

### **Product Features**

- ♦ Package form: industry standard SIP-3 package
- ♦ Operating temperature range:  $-40^{\circ}C \rightarrow +85^{\circ}C$
- ♦ Support negative output
- ♦ Efficiency up to 95%
- ♦ Output short circuit protection
- Application fields: electric power, industrial control, communication, Internet of things, automobile, rail transit, etc.

## **Selection Table**





Product	Input voltage (VDC)	Output		Full Load	Maximum	
	Nominal value (range value)	Output voltage (VDC)	Output current (mA)	Min Vin	Max Vin	μF)
HLK-K7803-500R3	24 (4.75-36)	3.3	500	86	80	680
HLK-K7805-500R3	24 (6.5-36)	5	500	90	84	680
	12 (7-31)	-5	-300	80	81	330
HLK-K7809-500R3	24 (12-36)	9	500	93	90	680
HLK-K7812-500R3	24 (15-36)	12	500	94	91	680
	12 (8-24)	-12	-150	84	85	330
HLK-K7815-500R3	24 (19-36)	15	500	95	93	680
	12 (8-21)	-15	-150	85	87	330

### **Input Characteristics**

Project	Working conditions	Min.	Тур.	Max.	Unit
No-load input current	positive output		0.2	1.5	mA
Reverse input			pro	hibit	
Input filter type			Capaci	tive filterin	ng



# **Output Characteristics**

Project	Working co	nditions	Min.	Тур.	Max.	Unit
Output Voltage	Full load, input voltage range	HLK-K7803-500R3		±2	±4	%
Accuracy		Other models		±2	$\pm 3$	
Linear regulation rate	Full load, input v	voltage range		±0.2	±0.4	
Load regulation	Nominal input voltage, 10% to	o 3.3/5 VDC output		±0.6		%
	100% load	Other models		±0.3		
Ripple noise	20MHz bandwidth, nominal inp		20	75	mVp-p	
Instant recovery time			0.2	1	mS	
Transient Response	Nominal input voltage, 25% load step change			50	250	mV
Deviation						
Temperature Drift	Working temperature $-40^{\circ}C \sim +85^{\circ}C$				$\pm 0.03$	%/°C
Coefficient						
Short circuit protection	Nominal input voltage			ustainable	e, self-hea	ling

# **Common Characteristics**

Project	Working conditions	Min.	Тур.	Max.	Unit
Operating temperature	Temperature $\geq$ 85 °C derated use, (see Figure 1)			85	°C
Storage temperature		-55		125	
Storage humidity	No condensation			95	%RH
Pin Soldering Temperature	The solder joint is 1.5mm away from the shell,10s			260	°C
On-off level		550		850	kHz
Mean Time Between Failure (MTBF)	MIL-HDBK-217F@25°C, Ground Benign	2000			K Hours

# **Physical Characteristics**

Shell material	Black flame retardant heat resistant plastic (UL 94V-0 rated)				
Package size	11.50*7.55*10.20 mm				
Weight	1.95g				
Cooling method	Natural air cooling				



### **EMC Characteristics**

	Conducted disturbance	CISPR32/EN55032	N55032 CLASS B (See Figure 5-2) for the recommended	
EMI	EMI		circuit)	
	Radiation harassment	CISPR32/EN55032	CLASS B (See Figure 5-2) for the recommended	
			circuit)	
	Electrostatic discharge	IEC/EN61000-4-2	Contact±4KV	Perf.Criteria B
	Radiated immunity	IEC/EN61000-4-3	10V/m	Perf.Criteria A
	Burst immunity	IEC/EN61000-4-4	$\pm 1$ KV (See Figure 5-① for the recommended	Perf.Criteria B
EMS			circuit)	
	Surge immunity	IEC/EN61000-4-5	line to line±1KV (See Figure 5-① for the	Perf.Criteria B
			recommended circuit)	
	Conducted disturbance	IEC/EN61000-4-6	3 Vr.m.s	Perf.Criteria A
	immunity			

## **Product Characteristic Curve**





Tabla 1

### **Typical Application Circuit**



#### Figure 2 Typical Application Circuit

	14 12		2			Table I	
Vin o	1	DC/DC	•		Product model	C1/C3	C2/C4
	C3 =	0	C4			(Ceramic	(Ceramic
		2				capacitors)	capacitors)
	· · ·				HLK-K7803-500R3		22uF/10V
	LDM 1	13 52 12	2	11/2	HLK-K7805-500R3		22uF/10V
		DC/DC		—o +vo	HLK-K7809-500R3	10uF/50V	22uF/16V
	C1 =	3	C2		HLK-K7812-500R3	10417507	22uF/25V
					HLK-K7815-500R3		22uF/25V

Figure 3 Positive and negative output parallel application circuit

#### Note:

1. Under normal circumstances, external capacitors C1 and C2 (C3 and C4) should be connected depending on the use environment of the product, and the capacitor position should be close to the pin end of the product;

2. Refer to Table 1 for the capacitance values of C1 and C2 (C3 and C4), which can be appropriately increased as needed, or tantalum capacitors and electrolytic capacitors with low ESR can be used;

3. When the product is used in the application circuit shown in Figure 3, it is recommended to increase the inductor LDM to reduce the interference between the products. The recommended value of LDM is  $10\mu$ H;

4. This product does not support hot swapping, and the output terminals cannot be used in parallel;

If the output ripple needs to be further reduced, an "LC" filter network can be connected to the output. The recommended value of L is  $10\mu$ H-47 $\mu$ H, as shown in Figure 4.



Figure 4 "LC" filter application circuit



#### **EMC Recommend Current**



Figure 5 EMC Recommend Circuit

FUSE	MOV	LDM1	C0	C1/C2	C5	LDM2
According to the	20D470K	82µH	680µF	Refer to	4.7µF	12µH
customer's actual			/50V	Table 1	/50V	
input current				Parameters		
selection						

Note: Part ① in Figure 5 is used for EMS testing; Part ② is used for EMI filtering, which can be selected according to requirements

### **Appearance Dimensions/Recommended Printing Layout**



Terminal diameter tolerance: ±0.10[±0.004] Unmarked tolerance: ±0.50[±0.020]

Pin	Positive output	Negative output		
1	Vin	Vin		
2	GND	-Vo		
3	+Vo	GND		



#### Note:

1. The maximum capacitive load is tested under the input voltage range and full load conditions;

2. Unless otherwise specified, all indicators in this manual are measured at Ta=25°C, humidity <75RH, nominal input voltage and positive output rated load;

3. Our company can provide product customization, and you can directly contact our technical staff for specific needs;

4. All index testing methods are based on the company's corporate standards;

5. The copyright and the final interpretation right of the product belong to Shenzhen Hi-link Electronics Co., Ltd..

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