0.1MD4A_1.5U series

0.1W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter 0.1 Watt

- **Dual in line package**
- **100 burn-in**
- **Temperature Range: -40°C ~ +85°C**
- **Internal SMD Construction**
- **Custom solutions available**
- **Industry standard pinout**
- **RoHS compliance**
- **MTBF >1,000,000 hours**
- **UL 94V-0 package material**

The 0.1MD4A_1.5U series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

They apply to:
1) Where the voltage of the input power supply is fixed (Voltage variation ≤ ±10%)
2) Where isolation is necessary between input and output (Isolation voltage ≤1500VDC)
3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

Common specifications	
Short circuit protection:	momentary
Case temperature rise above ambient:	+100°C max.
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C
Storage temperature range:	-55°C ~+125°C
Lead temperature:	300°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
Radiated emissions:	EN55022 Class B
Efficiency:	50% (typ.)
Case material:	Non-conductive plastic [UL94-V0]
MTBF (MIL-HDBK-217F @25°C):	>1,000,000 hours
Weight:	1.5g
Dimensions:	9.4mm x 8.8mm x 6.35mm

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage range				±10	%
Internal filter	Capacitor				
Protection	Fuse recommended				

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 10sec.	1500			VDC
Isolation resistance	Test at 500VDC	10^9			Ω
Isolation capacitance				80	pF

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Minimum load	10% of full load				
Voltage set point accuracy				±2	%
Line regulation	for a 1% change in input voltage			±1.5	%
Load regulation	20% to 100% load			±12	%
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			±0.05	%/°C
Ripple & Noise*	20MHz Bandwidth			100	mVp-p
Switching frequency	Full load, nominal input		100		KHz

* Measured with 1uF ceramic capacitor connect to the output pins.

Example:
0.1MD4A_0505S1.5U
0.1 = 0.1 Watt; MD4 = Micro DIP4; A = Pinning; 05 = 5 Vin;
05 = 5Vout; S = Single Output; 1.5 = 1.5kVDC Isolation; U = Unregulated

Note:
1. Measured with 1uF ceramic capacitor connect to the output pins.
2. Line Regulation is for a 1.0% change in input Voltage.
3. Load Regulation is for output load current change from 20% to 100%.
4. 1500VDC for 10 seconds.
5. MIL-HDBK-217F @25 °C , Ground Benign.

All specifications typical at nominal line, full load and 25°C unless otherwise noted.

GAPTEC-Electronic GmbH & Co. KG
sales@gaptec-electronic.com – www.gaptec-electronic.com

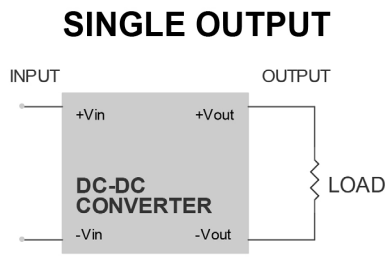
0.1MD4A_1.5U series

0.1W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

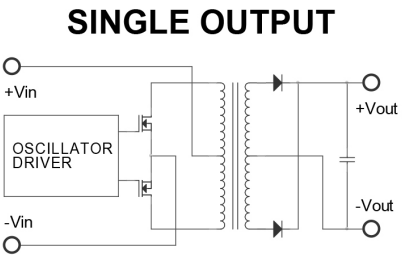
Product Selection Guide

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA]	Input Current [mA] full load	Input Current [mA] no load	Efficiency [%]
0.1MD4A_0303S1.5U	3.3	3.3	30	61	20	50
0.1MD4A_0305S1.5U	3.3	5	20	61	20	50
0.1MD4A_0503S1.5U	5	3.3	30	41	20	50
0.1MD4A_0505S1.5U	5	5	20	41	20	50
0.1MD4A_1203S1.5U	12	3.3	30	17	9	50
0.1MD4A_1205S1.5U	12	5	20	17	9	50

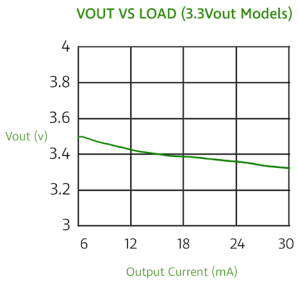
Typical application

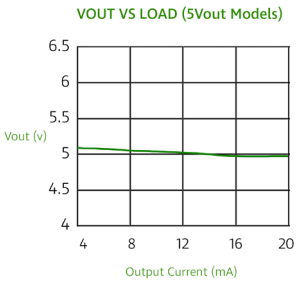


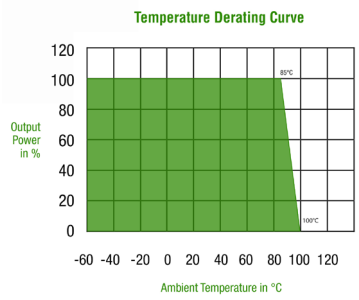
Simplified schematic

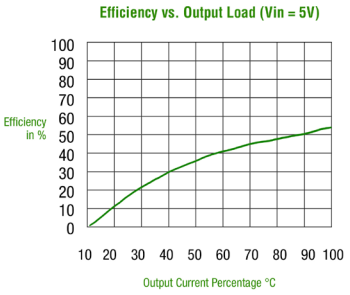


Typical performance curves

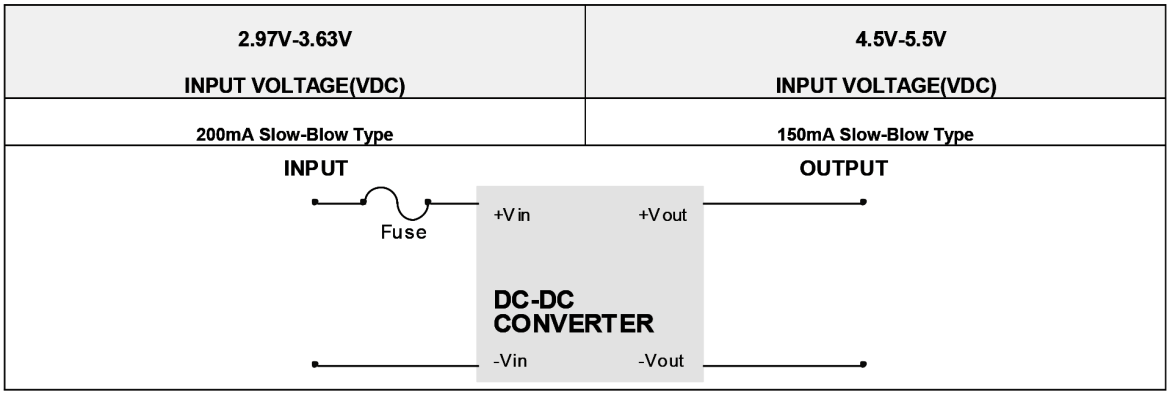








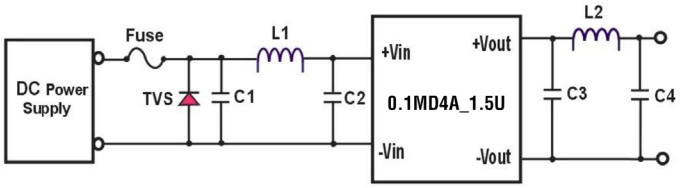
Input fuse selection



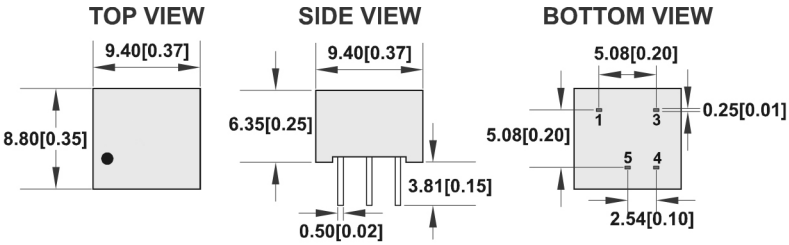
Note: Certain applications may require the installation of external fuse in front of the input.

EMC solution recommended

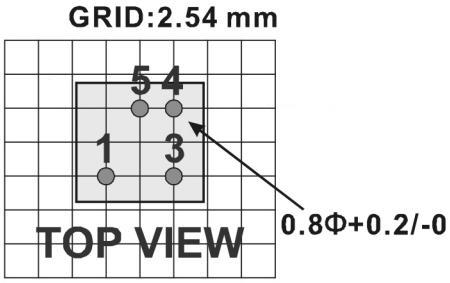
No.	Part type	Part number	Mfr.	Use
C1, C2	MLCC (SMD 0603)	2.2uF/16V (0606)		2
C3,C4	MLCC (SMD 0603)	2.2uF/16V (0606)		2
L1	Choke Coils (SMD 0603)	2.2 uH (LQM18PN2R2MFRL) or 3.3 uH (LQM18PN3R3MFRL)	MURATA	1
L2	Choke Coils (SMD 0603)	2.2 uH (LQM18PN2R2MFRL) or 3.3 uH (LQM18PN3R3MFRL)	MURATA	1



Mechanical dimensions



PIN	SINGLE
1	-Vin
3	+Vin
4	+Vout
5	-Vout



Note:
All dimensions are in mm [inches]
1. Pin Size is 0.50 x 0.30mm [0.02x0.01"]
2. Pin is Tolerance .XX = ±0.05mm
3. Tolerance .X or .XX = ±0.5mm

Application notes

External capacitance requirements
Output filtering is required for operation. A minimum of 10uF is needed. Output capacitance may be increased for additional filtering, not to exceed 220uF.

We can offer EMC-Filter According To EN55011/22 Class B.

Negative Outputs
A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting –OUT as the negative output.