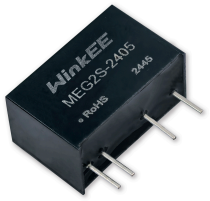
MEG2S Series

2W, Unregulated, 6KV Isolation, DC/DC Converters

Features

- Rated power: 2W Max
- Input voltage range ±10%
- Unregulated output
- Creepage & clearance >5mm
- Isolation capacitance 4pF Typ.
- High efficiency up to 84%
- Isolation 4.2KVAC or 6KVDC
- Patient leakage current 2uA Max
- RoHS compliant
- Compact SIP7 package
- Continuous short circuit protection
- Meet UL/EN/IEC 62368-1 EN 60601-1
- Operating temp. range: -40 ~ +105°C ambient
- 5 year warranty



RoHS CE

Overview

The MEG2S series are unregulated SIP7 package DC/DC converters with single or dual outputs, and 6KVDC isolation. These converters feature reinforced insulation, low isolation capacitance, low leakage current, continuous short circuit protection, and wide operating temperature range. They are widely used in industrial and medical applications where high isolation is needed.

Model Numbers

Model Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
MEG2S-0505	5 [4.5~5.5]	5	400	80	220
MEG2S-0509		9	222	80	220
MEG2S-0512		12	168	82	220
MEG2S-0515		15	136	82	220
MEG2S-0505D	5 [4.5~5.5]	±5	±200	81	±100
MEG2S-0509D		±9	±110	81	±100
MEG2S-0512D		±12	±80	82	±100
MEG2S-0515D		±15	±70	82	±100
MEG2S-1205	12 [10.8~13.2]	5	400	81	220
MEG2S-1209		9	222	80	220
MEG2S-1212		12	168	83	220
MEG2S-1215		15	136	80	220
MEG2S-1205D	12 [10.8~13.2]	±5	±200	80	±100
MEG2S-1209D		±9	±110	81	±100
MEG2S-1212D		±12	±80	83	±100
MEG2S-1215D		±15	±70	80	±100

Model Numbers

Model Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
MEG2S-2405	24 [21.6~26.4]	5	400	80	220
MEG2S-2409		9	222	80	220
MEG2S-2412		12	168	82	220
MEG2S-2415		15	136	81	220
MEG2S-2424		24	83	81	220
MEG2S-2405D	24 [21.6~26.4]	±5	±200	80	±100
MEG2S-2409D		±9	±110	81	±100
MEG2S-2412D		±12	±80	82	±100
MEG2S-2415D		±15	±70	81	±100

Electrical Specifications

Unless otherwise indicated, specifications are measured at T_A=25°C, nominal input voltage, full load after warm up.

Parameters	Conditions	Min.	Typ.	Max.	Unit
Input current Full load	V_{IN}=5V V_{IN}=12V V_{IN}=24V	-	453 199 101	-	mA
Input current No load	V_{IN}=5V V_{IN}=12V V_{IN}=24V	-	98 70 35	-	mA
Reflected Ripple Current		-	15	-	mA
Surge voltage 1 second max	V_{IN}=5V V_{IN}=12V V_{IN}=24V	-0.7 -0.7 -0.7	-	9 18 30	VDC
Output voltage accuracy	All models	Refer to graphic in "Characteristic Curves" section			
Line regulation For V_{IN} change of ±1%		-	-	±1.5	%
Load regulation [2] I_{OUT}=10% to 100% of $I_{OUT, rated}$	V_{OUT}=3.3, 5V Others	-	-	20 15	%
Temperature coefficiency	Full load	-	±0.02	-	%/°C
Output ripple and noise	20MHz bandwidth	-	100	150	mVp-p
Output short circuit protection		Continuous, automatic recovery			
Input filter		Capacitor			
Hot plug		None			

Note [2]: Operating with less than 10% of rated load will not cause permanent damage to the converters, but the performances data may not fall into the specifications, and reliable operating is not assured. Dual output models need to operate with balanced load. The load difference between two outputs over 10% may cause unstable operating of the converter.

2W, Unregulated, 6KV Isolation, DC/DC Converters

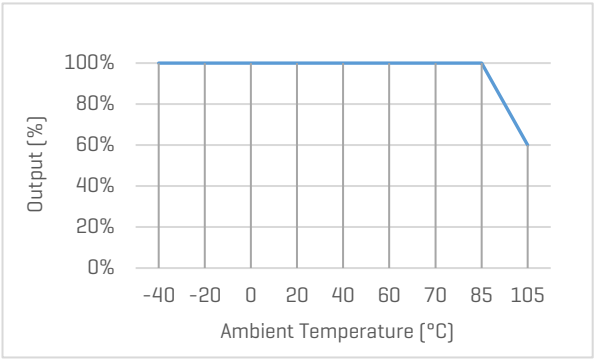
General Specifications

Parameters	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current <1mA	Input to Output Input to Output	4200 6000	-	-	VAC VDC
Patient leakage current	250VAC, 50/60Hz	-	-	2	uA
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	Input to Output	-	4	-	pF
Creepage & Clearance distance		5	-	-	mm
Switching frequency	Full load	-	220	-	KHz
Temperature rise at case	Full load	-	25	-	°C
Operating temperature	See "Derating Curve"	-40	-	+105	°C
Storage temperature		-55	-	+125	°C
Storage humidity	Non-condensing	5	-	95	%RH
Pin soldering resistance 1.5mm away from case for 10 sec		-	-	300	°C
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z			
MTBF	MIL-HDBK-217F	>19,360,000 Hours, T_A=25°C			
Safety standards		UL/EN/IEC 62368-1, EN/ES 60601-1			
EMC standards	CISPR32, EN55032	Class B with "External Circuit"			
ESD	IEC/EN61000-4-2	Contact ±8kV, Air ±15kV, perf. Criteria B			
Size & Weight		19.5x9.8x12.5mm, 4.2g Typ.			

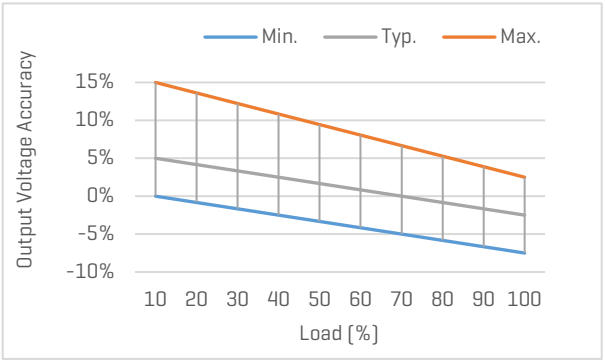
Characteristic Curves

Derating Curve

Output vs Ambient Temperature



Output Voltage Accuracy vs Load



Recommended External Circuit

Typical Application Circuit

*Typical application circuit is to further lower the input and output ripple. It is not mandatory.

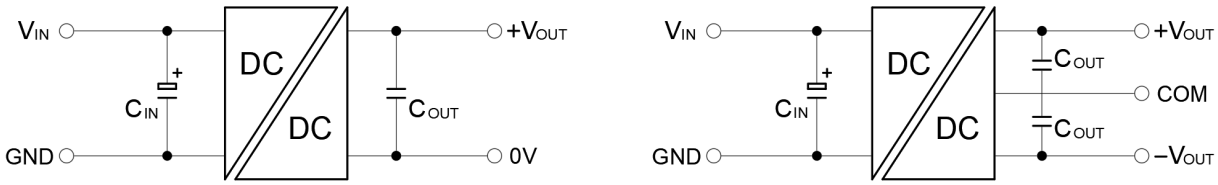


Figure 1. Typical Application Circuit

[Table 1] Recommended component spec

Input voltage	5V	12, 15V	24V
C_{IN}	4.7uF, 16V	2.2uF, 25V	1uF, 50V

Output voltage	5V	9, 12V	15, 24V	±5, ±9V	±12, ±15V
C_{OUT}	10uF, 16V	2.2uF, 25V	1uF, 50V	4.7uF, 16V	1uF, 25V

EMC Enhancement for EN55032 Class B

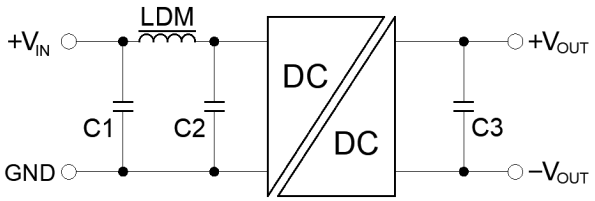


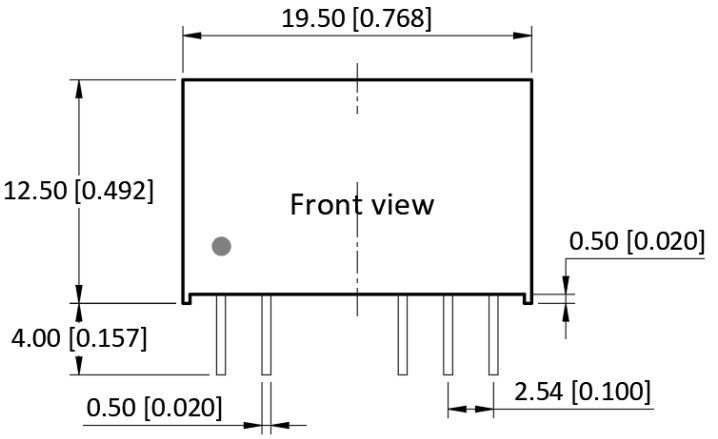
Figure 2. Circuit for EMC enhancement

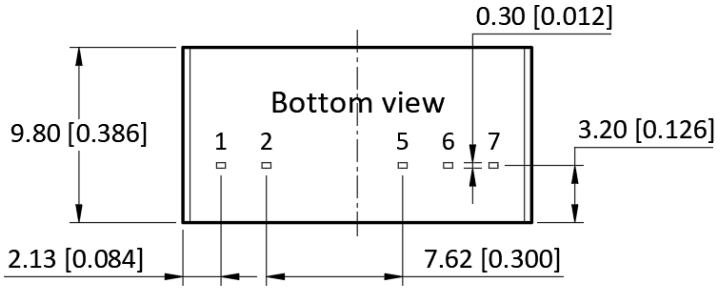
[Table 2] Recommended component spec

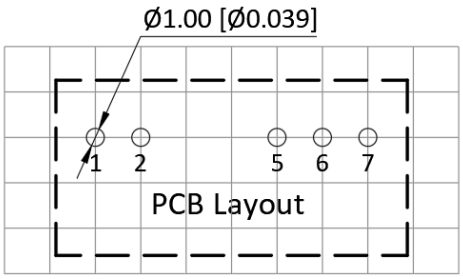
Output voltage	C1, C2	LDM
Spec	4.7uF, 50V	6.8uH

*"C3" refer to C_{OUT} in [Table 1]

Mechanical Specifications







Pin Definition

Pin #	Single Out	Dual Out
1	$+V_{IN}$	$+V_{IN}$
2	$-V_{IN}$	$-V_{IN}$
5	$-V_{OUT}$	$-V_{OUT}$
6	No Pin	COM
7	$+V_{OUT}$	$+V_{OUT}$

* Unless otherwise specified unit: mm [inch]
* General tolerance: ±0.50 [±0.020]
* Pin thickness: ±0.10 [±0.004]
* Footprint grid 2.54 x 2.54 mm