

ME2T 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 85%
- ▶ Isolation voltage 1.5KVDC
- ▶ Small no load input current
- ▶ Operating temp. range: -40 ~ +105°C ambient
- ▶ RoHS compliant
- ▶ Compact SMD package
- ▶ Continuous short circuit protection
- ▶ Meet UL/EN/IEC 62368-1 EN 55032 Class B
- ▶ 5 year warranty



Overview

The ME2T series are unregulated DC/DC converters offered in compact SMD package with 1.5KVDC isolation. These converters feature high efficiency, low ripple and noise, continuous short circuit protection, and wide operating temperature range -40 ~ +105°C. 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.
ME2T-0505	5 [4.5~5.5]	5	400	83	2400
ME2T-0507		7	286	84	1000
ME2T-0509		9	222	84	1000
ME2T-0512		12	167	84	560
ME2T-0515		15	133	84	560
ME2T-0524		24	83	84	220
ME2T-1205	12 [10.8~13.2]	5	400	83	2400
ME2T-1209		9	222	84	1200
ME2T-1212		12	167	84	560
ME2T-1215		15	133	84	560
ME2T-1224		24	83	84	220
ME2T-1505	15 [13.5~16.5]	5	400	83	2400
ME2T-1509		9	222	84	1200
ME2T-1512		12	167	84	560
ME2T-1515		15	133	84	560
ME2T-1524		24	83	84	220

Model Numbers

Model Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [μ F] Max.
ME2T-2405	24 [21.6~26.4]	5	400	83	2400
ME2T-2409		9	222	83	1200
ME2T-2412		12	167	84	560
ME2T-2415		15	133	85	560
ME2T-2424		24	83	85	220

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	$V_{IN}=5\text{V}$ $V_{IN}=12\text{V}$ $V_{IN}=15\text{V}$ $V_{IN}=24\text{V}$	-	477 196 161 98	-	mA
Input current No load		-	8	-	mA
Reflected Ripple Current		-	30	-	mA
Surge voltage 1 second max	$V_{IN}=5\text{V}$ $V_{IN}=12\text{V}$ $V_{IN}=15\text{V}$ $V_{IN}=24\text{V}$	-0.7 -0.7 -0.7 -0.7	-	9 18 21 30	VDC
Output voltage accuracy	All models	Refer to graphic in "Characteristic Curves" section			
Line regulation For V_{IN} change of $\pm 1\%$		-	-	± 1.2	%
Load regulation ^[1] $I_{OUT}=10\%$ to 100% of $I_{OUT, rated}$	$V_{OUT}=5\text{V}$ $V_{OUT}=7\text{V}$ $V_{OUT}=9\text{V}$ $V_{OUT}=12\text{V}$ $V_{OUT}=15\text{V}$ $V_{OUT}=24\text{V}$	-	10 8 8 7 6 6	15 12 10 10 10 10	%
Temperature coefficient	Full load	-	± 0.02	-	%/ $^\circ\text{C}$
Output ripple and noise	20MHz bandwidth	-	50	150	mVp-p
Output short circuit protection		Continuous, automatic recovery			
Input filter		Capacitor			
Hot plug		None			

Note ^[1]: 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

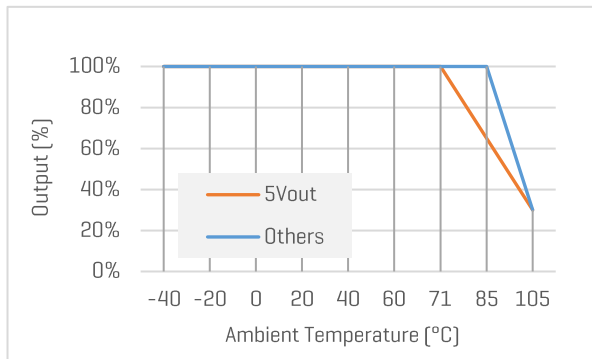
Parameters	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current <1mA	Input to Output	1500	-	-	VDC
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	Input to Output	-	20	-	pF
Switching frequency	Full load	-	260	-	KHz
Operating temperature	See "Derating Curve"	-40	-	+105	°C
Storage temperature		-55	-	+125	°C
Temperature rise at case	Full load	-	25	-	°C
Storage humidity	Non-condensing	5	-	95	%RH
Reflow soldering temperature		Peak temp. 217 - 245°C, maximum duration 60s			
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z			
Moisture sensitivity level [MSL]		IPC/JEDEC J-STD-020D.1 Level 1			
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		13.5x11x7.25mm, 1.2g Typ.			

ME2T Series

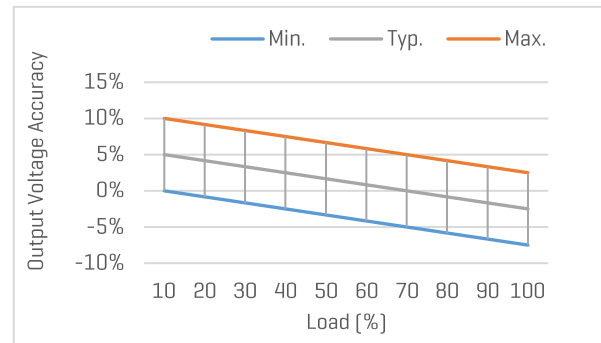
2W, Unregulated, 1.5KV Isolation, DC/DC Converters

Characteristic Curves

Output vs Ambient Temperature

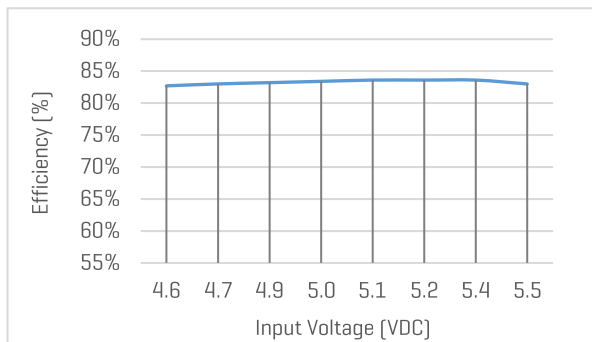


Output Voltage Accuracy vs Load



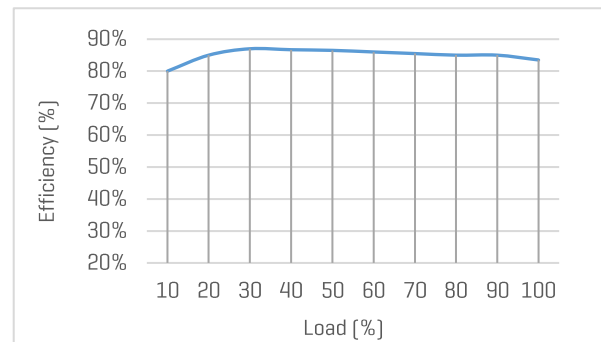
Efficiency vs Input Voltage

ME2T-0505, with full Load



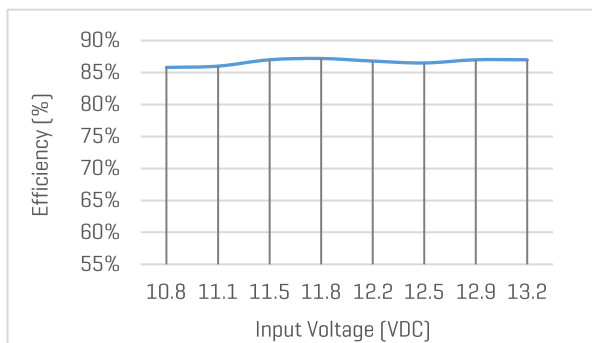
Efficiency vs Load

ME2T-0505, with nominal input voltage



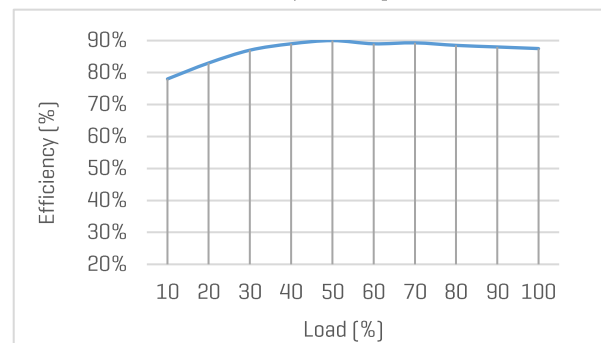
Efficiency vs Input Voltage

ME2T-1205, with full Load



Efficiency vs Load

ME2T-1205, 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	15V	24V
C_{IN}	4.7uF, 16V	2.2uF, 25V	1uF, 25V	1uF, 50V

[Table 2] Recommended component spec

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

EMC Enhancement for EN55032 Class B

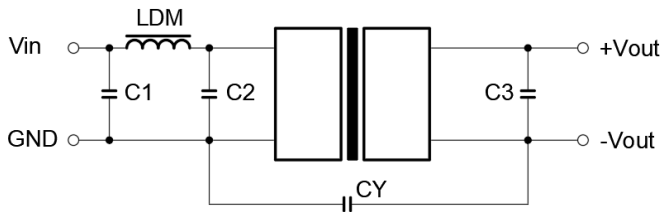


Figure 2. Circuit for EMC enhancement

[Table 3] Recommended component spec

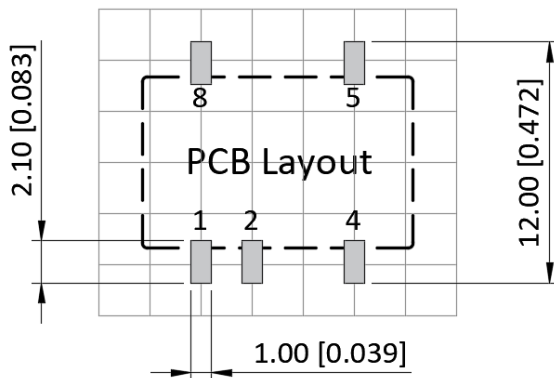
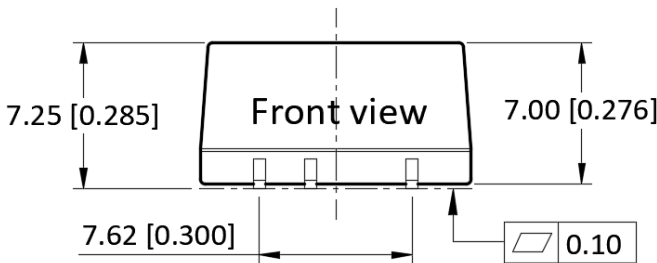
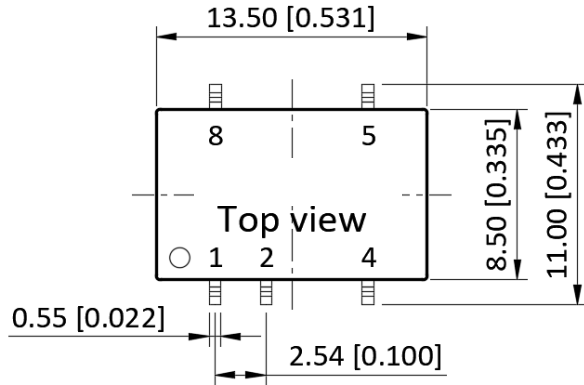
Component	LDM	C1, C2	CY
C_{OUT}	6.8uH	4.7uF, 50V	270pF, 2KV

*"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}
4	-V _{OUT}
5	+V _{OUT}
8	N/C

* Unless otherwise specified unit: mm [inch]

* General tolerance: ± 0.25 [± 0.010]

* Pin thickness: ± 0.10 [± 0.004]

* Footprint grid 2.54 x 2.54 mm