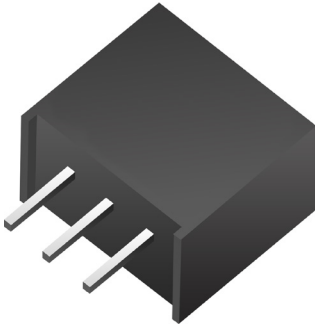


# Non Isolated DC to DC Converters Single Output

**multicomp** PRO

**RoHS  
Compliant**



## Features

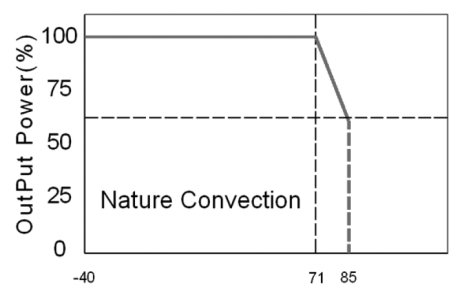
- 3PIN SIP Package
- Pin-out compatible with LM78XX Linear
- Efficiency up to 95%, Non isolated, no need for heatsinks
- UL94V-0 package material
- Operating temperature from -40°C to +85°C
- No-load input current as low as 0.3mA
- Short circuit protection
- UL/cUL/IEC/EN 62368-1 approved, CB-Report

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Range	Output Voltage	Output Current	Efficiency		Capacitive Load
	V DC	V DC	mA	Min. Vin	Max. Vin	Max.
MPK78-3R3-500	4.75-36	3.3	1000	90	78	680
MPK78-05-500	6.5-36	5		92	84	
MPK78-09-500	12-36	9		95	90	
MPK78-12-500	15-36	12			92	470
MPK78-15-500	18-36	15		93		

Output Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance			2	±3	%
Short Circuit Protection	Continuous, automatic recovery				
Line Regulation	1.2V to 1.5V			0.3	%
	1.8V to 15V				
Load Regulation	1.2V to 1.5V (10% To 100% F.L.)			0.6	
	1.8 V to 15V (10% To 100% F.L.)		0.4	0.6	
Ripple & Noise (without Output Capacitor)	1.2V to 6.5V (BW=DC To 20MHz)			75	
	9V to 15V (BW=DC To 20MHz)			100	
Transient response setting time	50% load step change		250		us

## Temperature Derating Graph

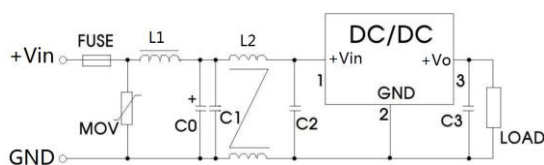


# Non Isolated DC to DC Converters Single Output

Electromagnetic Compatibility (EMC)		
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Contact $\pm 4kV$ perf. Criteria B
	RS	IEC/EN 61000-4-3 10V/m perf. Criteria A
	EFT	IEC/EN 61000-4-4 $\pm 1kV$ perf. Criteria B
	Surge	IEC/EN 61000-4-5 line to line $\pm 1kV$ perf. Criteria B
	CS	IEC/EN 61000-4-6 3Vr.m.s perf. Criteria A

General Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Switching Frequency			440		KHz
Operating Temperature		-40		85	°C
Storage Temperature		-55		125	
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	Non-Conductive Black Plastic				
Weight			2		g
Dimensions			11.6 × 7.6 × 10.4		mm
MTBF(+25°C)	using MIL-HDBK 217F		5000 × 10 <sup>3</sup>		hours
MTBF(+71°C)			1000 × 10 <sup>3</sup>		

## EMC (CLASS B) Compliance Circuit

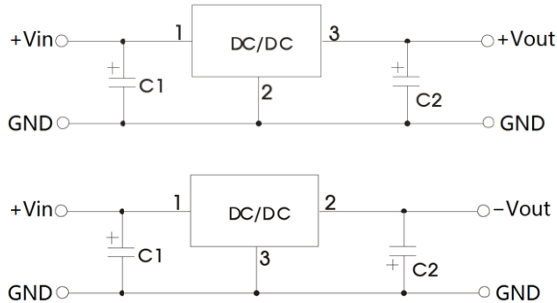


Fuse	Select fuse value according to actual input current
MOV	S20K30
L1	82 $\mu$ H
C0	680 $\mu$ F /50V
L2	4.7mH
C1,C3,C4	4.7 $\mu$ F /50V
C2	10 $\mu$ F /50V

# Non Isolated DC to DC Converters Single Output

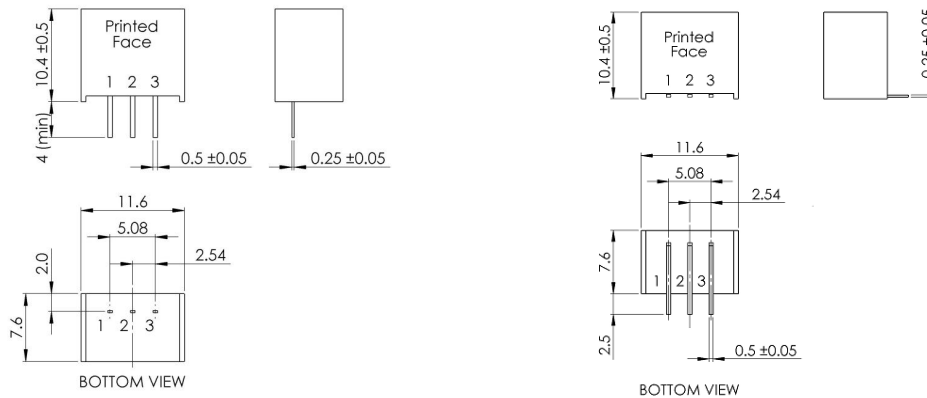
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## Recommended Test Circuit



Vout	C1	C2
1.2	10µF/50V	22µF/10V
1.5		22µF/10V
1.8		22µF/10V
2.5		22µF/10V
3.3		22µF/10V
5		22µF/10V
6.5		22µF/16V
9		22µF/16V
12		22µF/25V
15		22µF/25V

## Diagram



## PIN Connection

PIN	1	2	3
Single	+Vin	GND	+Vout

## Part Number Table

Description	Part Number
Non Isolated DC To DC Converter, V in 4.75-36 V DC, Vout 3.3 V DC, 0.5A	MPK78-3R3-500
Non Isolated DC To DC Converter, V in 6.5-36 V DC, Vout 5 V DC, 0.5A	MPK78-05-500
Non Isolated DC To DC Converter, V in 12-36 V DC, Vout 9 V DC, 0.5A	MPK78-09-500
Non Isolated DC To DC Converter, V in 15-36 V DC, Vout 12 V DC, 0.5A	MPK78-12-500
Non Isolated DC To DC Converter, V in 18-36 V DC, Vout 15 V DC, 0.5A	MPK78-15-500

Dimensions : Millimetres

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