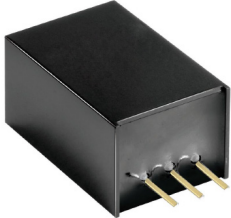


# Non Isolated Board Mount DC / DC Converters

**multicomp** PRO

**RoHS  
Compliant**



## Features

- High efficiency up to 96%
- No-load input current as low as 0.1mA
- Operating ambient temperature range: -40°C to +85°C
- Output short-circuit protection

## Selection Guide

Part Number	Certification	Input Voltage (V DC)*	Output		Full Load Efficiency(%) Typ. Vin Min. / Vin Max.	Capacitive Load (µF) Max.
		Nominal (Range)	Voltage (V DC)	Current (mA) Max.		
MP-K7803-2000R3	EN/BS EN	24 (6-36)	3.3	2000	89/85	1800
		12 (8-31)	-3.3	1000	85/83	1000
MP-K7805-2000R3		24 (8-36)	5	2000	92/89	1000
		12 (8-30)	-5	1000	86/84	680

Note: For input voltage exceeding 30V DC, an input electrolytic capacitor of 22µF/50V is required to prevent the module from being damaged by voltage spikes.

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
No-load Input Current	Positive output, nominal input voltage	1.8V/2.5V Output	-	0.2	0.5	mA
		Others	-	0.1	1	
	Negative output, nominal input voltage	-3.3V/-5V Output	-	-	1	
Reverse Polarity at Input	-		Avoid / Not protected			
Input Filter	-		Capacitance filter			

## Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	Full load, Input Voltage Range	±3.3V output	-	±2	±4	%
		Other positive and negative output	-	±2	±3	
Linear Regulation	Full load, input voltage range		-	±0.4	±0.8	
Load Regulation	10% -100% load step; nominal input voltage		-	±0.5	±1.5	

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Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Ripple & Noise*	Positive output, 20MHz bandwidth, nominal input voltage, 100% load		-	30	75	mVp-p	
	Negative output, 20MHz bandwidth, nominal input voltage, 100% load		-	-	150		
Temperature Coefficient	Operating temperature -40°C to +85°C		-	-	±0.03	%/°C	
Transient Response Deviation	Nominal input, 25% load step (25%-50%-25%, 50%-75%-50% step)	Positive output	1.8V, 2.5V output	-	±80	±150	mV
			Other output	-	±50	±150	
		Negative output		-	±100	±150	
Transient Recovery Time	Nominal input, 25% load step (25%-50%-25%, 50%-75%-50% step)		-	0.2	1	ms	
Short-circuit Protection	Nominal input		Continuous, Self-recovery				

Notes: \*1. The “parallel cable” method is used for ripple and noise test, please refer to Non-isolated DC-DC Converter Application Notes for specific information;

\*2. Positive output: Input voltage range, 20%-100% load ripple & noise is less than 100mVp-p, 0%-20% load ripple & noise is less than 180mVp-p.

\*3. Negative output: Input voltage range, 20%-100% load ripple & noise is less than 150mVp-p, 0%-20% load ripple & noise is less than 180mVp-p.

## General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature	-	-40	-	85	°C
Storage Temperature	-	-55	-	125	
Pin Soldering Resistance Temperature	Soldering time: 10s (Max.)	-	-	260	
Storage Humidity	Non-condensing	5	-	95	%RH
Switching Frequency	Full load, nominal input	-	400	-	kHz
MTBF	MIL-HDBK-217F @ 25°C	2000	-	-	k hours

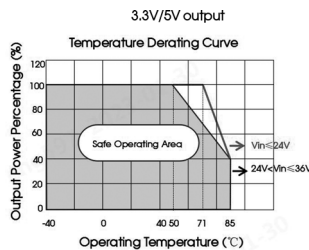
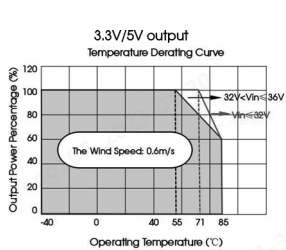
## Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	11.5mm × 9mm × 17.5mm
Weight	3.8g (Typ.)
Cooling Method	Free Air Convection

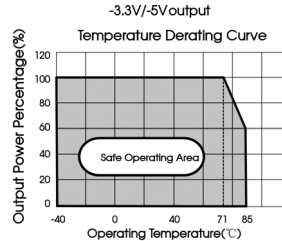
# Non Isolated Board Mount DC / DC Converters

## Typical Characteristic Curves

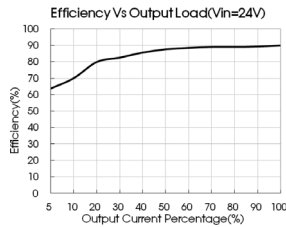
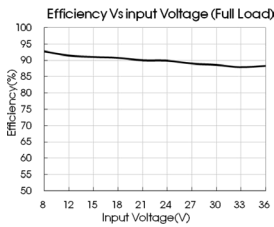
### 1. Forced convection curve (Positive output)



### 2. Free air convection curve (Positive output)

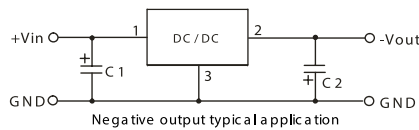
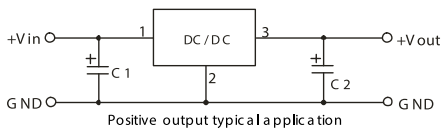


### 3. Free air convection curve (Negative output)



## Design Reference

### Typical application

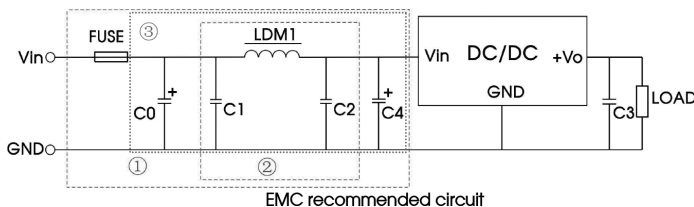


Part Number	C1 (Ceramic Capacitor)	C2 (Ceramic Capacitor)
MP-K7803-2000R3	22μF/50V	22μF/10V
MP-K7805-2000R3		

### Note:

1. The required C1 and C2 capacitors must be connected as close as possible to the terminals of the module;
2. Refer to Table 1 for C1 and C2 capacitor values;
3. For certain applications, increased values of C2 and/or tantalum or low ESR electrolytic capacitors may also be used instead;
4. Converter cannot be used for hot swap and with output in parallel.

### EMC compliance circuit

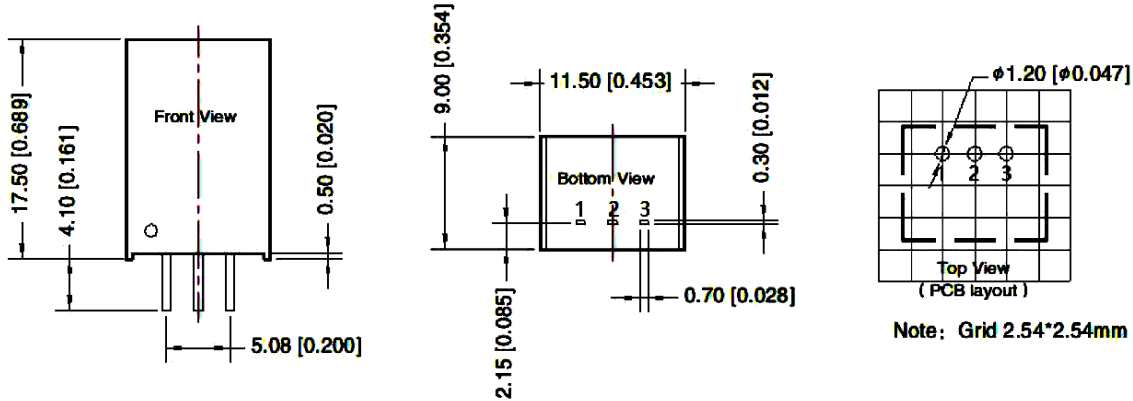


FUSE	C0	LDM1	C4	C1/C2	C3
Selected based on the actual input current in application	100μF / 100V	22μH	680μF / 50V	10μF / 50V	22μF / 25V

# Non Isolated Board Mount DC / DC Converters



## Diagram



Pin-Out		
Pin	Positive Output	Negative Output
1	V <sub>in</sub>	V <sub>in</sub>
2	GND	-V <sub>o</sub>
3	+V <sub>o</sub>	GND

Dimensions : Millimetres (Inches)  
 Pin Diameter Tolerances:  $\pm 0.1$ mm ( $\pm 0.004$ "")  
 General Tolerances:  $\pm 0.5$ mm ( $\pm 0.02$ "")

## Part Number Table

Description	Part Number
Non Isolated Board Mount, DC / DC Converter, 3.3V, 2A	MP-K7803-2000R3
Non Isolated Board Mount, DC / DC Converter, 5V, 2A	MP-K7805-2000R3

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