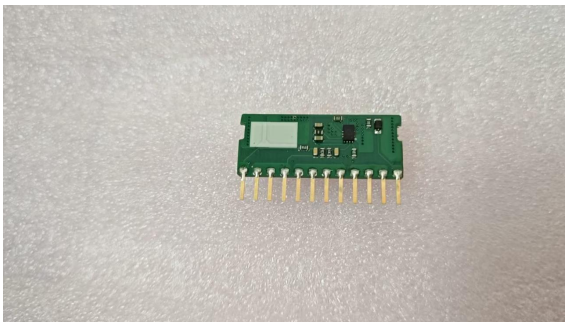
FEATURES：

- Wide input range
- Continuous short-circuit protection,self recover
- Working temperature：-40℃～+85℃
- No additional components required
- Stable performance and high reliability (MTBF≥2000K hours)
- Industry standard pin-out
- SIP package
- No-load input current as lowas 2mA



Selection Guide

Part No.	INPUT		OUTPUT		Full Load Efficiency （%/Typ）Vin Min/Vin Max	CapacitiveLoad(μF)
	Norminal （Vdc）	Range （Vdc）	Voltage (Vdc)	Max current (mA)		
K78L03-3AR3	24	8-32	3.3	3000	90/83	1000
K78L05-3AR3	24	8-32	5	3000	93/89	680
K78LX6-3AR3	24	10-32	6.5	3000	94/90	330
K78L09-3AR3	24	13-32	9	3000	95/91	330
K78L12-3AR3	24	16-32	12	3000	97/93	330
K78L15-3AR3	24	19-32	15	3000	97/94	330

customized accepted ,pls contact sales for details

Input Specifications

Input Filter	Capacitive Filter	
No-load Input Current	2mA(typ),4mA(max)	
Ctrl	Module on	Ctrl pin open or pulled high (TTL 4.5-14VDC)
	Module off	Ctrl pin pulled low to GND(0-0.8VDC)
	Input current when off	4mA(max)

Output Specifications

Item	Typ	Max	Test Conditions
Voltage Accuracy	±2%	±3%	0%-100% load, input voltage range
Line Regulation	±0.5%	±1%	Full load, input voltage range
Load Regulation	±0.5%	±1%	Nominal input voltage, 10% -100% load
Ripple&Noise	3.3V/5V/6.5V/9V output		20MHz Bandwidth, full load
	40mVp-p	70mVp-p	
	12V/15V output		
	50mVp-p	100mVp-p	
	3.3V output		Nominal input voltage, 50% load step change
	-	5%Vo	
	5V/6.5V output		
	-	4%Vo	

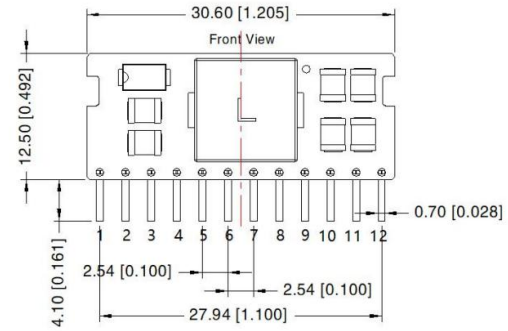
Transient Response Deviation	9V/12V output		
	-	3%Vo	
	15V output		
	-	2%Vo	

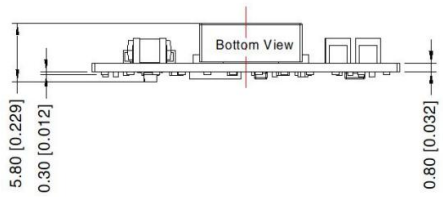
Gerneral Specifications

Switching Frequency	250KHz(Typ)	PWM mode
Short-Circuit Protection	Continuous, self-recovery	
Temperature Coefficient	±0.03%/℃	Operating ambient temperature -40℃ to +85℃
Pin Soldering Resistance Temperature	260℃	Soldering spot is 1.5mm away from case for 10 seconds
Operating Temperature	-40～+105℃	
Storage Temperature	-55～+125℃	
Storage Humidity	<95%	Non-condensing
Cooling Method	Free air convection	

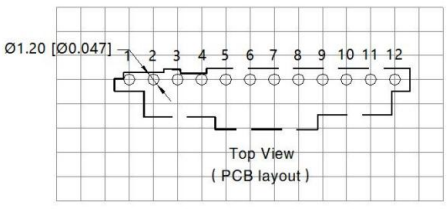
**Unless specified, otherwise all other parameters are tested under the following conditions: nominal input voltage, pure resistive load, 25℃ room temperature environment.

Dimensions and Recommended Layout





Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]



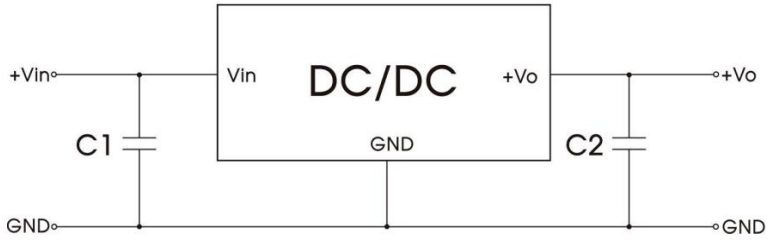
Note: Grid 2.54*2.54mm

Pins

Pin-out	Mark		
1	CTRL		
2,3,4	Vin		

5,6,7,8	GND		
9,10	+Vo		
11	+Vo		
12	TRIM		

Recommended Circuit



Recommended input and output capacitor values

Part Number	C1 (Ceramic capacitor)	C2 (Ceramic capacitor)		
K78L03-3AR3	10uF/50V	22uF/10V		
K78L05-3AR3		22uF/10V		
K78LX6-3AR3		22uF/10V		
K78L09-3AR3		22uF/16V		
K78L12-3AR3		22uF/25V		
K78L15-3AR3		22uF/25V		

EMC

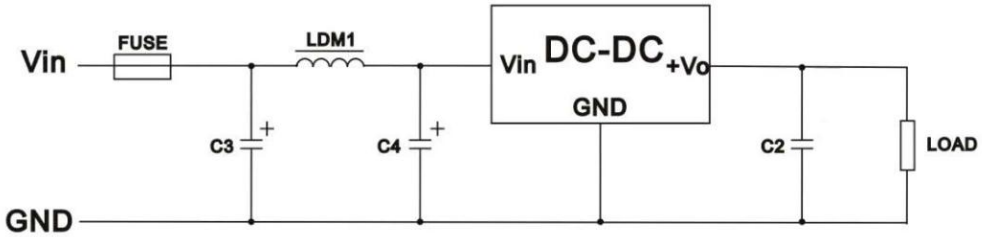
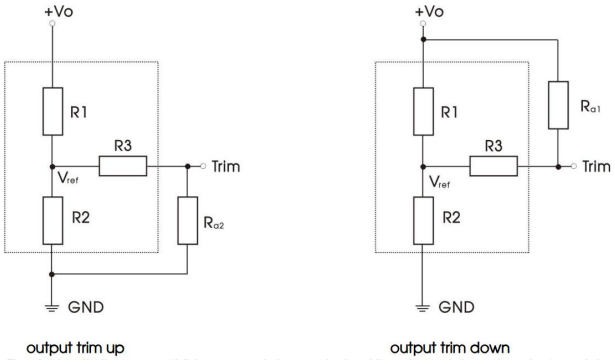


Fig.3 EMC compliance circuit

	FUSE	C3	LDM1	C4	C2
Emissions	Select fuse value according to actual input current	100μF /50V	22μH	100μF /50V	Refer to the C2 in Fig. 2
Immunity				680μF /50V	

TRIM



Trim up : $R_{a2}=\frac{aR_2}{R_2-a}-R_3,\ a=R_2//(R_3+R_{a2})=\frac{V_{ref}}{V_o'-V_{ref}}R_1$

Trim down : $R_{a1}=\frac{aR_1}{R_1-a}-R_3,\ a=R_1//(R_3+R_{a1})=\frac{V_o'-V_{ref}}{V_{ref}}R_2$

Output voltage(VDC)	R1(K)	R2(K)	R3(K)	Vref(V)
3.3	47	10.5	7.5	0.6
5	100	13.7	7.5	0.6
6.5	118	12	7.5	0.6
9	140	10	7.5	0.6
12	200	10.5	7.5	0.6
15	240	10	7.5	0.6

Vout nom(Vo)	3.3VDC		5VDC		6.5VDC		9VDC		12VDC		15VDC	
Vout adj(Vo')	Ra1	Ra2	Ra1	Ra2	Ra1	Ra2	Ra1	Ra2	Ra1	Ra2	Ra1	Ra2
3	387.3K											
3.3												
4		32.0K	139.4K									
4.5		15.7K	805.7K									
5												
5.5				107.8K	570.7K							
6				51.3K	1266.9K							
6.5												
7						134.1K	440.5K					
8						39.7K	1028.5K					
9												
10								76.5K	919.3K			
11								34.5K	2014.7K			
12												
13										116.0K	1480.5K	
14										53.4K	3208.5K	
15												
16												136.5K
17												64.5K

Noted

1. Input current: Ensure that the output current of the power supply meets the instantaneous starting current of the power module (that is, twice the average input current of the power module).
2. Output load requirements: Avoid no-load use. When the actual power consumption of the load is less than 10% of the rated output power of the module or no load occurs, connect an external resistance to the output end (the sum of the external resistance and the load power is greater than or equal to 10% of the rated load) or select a module with a smaller rated power.
3. The external capacitance of the output end should not be too large; otherwise, the module may be overcurrent or poorly started. For details, see the external capacitance recommendation table.
4. External LC filter circuit can be connected for occasions with high ripple noise requirements.