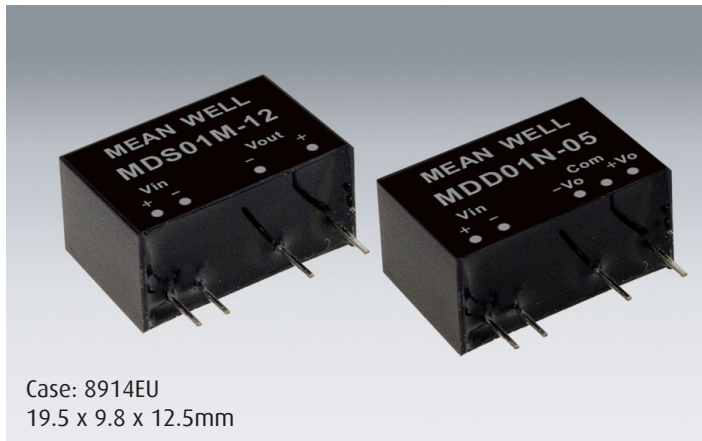


MDS01 & MDD01 Series

1W SIP Package DC-DC Medical Grade Unregulated Converter



Case: 8914EU
19.5 x 9.8 x 12.5mm

Features

- SIP7 package with international standard pinout
- Operating temperature range -40 ~ +85°C
- Medical safety approved (1xMOPP/2xMOOP) according to ANSI/AAMI ES60601-1
- Low patient leakage current <2µA
- Protection: Short circuit (3 second max.)
- 6KVDC or 4.2VAC height I/O isolation (reinforced isolation)
- Low cost
- 3 years warranty

MDS	-	01	L	-	12	← Output voltage (3.3/5/12/15dc, ±5%/±9%/±12%/±15Vdc)
Series name:		Rated	Input Voltage (L:4.5~5.5Vdc;			
S: Single output		wattage	M: 10.8~13.2Vdc; N:			
D: Dual output			21.6~26.4Vdc)			



Specification

INPUT	Voltage Range	L: 4.5 ~ 5.5Vdc M: 10.8 ~ 13.2Vdc N: 21.6 ~ 26.4Vdc
	Surge Voltage	5V in models: 9Vdc 12V in models: 18Vdc 24V in models: 30Vdc
	Filter	Internal Capacitor
	Protection	Fuse recommended. 500mA Slow-Blow Type for all models
OUTPUT	MODEL No.	MDS01 & MDD01 (see page 2 for model selection)
	Voltage Accuracy	±5.0%
	Rated Power	1W
	R&N	75mVp-p
	Line Regulation	1.2% for 1% input variation
	Load Regulation	±10%
	Switching Frequency	100KHz
PROTECTION	Short Circuit	3 seconds Max.
ENVIRONMENT	Cooling	Free-air convection
	Working Temperature	Standard Model: -40 ~ +85°C (Please refer to 'Derating Curve' section)
	Working Humidity	40 ~ 85% RH non-condensing
	Storage Temperature	-55 ~ +125°C, 10 ~ 95% RH non-condensing
	Temp Coefficient	±0.03%/°C (0 ~ 85°C)
	Soldering Temperature	1.5mm from case of 1~3sec./260°C max.
	Vibration	10 ~ 500Hz, 2G 10 min./1cycle, period for 60 min. each along X, Y, Z axes
SAFETY & EMC	Withstand Voltage	I/P-O/P: 6KVDC or 4.2KVDC
	Isolation Resistance	I/P-O/P: 100M Ohms / 500VDC / 25°C / 70% RH
	Isolation Level	Primary-secondary: 1xMOPP/2xMOOP when system input voltage is with 250VAC, 50/60Hz
	Isolation Capacitance (Typ.)	5pF
	EMC Emission	Compliance to EN55011 (CISPR11), Class B
	EMC Immunity	Compliance to EN61000-4-2 Level 2, ±8KV contact
OTHERS	M.T.B.F.	3500K hrs min. MIL-HDBK-217F (25°C)
	Case Material	Non-Conductive black plastic (UL 94V-0 rated)
	Packing	4.2g

1. All parameters are specified at normal input (L: 5Vdc, M: 12Vdc, N: 24Vdc), rated load, 25°C 70% RH ambient temperature.
2. Ripple and Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with 0.1µf & 47µf parallel capacitor.
3. Line regulation is measured from low line to high line at rated load.
4. Load regulation is measured from 10% to 100% rated load.
5. Patient leakage current (2µf max.) and reinforced isolation is based on 250VAC, 50/60Hz system input voltage.
6. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to 'EMI testing of component power supplies.

MDS01 & MDD01 Series

1W SIP Package DC-DC Medical Grade Unregulated Converter



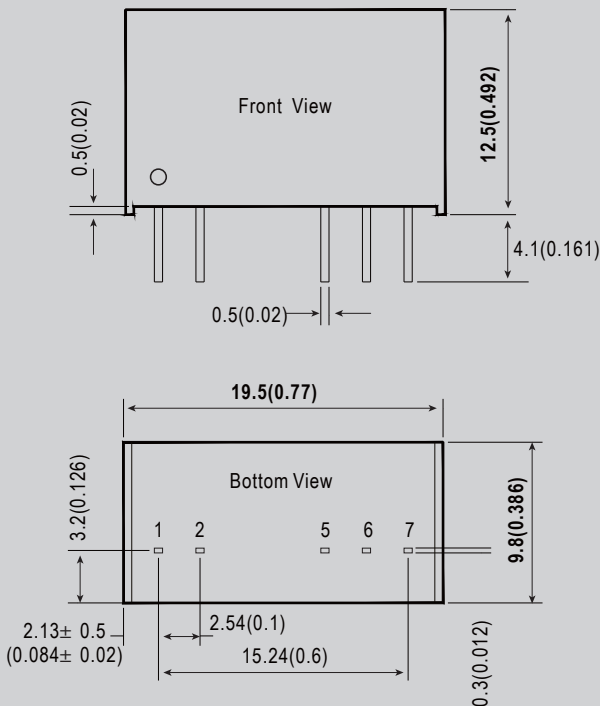
Model Selection Table

Model No.	INPUT			OUTPUT		Efficiency (Typ.)	Capacitor Load	
	Input Voltage Range	Input Current		Output Voltage	Output Current			
		No load	Full Load					
MDS01L-03	Normal 5V (4.5~5.5V)	25mA	260mA	3.3V	31~303mA	73%	1000µF	
MDS01L-05		25mA	260mA	5V	20~200mA	78%	1000µF	
MDS01L-12		40mA	260mA	12V	9~84mA	77%	470µF	
MDS01L-15		45mA	265mA	15V	7~67mA	75%	470µF	
MDD01L-05		25mA	260mA	±5V	±10~100mA	79%	*470µF	
MDD01L-09		35mA	260mA	±9V	±6~56mA	81%	*470µF	
MDD01L-12		40mA	265mA	±12V	±5~42mA	77%	*220µF	
MDD01L-15		45mA	275mA	±15V	±4~34mA	77%	*220µF	
MDS01M-05		Normal 12V (10.8~13.2V)	15mA	105mA	5V	20~200mA	78%	1000µF
MDS01M-05	15mA		105mA	12V	9~84mA	82%	470µF	
MDS01M-05	15mA		105mA	15V	7~67mA	83%	470µF	
MDS01M-05	14mA		105mA	±5V	±10~100mA	78%	*470µF	
MDD01M-09	14mA		105mA	±9V	±6~56mA	82%	*470µF	
MDD01M-12	22mA		114mA	±12V	±5~42mA	75%	*220µF	
MDD01M-15	22mA		114mA	±15V	±4~34mA	76%	*220µF	
MDS01N-05	Normal 24V (21.6~26.4V)		9mA	55mA	5V	20~200mA	77%	1000µF
MDS01N-12			9mA	55mA	12V	9~64mA	79%	470µF
MDS01N-15		9mA	55mA	15V	7~67mA	79%	470µF	
MDD01N-05		9mA	55mA	±5V	±10~100mA	77%	*470µF	
MDD01N-09		9mA	55mA	±9V	±6~56mA	79%	*470µF	
MDD01N-12		10mA	56mA	±12V	±5~42mA	77%	*220µF	
MDD01N-15		11mA	57mA	±15V	±4~34mA	77%	*220µF	

*For each output

Mechanical Specification

- All dimensions in mm(inch)
- Tolerance: x.x±0.25mm(x.xx±0.01")
x.xx ±0.10mm(x.xxx±0.004")
- Pin pitch tolerance ±0.05mm (±0.02")



Plug Assignment

Pin No.	Pin-Out	
	MDS01 (Single output)	MDD01 (Dual output)
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
7	No pin	Common
6	+Vout	+Vout

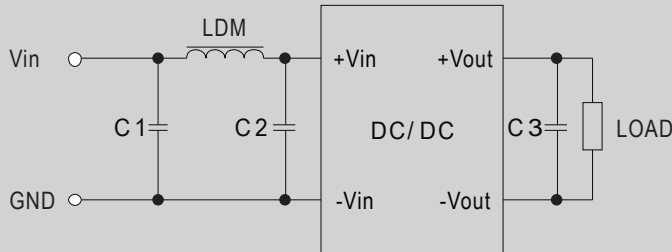
MDS01 & MDD01 Series

1W SIP Package DC-DC Medical Grade Unregulated Converter



EMC Suggestion

EMC typical recommended circuit (Class B)



Recommended typical circuit parameters:

Input voltage (V)		3.3/5/12/15/24
EMI	C1,C2	4.7 μ F/50V
	C3	See table 2
	LDM	6.8 μ F

Table 1

Single Vout	C3(μ F)	Dual Vout	C3(μ F)
3.3/5V	10 μ F	\pm 5V	4.7 μ F
12V	2.2 μ F	\pm 9V	2.2 μ F
15V	1 μ F	\pm 12V/ 15V	1 μ F

Table 2

Derating Curve

