

Features

1. Non-isolated, step-downswitching regulators
2. Input voltage range:4.75~36VDC
3. Regulated single output withlow ripple and noise
4. High efficiency up to 95%, noneed for heatsink
5. Low no load input current,0.2mA only
6. Ultra-flat T3.5mm package
7. Continuous short circuitprotection
8. Operating temperaturerange:-40~+85'Cambient
9. Designed to meetUL/EN/IEC 62368-1
10. 3 year warranty



3 years
Warranty

the K7805MT series are non-isolated switching regulators in an ultra-flat 3.5mm profile SMD package. Unlike linear regulators, the RNseries offers high efficiency of up to 95%. These devices require no heatsink, as minimal energy is dissipated as heat. Furthermorethey support a wide input voltage range of 4.75-36 yDC, operate across an ambient temperature range of -40 to +85'c, and includeshort-circuit protection. This series features an extremely low no-I0ad input current of just 0.2 mA. They are particularly suited foroortable devices and applications where energy efficiency, compact size, and high performance are critical.

Selection Guide

Model	Input Voltage Range [VDC]			V _{OUT} [VDC]	I _{OUT} [mA]Ma x.	Efficiency [%] Typ.		Capacitive Load[uF]Max.
	Nominal	Min.	Max.			Min.Vin	Max.Vin	
K7803MT-500	24	4.75	36	3.5	500	92	81	680
K7805MT-500	24	6.5	36	5	500	93	84	680
K7809MT-500	24	12	36	9	500	93	90	680
K7812MT-500	24	15	36	12	500	94	91	680
K7815MT-500	24	19	36	15	500	95	92	680

* Only typical models are listed, other models may be available, upon request.

Electrical Specification

Unless otherwise indicated, specifications are measured at TA=25°C, nominal input voltage, full load after warm up.

Parameters	Condition	Min.	Typ.	Max.	Unit	Note
No load input current	V _{IN} =Min.to Max.	-	0.2	1.5	mA	
Output voltage accuracy Full load	V _{OUT} =3.3V All others	-	±2 ±2	±3 ±4	%	
Line regulation	V _{IN} =Min.to Max.	-	±0.2	±0.4	%	
Load regulation I _{OUT} = 10%~100%	V _{OUT} =3.3, 5V Others	-	±0.6 ±0.3	-	%	
Temperature coefficient	-40°C~+85°C	-	-	0.03	%/°C	
Output ripple and noise	10%~100% load	-	50	120	mVp-p	
Dynamic load response I _{OUT} = 25%~50%~75% of I _{OUT,rated}	Peak deviation Recovery time	-	50 0.2	200 1	mV mS	
Remote On/Off control "Ctrl" pin open or logic high [ON] "Ctrl" pin grounded or logic low [OFF]	Logic high Logic low Ctrl pin current	3.2 0 -	- - 0.03	8 0.8 0.1	VDC VDC mA	Positive Logic
Output short circuit protection		Continuous, automatic recovery				
Input filter		Capacitor				
		-	±0.02	-	%/°C	
		-	0.1	-	W	
Hold up time Full load	115VAC 230VAC	-	10 50	-	mS	
Over voltage protection Hiccup or clamping by zener diode	V _{OUT} =3.3, 5.0V V _{OUT} =9.0V V _{OUT} =12.0, 15.0V V _{OUT} =24.0V	-	-	7.5 15 20 30	VDC	
Over current protection	Automatic recovery	110	-	-	% I _{OUT}	
Short circuit protection		Continuous, hiccup mode, automatic recovery				
Minimum load		No minimum load is required				
Built in fuse		3.15A, 300V slow blow				

* Ripple and noise measured at 20MHz of bandwidth using a 12" twisted-pair wire terminated with a parallel combination of a 0.1uF and a 47uF capacitor

General Specifications

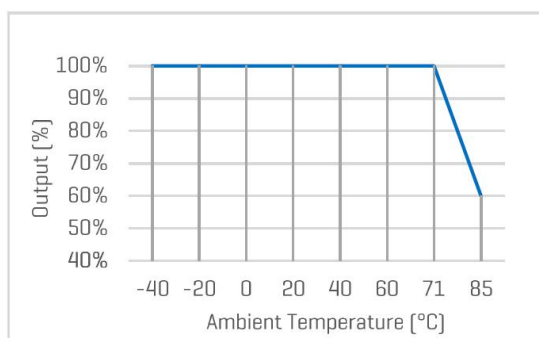
Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Operating temperature range	See "Derating Curve"	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	Non-condensing	5	-	95	%RH	
Switching frequency	Full Load	-	500	-	KHz	
Reflow soldering temperature		Peak temp. 217 - 245°C, maximum duration 60s				
Cooling method		Free air convection				
Moisture sensitivity level (MSL)		IPC/JEDEC J-STD-0200.1, Level 1				
MTBF	MIL-HDBK-217F	> 2,000,000 Hours, TA=25°C				
Safety standards		UL/EN/IEC 62368-1				
EMC standards	CISPR32, EN55032	Class B *with External Circuit[2]				
ESD	IEC/EN61000-4-2	Contact ±4KV,perf.Criteria A				
Radiated	IEC/EN61000-4-3	10V/m,perf.Criteria B				
EFT, Burst	IEC/EN61000-4-4	±1KV,perf.Criteria B[2]				
Surge	IEC/EN61000-4-5	Line to Line,±1KV,perf.Criteria B[2]				
Conductad	IEC/EN61000-4-6	3Vrms,perf.Criteria A				
Size, and Weight		12.5x13.5x3.5mm, 0.9g				

Note[2] : with External Circuit Figure 2 for EMC Enhancement

Characteristic Curves

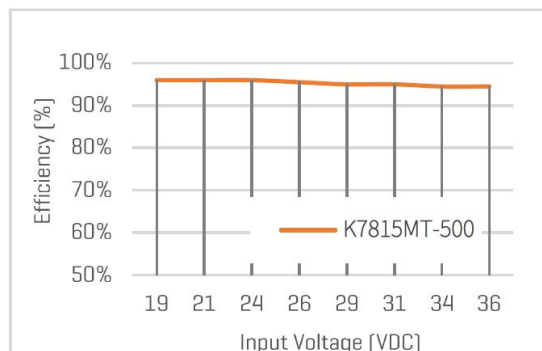
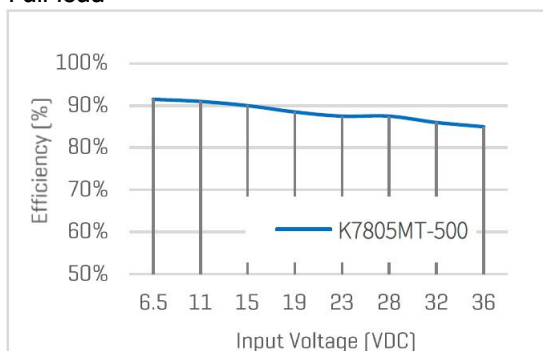
Derating Curve

Output vs Ambient Temperature



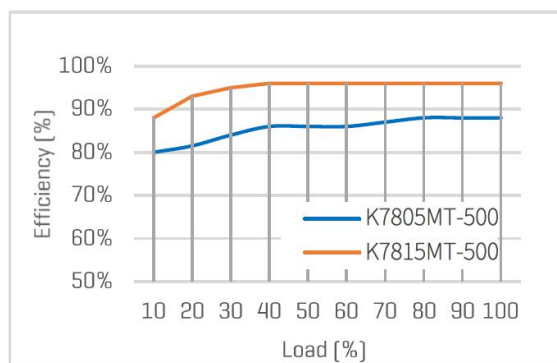
Efficiency vs Input Voltage

Full load



Efficiency vs Load

V_{IN}=24V



Recommended External Circuit

Typical Application Circuit

*C1 and C2 are required for the operating, and to be connected as close to the converter as possible.

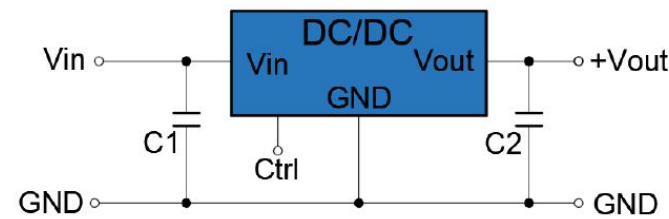


Figure 1, Typical application circuit

[Table 1] Recommend component spec

Models	C1	C2
V _{OUT} =3.3V	10uF, 50V	22uF, 10V
V _{OUT} =5V	10uF, 50V	22uF, 16V
V _{OUT} =9...15V	10uF, 50V	22uF, 25V

EMC Enhancement for EN55032 Class B

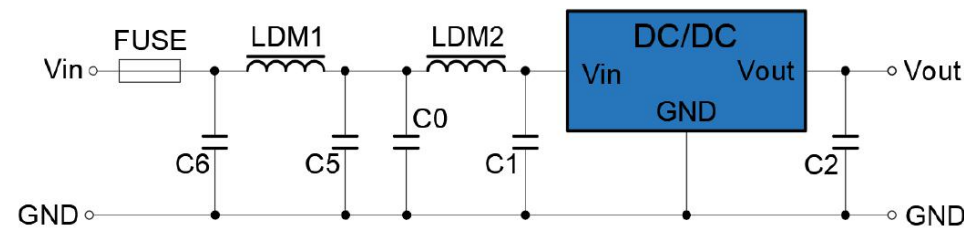


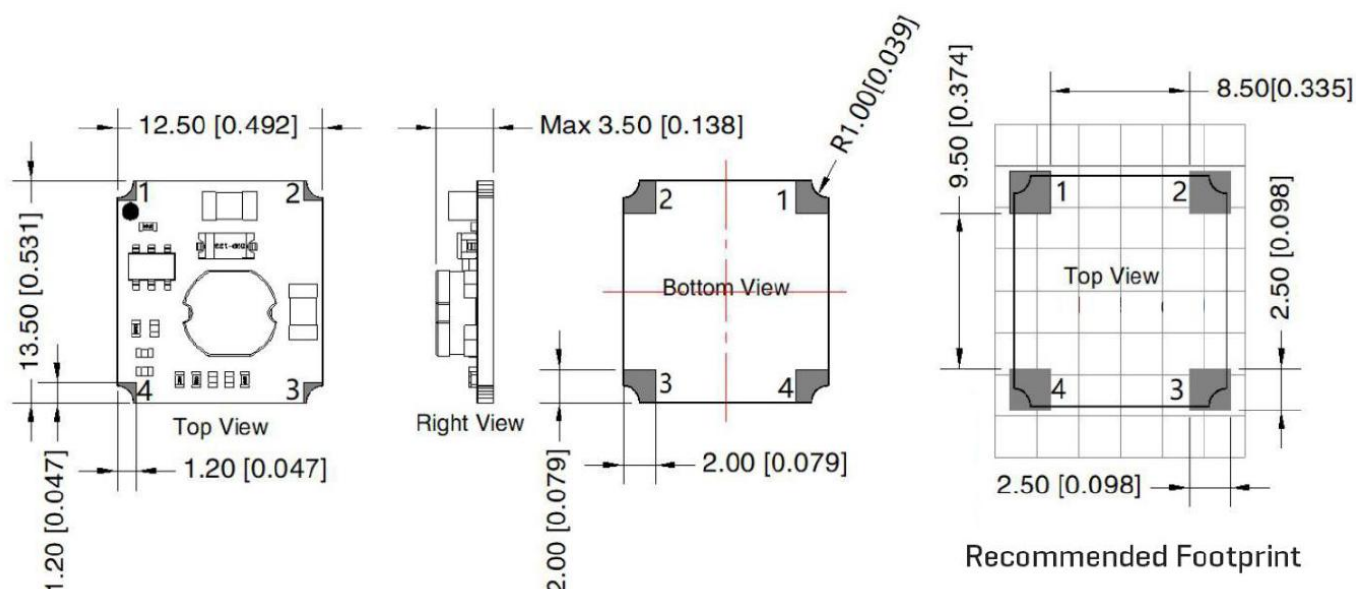
Figure 2, Circuit for EMC enhancement

[Table 2] Recommend component spec

Component	LDM1	LDM2	C5, C6	C0, C1
Spec	82uH	22uH	330uF, 50V	10uF, 50V

*C2 refer to the same in [Table 1]

Mechanical Specifications



Unless otherwise specified unit: mm [inch]
 General tolerance: ± 0.25 [± 0.010]
 Footprint grid 2.54 x 2.54 mm

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

Notes & Instructions

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at Ta=25°C, humidity <75%RH, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;
6. AMCHARD reserves the right to make changes to the product at any time without notice.

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