



### Product Typical

- ◆ Wide input voltage range (4:1), Output power 3W
- ◆ Transfer Efficiency to 81%
- ◆ With remote control shutdown function
- ◆ Continuous Short Circuit protection, Self-recovery
- ◆ No overshoot on switch
- ◆ Isolation Voltage 1600VDC
- ◆ Operating Temperature: -40°C ~ +85°C
- ◆ Plastic shell, meet UL94-V0 requirements



**Test conditions: Unless otherwise specified, all parameters are tested under nominal input voltage, pure resistive rated load and 25°C room temperature.**

### Application Field

*Widely used in instrumentation, communications, pure digital circuits, general low-frequency analog circuits, relay drive circuits, data exchange circuits and other fields*

### Application Field

Part no.	Input voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input current (mA) Nominal Voltage		Max. Capacitive Load	Ripple & Noise	Efficiency (%)@output full load, input nominal voltage	
	Nominal	Range	Voltage (VDC)	Current (mA) MAX./Min.	Full Load typ.	No Load typ.			uF	mVp-p
KW3-12S05E2C2	12	4.5 -18	5	600	316	12	1000	100	77	79
*KW3-12S12E2C2			12	250	313	12	330	100	79	81
*KW3-12S15E2C2			15	200	313	12	220	100	79	81
*KW3-12S24E2C2			24	125	313	12	100	100	79	81

1. "\*" is the model under development;

2. In order to ensure that the module can work efficiently and reliably, the minimum output load cannot be less than 10% of the rated load during use. If the power you need is really small, please connect a resistor in parallel at the output end. The recommended resistance is equivalent to 10% of the rated power.

### Input Specification



project	Working conditions	Min.	Typ.	Max.	Unit
Maximum input impulse voltage	4.5-18V Input	-0.7	---	22	VDC
Starting voltage	4.5-18V Input	---	4.5	4.6	VDC
Input undervoltage protection	4.5-18V Input	---	3.6	4	VDC
Standby power consumption	0.2W (Max.)				
Input filter	Capacitor filtering				
CTRL	Module turns on CTRL floating or connected to low level (0-0.6VDC)				
	The module turns off CTRL and connects to TTL high level (3-13VDC),				
	Input current at shutdown, Vin=5V		3mA (TYP)		

**Output characteristics**

Output voltage accuracy	Full pressure and full load	+Vo	≤±2.0%
Voltage regulation rate	Nominal load, full voltage range	Vo	≤±0.2%
Load regulation rate	10% ~ 100% rated load	Vo	≤±0.5%
Ripple & Noise	Nominal load		≤100mVp-p (20MHz bandwidth)
Temperature drift coefficient	100 % Full Load		±0.03%/°C
Dynamic Response	25% nominal load step	ΔVo/Δt	≤±5.0%/0.5ms(Typ.)
Output short circuit protection	Sustainable and self-healing		
Output overload protection	Min: 120%Iout Typ: 240%Iout		
Output start overshoot	≤10%Vo		

Note: The ripple & noise test adopts the twisted pair method, please refer to the design and application circuit reference for details.

**General characteristics**

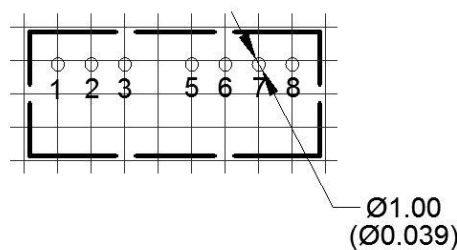
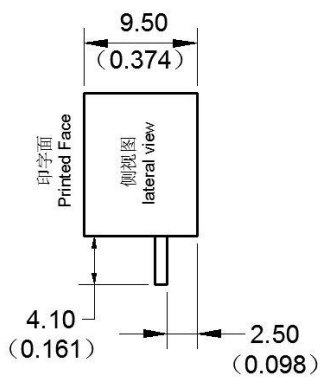
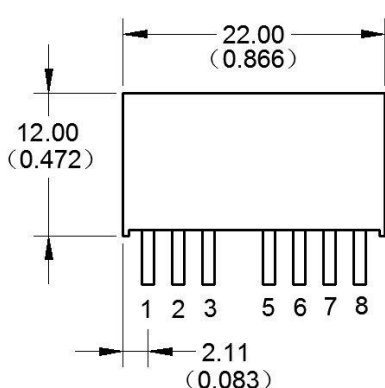
operating frequency	Typical value	330KHz (Typ.)
Operating temperature	Use reference temperature derating curve	-40°C ~ +85°C
Storage temperature		-55°C ~ +125°C
Maximum shell temperature	Within the temperature derating	+105°C
Relative humidity	No condensation	5%~95%
Shell material		Black flame-retardant and heat-resistant plastic (UL94-V0)
Pin solder resistance temperature	The solder joint is 1.5mm away from the shell, 10 seconds	300°C MAX
Isolation voltage	Input to output	1600Vdc ≤ 0.5mA / 1min
Minimum time between failures	MIL-HDBK-217F@25°C	2X10 <sup>5</sup> Hrs
product weight		10g (Typ.)

**EMC characteristics**



Total Items		Sub Items	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B ( (see recommended circuit photo②) )
		RE	CISPR22/EN55032	CLASS B ( (see recommended circuit photo②) )
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B ( (see recommended circuit photo②) )
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B ( (see recommended circuit photo②) )
		ESD	IEC/EN61000-4-2	Contact ±4KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B ( (see recommended circuit photo①) )
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B ( (see recommended circuit photo①) )
		Voltage dips, short interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

**Packing Dimension(without heat sink)**



印刷版俯视图  
Printed board vertical view  
栅格间距  
Lattice spacing:2.54mm(0.1inch)

单位 (Unit: ) : mm  
未标注公差xx.xx±0.2mm  
x.xx±0.2mm  
0.xx±0.1mm

封装尺寸图

建议印刷板图

Packing code	L x W x H	
E	22X9.5X12mm	0.866X0.374X0.472inch

**Pin out Specifications**

Pin function	1	2	3	4	5	6	7	8
Single output (S)	-Vin	+Vin	Ctrl	NP	NC	+Vo	GND	NC

Note: If the definition of each pin of the power module is not consistent with the selection manual, the marking on the physical label shall prevail.

**Ripple& Noise Test: (Parallel Line Test Method 20MHz bandwidth)**

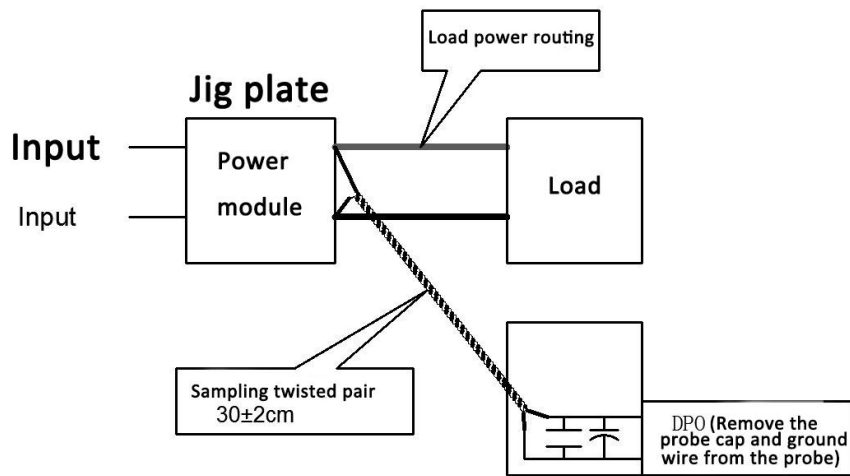
**Test Methods:**

1. Ripple noise is connected by 12# twisted pair, oscilloscope

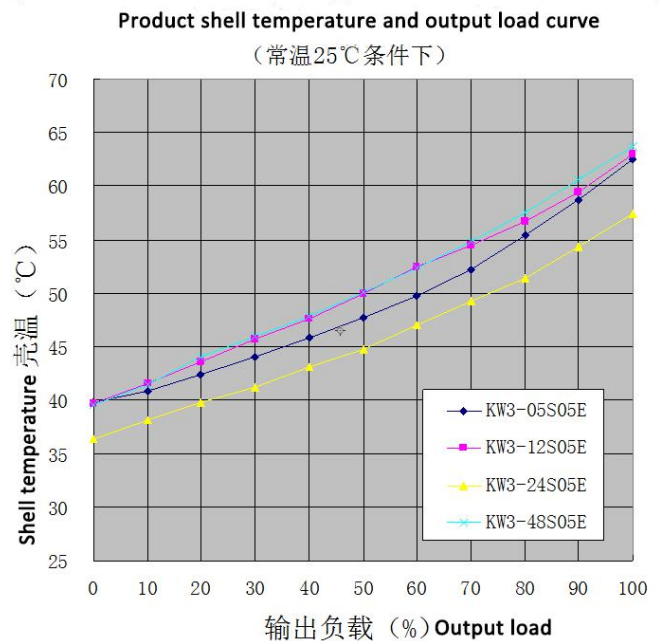
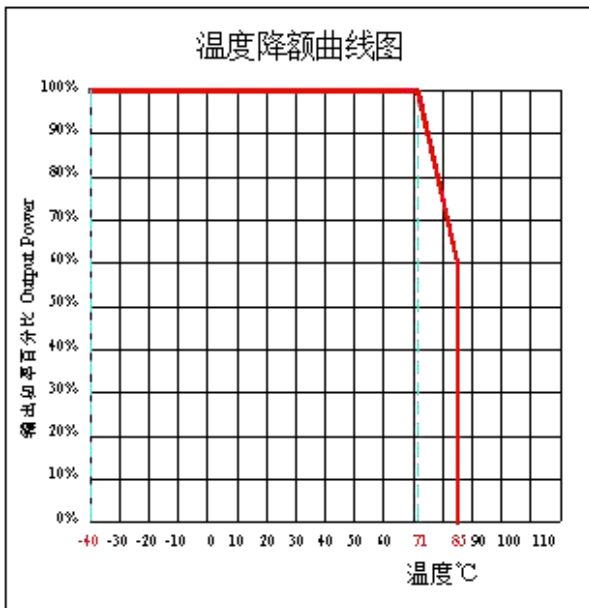
The bandwidth is set to 20MHz, 100M bandwidth probe, and the probe is Parallel 0.1uF polypropylene capacitor and 10uF high frequency on the head end Low-resistance electrolytic capacitor, use Sample for oscilloscope sampling model.

2. Schematic diagram of output ripple noise test:

Connect the power input terminal to the input power supply, and the power output passes The jig board is connected to the electronic load, and the test is individually used 30cm±2 cm The sampling line directly samples from the power output port. The power line is based on the output The size of the outgoing current is to select a wire with insulation covering the corresponding wire diameter.



**Product characteristic curve**



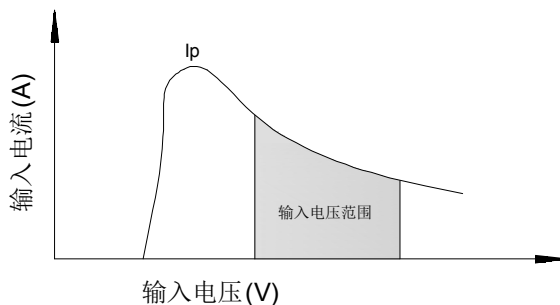
**Design reference application**



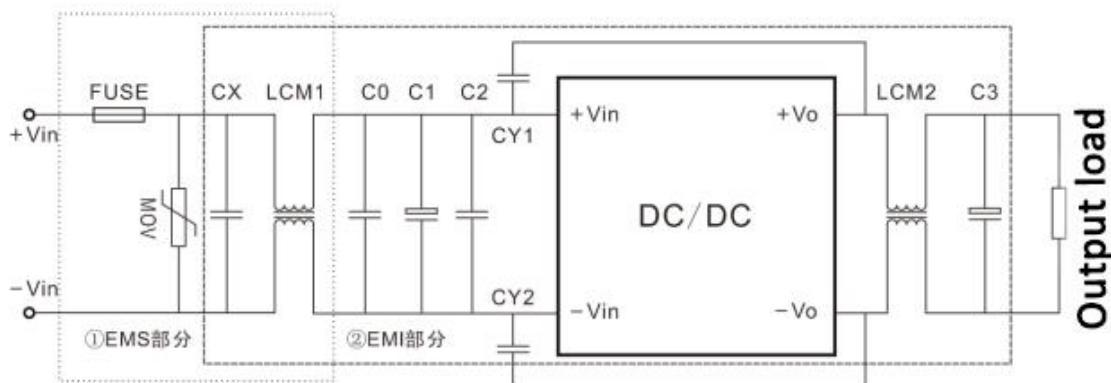
1、Input current

When using an unstable power supply, please ensure that the output voltage fluctuation range and ripple voltage of the power supply do not exceed the specifications of the module itself. The output current of the input power supply must be sufficient to cope with the instantaneous starting current  $I_p$  of the DC/DC module (see below picture).

Normally:  $I_p \leq 1.4 * I_{in_{max}}$



2、EMC peripheral recommended circuit



**Parameter recommendation**

Device code	KW3-XXSXXE2C2
FUSE	Connect the corresponding fuse according to customer needs
MOV	14D560K
CX	0.47uF
LCM1	5mH
C0	1uF/100V
C1	220uF/100V
C2	1uF/100V
LCM2	30uH
C3	47uF/50V
CY1,CY2	2.2nF/2000V



## Note:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
3. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. Unless otherwise specified, the above data is measured when  $T_a=25^{\circ}\text{C}$ , humidity <75%, input nominal voltage and output rated load (pure resistance load);
5. All the above index test methods are based on the company's standards;
6. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard products will exceed the above requirements. For specific information, please contact our technical staff directly;
7. Our company can provide product customization;
8. Product specifications are subject to change without notice. Please pay attention to the latest manual published on our official website.