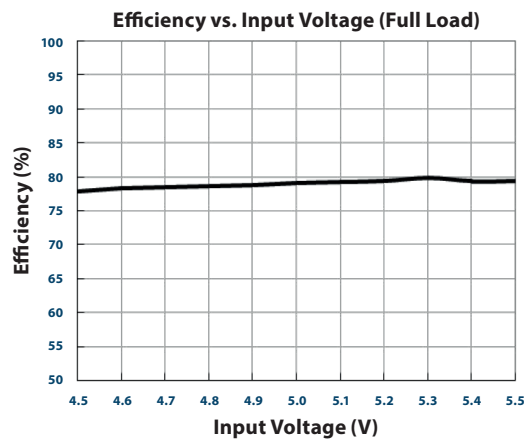
Model Selection Guide

Model Number	Input	Output	Efficiency	Capacitor Load
	Voltage (VDC) Nom. (Range)	max. Current (mA) full / no load	@ Full Load (%, Min./ Typ.)	@ Full Load (µF, max.)
RSM-0305S10D6v2	3.3 (2.97 ~ 3.63)	426 / 45	67 / 71	1000
RSM-0503S10D6v2	5 (4.5 ~ 5.5)	274 / 35	69 / 73	1000
RSM-0505S10D6v2	5 (4.5 ~ 5.5)	274 / 35	74 / 78	1000
RSM-0512S10D6v2	5 (4.5 ~ 5.5)	274 / 35	72 / 76	470
RSM-0515S10D6v2	5 (4.5 ~ 5.5)	274 / 35	72 / 76	470
RSM-1205S10D6v2	12 (10.8 ~ 13.2)	114 / 15	73 / 77	1000
RSM-1212S10D6v2	12 (10.8 ~ 13.2)	114 / 15	77 / 81	470
RSM-1215S10D6v2	12 (10.8 ~ 13.2)	114 / 15	77 / 81	470
RSM-2405S10D6v2	24 (21.6 ~ 26.4)	56 / 10	72 / 76	1000
RSM-2412S10D6v2	24 (21.6 ~ 26.4)	56 / 10	74 / 78	470
RSM-2415S10D6v2	24 (21.6 ~ 26.4)	56 / 10	74 / 78	470
RSM-0505D10D6v2	5 (4.5 ~ 5.5)	274 / 35	74 / 78	470
RSM-0509D10D6v2	5 (4.5 ~ 5.5)	274 / 35	76 / 80	470
RSM-0512D10D6v2	5 (4.5 ~ 5.5)	274 / 35	70 / 74	220
RSM-0515D10D6v2	5 (4.5 ~ 5.5)	274 / 35	72 / 76	220
RSM-1205D10D6v2	12 (10.8 ~ 13.2)	114 / 15	73 / 77	470
RSM-1209D10D6v2	12 (10.8 ~ 13.2)	114 / 15	76 / 80	470
RSM-1212D10D6v2	12 (10.8 ~ 13.2)	114 / 15	69 / 73	220
RSM-1215D10D6v2	12 (10.8 ~ 13.2)	114 / 15	71 / 75	220
RSM-1515D10D6v2	15 (13.5 ~ 16.5)	93 / 18	68 / 72	220
RSM-2405D10D6v2	24 (21.6 ~ 26.4)	56 / 10	71 / 75	470
RSM-2409D10D6v2	24 (21.6 ~ 26.4)	56 / 10	75 / 79	470
RSM-2412D10D6v2	24 (21.6 ~ 26.4)	56 / 10	72 / 76	220
RSM-2415D10D6v2	24 (21.6 ~ 26.4)	56 / 10	72 / 76	220

Product Characteristic Curve



Electrical Characteristic Curves



Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.3.

Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (see Fig. 4).

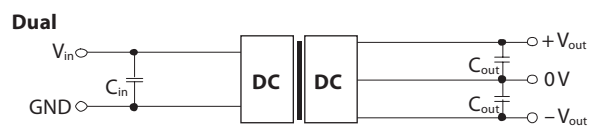
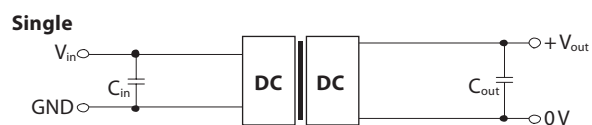


Fig. 3

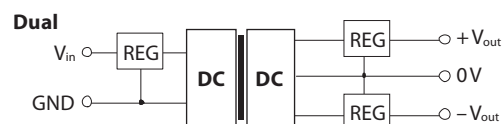
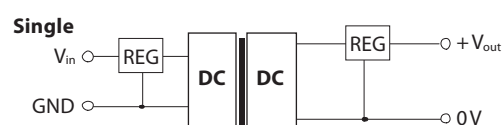
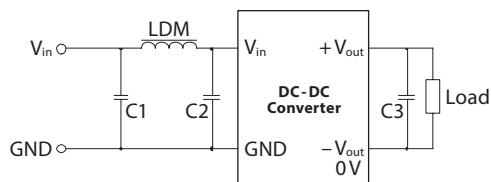


Fig. 4

Recommended capacitive load value table (Table 1)					
V_{in} (VDC)	C_{in} (μ F)	Single V_{out} (VDC)	C_{out} (μ F)	Dual V_{out} (VDC)	C_{out} (μ F)
3.3/5	10	3.3/5	10	± 5	4.7
12/15	4.7	12	2.2	± 9	2.2
24	2.2	15	1	$\pm 12/\pm 15$	1

2. EMC typical recommended circuit (CLASS B)



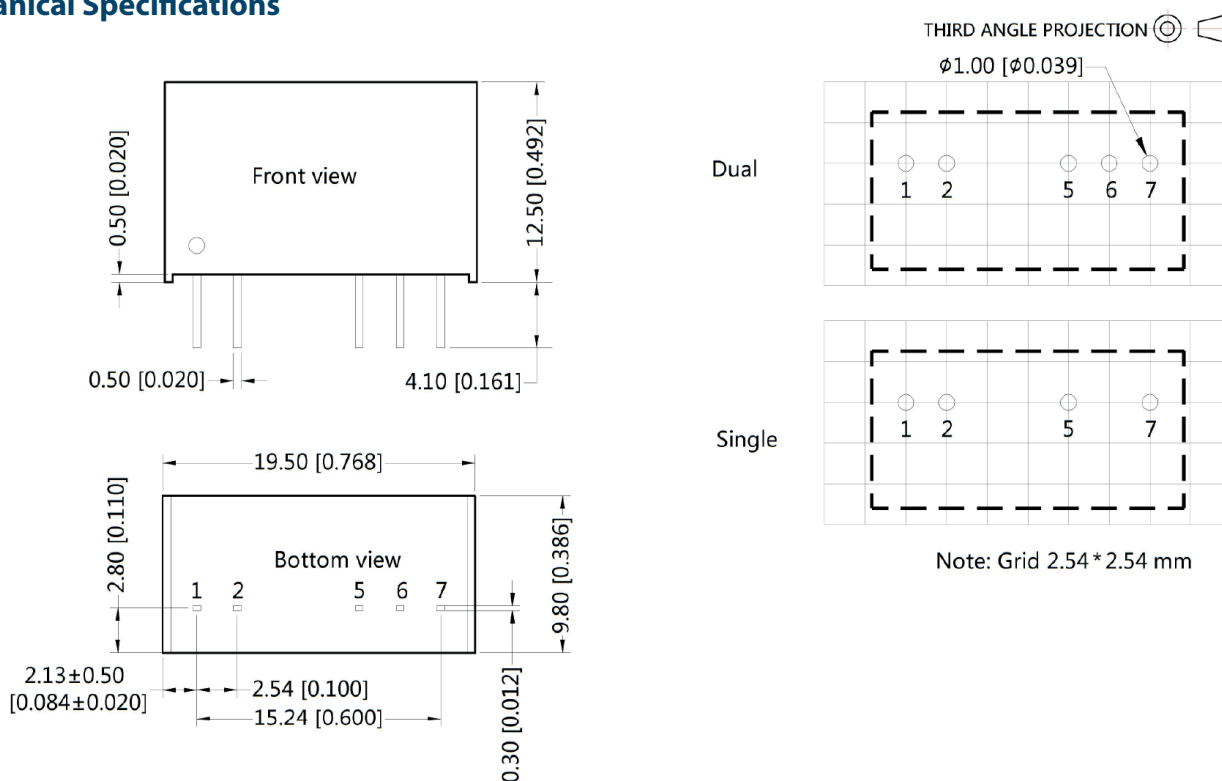
Recommended typical circuit parameters:

V _{in} (VDC)		3.3 / 5 / 12 / 15 / 24
EMI	C1, C2	4.7 µF / 50V
	C3	Refer to the C _{out} in Fig.3
	LDM	6.8 µH

3. Output load requirements

For a reliable and efficient operation of the converter, the minimum load should never be less than 10% of the rated output load. If the total required output power is below 10%, a parallel bleeding resistor is required on the output, ensuring that the sum of the power consumption is always maintained at 10% minimum.

Mechanical Specifications



Notes:

Unit: mm [inch]

Pin section tolerances: ±0.10 [±0.004]

General tolerances: ±0.50 [±0.020]

Pin	Single	Dual
1	V _{in}	V _{in}
2	GND	GND
5	0V	-V _{out}
6	No Pin	0V
7	+V _{out}	+V _{out}

Notes

- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet.
- The maximum capacitive load was tested at nominal input voltage and full load.
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of T_a = 25 °C, humidity < 75 % RH with nominal input voltage and rated output load.

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