

ME2A Series

2W, Unregulated, 1.5KV Isolation, DC/DC Converters

Features

- ▶ Rated power: 2W max
- ▶ Input voltage range $\pm 10\%$
- ▶ Unregulated output
- ▶ High efficiency up to 86%
- ▶ Isolation voltage 1.5KVDC
- ▶ Small no load input current
- ▶ Operating temp. range: -40 ~ +105°C ambient
- ▶ RoHS compliant
- ▶ Compact SIP4 package
- ▶ Continuous short circuit protection
- ▶ Meet UL/EN/IEC 62368-1 EN 55032 Class B
- ▶ 5 year warranty



Overview

The ME2A series are unregulated SIP4 package DC/DC converters with single output, and 1.5KVDC isolation. These converters feature high efficiency, low ripple and noise, short circuit protection, and wide operating temperature range. They are widely used in distributed power system in industrial applications where isolation and voltage converting is needed.

Model Numbers

Model Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [μ F] Max.
ME2A-0505	5 [4.5~5.5]	5	400	80	2400
ME2A-0509		9	222	80	1000
ME2A-0512		12	167	80	560
ME2A-0515		15	133	80	560
ME2A-0524		24	83	80	220
ME2A-1203	12 [10.8~13.2]	3.3	400	79	2400
ME2A-1205		5	400	82	2400
ME2A-1209		9	222	82	1000
ME2A-1212		12	167	84	560
ME2A-2405	24 [21.6~26.4]	5	400	80	2400
ME2A-2415		15	133	84	560
ME2A-2424		24	83	86	220

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Electrical Specifications

Unless otherwise indicated, specifications are measured at $T_A=25^{\circ}\text{C}$, nominal input voltage, full load after warm up.

Parameters	Conditions	Min.	Typ.	Max.	Unit
Input current Full load	$V_{IN}=5\text{V}$ $V_{IN}=12\text{V}$ $V_{IN}=24\text{V}$	-	500 200 100	-	mA
Input current No load		-	8	-	mA
Reflected Ripple Current		-	15	-	mA
Surge voltage 1 second max	$V_{IN}=5\text{V}$ $V_{IN}=12\text{V}$ $V_{IN}=24\text{V}$	-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 $\pm 1\%$	$V_{OUT}=3.3\text{V}$ All others	-	-	± 1.5 ± 1.2	%
Load regulation [2] $I_{OUT}=10\%$ to 100% of $I_{OUT, rated}$	$V_{OUT}=3.3\text{V}$ $V_{OUT}=5\text{V}$ Others	-	12 10 8	25 20 15	%
Temperature coefficient	Full load	-	± 0.03	-	%/ $^{\circ}\text{C}$
Output ripple and noise	20MHz bandwidth	-	75	200	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.

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General Specifications

Parameters	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current <1mA	Input to Output	1500	-	-	VDC
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	Input to Output	-	20	-	pF
Switching frequency	Full load	-	220	-	KHz
Temperature rise at case	Full load	-	15	-	°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	>3,500,000 Hours, T _A =25°C			
Safety standards		UL/EN/IEC 62368-1			
EMC standards	CISPR32, EN55032	Class B with "External Circuit"			
ESD	IEC/EN61000-4-2	Contact ±4kV, Air ±8kV, perf. Criteria B			
Size & Weight		11.6x6x10.2mm, 1.3g Typ.			

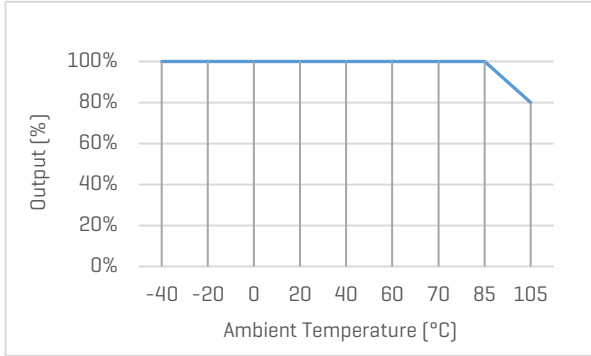
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Characteristic Curves

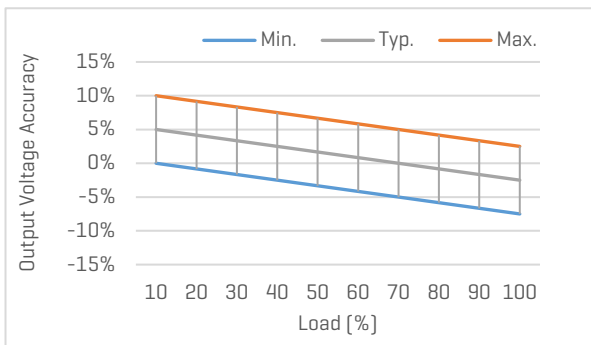
Output vs Ambient Temperature

All models

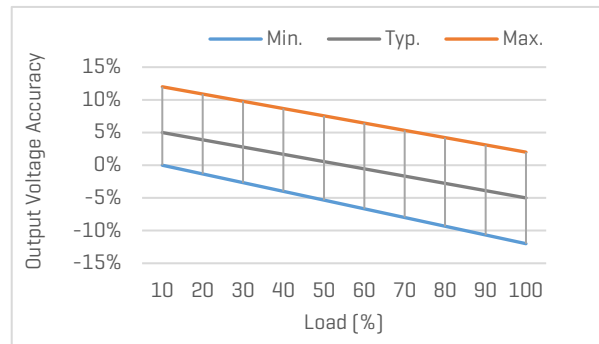


Output Voltage Accuracy vs Load

None 3.3V output models

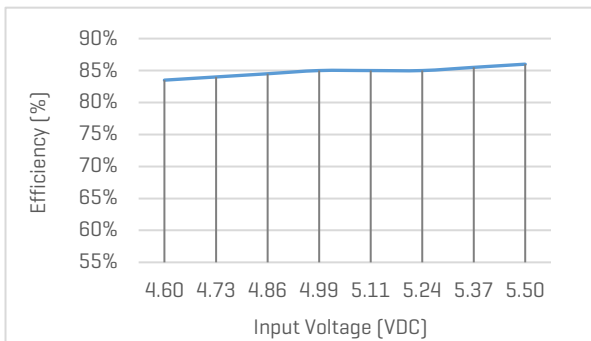


3.3V output models



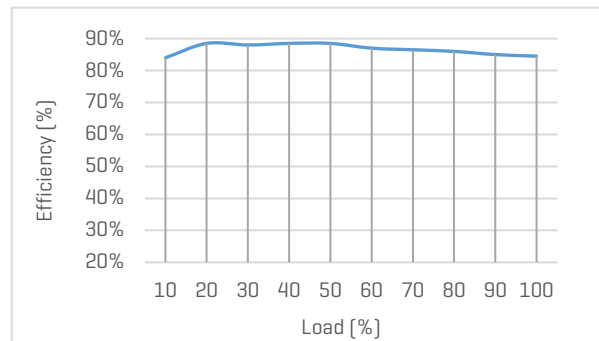
Efficiency vs Input Voltage

ME2A-0505, with full Load



Efficiency vs Load

ME2A-0505, with nominal input voltage



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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 external circuit

[Table 1] Recommended component spec

Input voltage	5V	12V	24V
C_{IN}	4.7uF, 16V	2.2uF, 25V	1.0uF, 50V

[Table 2] Recommended component spec

Output voltage	3.3, 5V	9V	12V	15V	24V
C_{OUT}	10uF, 16V	4.7uF, 16V	2.2uF, 25V	1uF, 25V	0.47uF, 50V

EMC Enhancement for EN55032 Class B

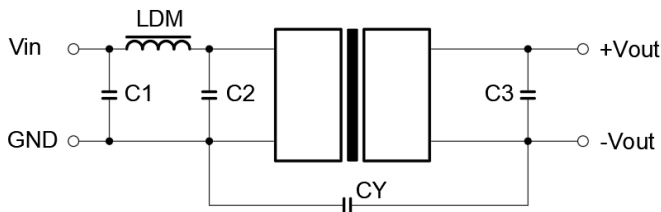


Figure 2. Circuit for EMC enhancement

[Table 3] Recommended component spec

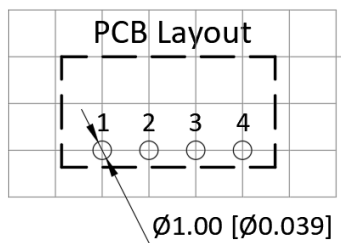
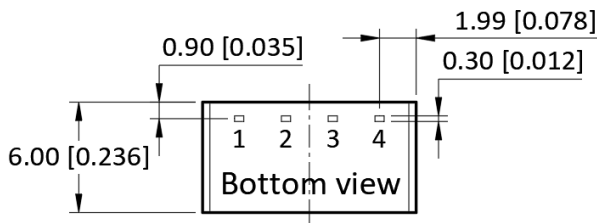
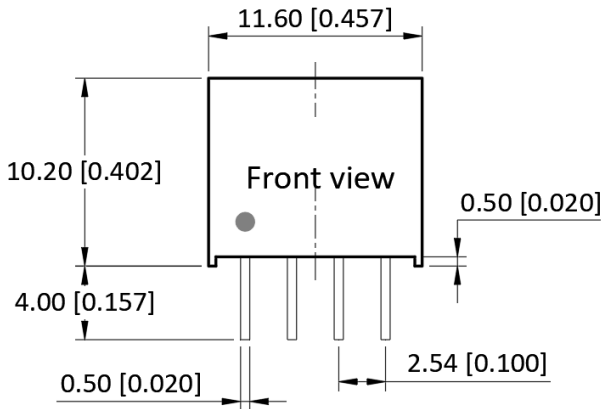
Component	LDM	C1, C2	CY
C_{OUT}	6.8uH	4.7uF, 50V	1nF, 2KV

*"C3" refer to C_{OUT} in [Table 2]

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Mechanical Specifications



Pin Definition

Pin #	Single Out
1	-V _{IN}
2	+V _{IN}
3	-V _{OUT}
4	+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