

Typical Features

- ◆Wide Input Voltage Range (4:1), Output Power 3W
- ◆High Efficiency up to 82%
- ◆With remote control Switch-off function
- ◆Continuous Short Circuit protection, Self-recovery
- ◆No Overshooting when turn-on or off
- ◆Isolation Voltage 1500VDC
- ◆Operating Temperature: -40°C~+85°C
- ◆Plastic Case, meet flammability UL94 V-0



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C

Typical Product List

Part No.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current(mA) Nominal Voltage		Max. Capacitive Load uF	Ripple & Noise (Max.) mVp-p	Efficiency (%) Typ.
	Nominal	Range	Voltage (V)	Current(mA)	Full load Typ.	No Load Typ.			
KW3-18S05EA	18	9 - 36	5	600	219	8	1000	100	78
KW3-18S12EA			12	250	208	10	820		80
KW3-18S15EA			15	200	203	11	680		82
KW3-18S24EA			24	125	203	13	330		82
KW3-36S05EA	36	18 - 75	5	600	110	4.5	1000		76
KW3-36S12EA			12	250	104	5	820		80
KW3-36S15EA			15	200	102	6	680		82
KW3-36S24EA			24	125	102	7	330		82
*KW3-18D05EA	18	9 - 36	±5	±300	219	8	680		76
*KW3-18D12EA			±12	±125	208	10	470		80
*KW3-18D15EA			±15	±100	203	11	330		82
*KW3-18D24EA			±24	±62	203	13	100		82
*KW3-36D05EA	36	18 - 75	±5	±300	110	4.5	680	76	
*KW3-36D12EA			±12	±125	104	5	470	80	
*KW3-36D15EA			±15	±100	102	6	330	82	
*KW3-36D24EA			±24	±62	102	7	100	82	

1. To ensure this module operate efficiently and reliably, the minimum output load could not be less than 10% of the nominal load during operation. If the actual output power is too small, please connect a resistor in parallel at the output, the resistance recommended equal to 10% nominal power;

2. "*" are for models being developing.



Input Specifications

Item	Test Condition	Min.	Typ.	Max.	Unit
Max Input Overshoot Voltage (1Second)	9-36V Input	-0.7	-	50	VDC
	18-75V Input	-0.7	-	100	
Turn-on Voltage	9-36V Input	4.5	8	9	VDC
	18-75V Input	11	16	18	
Stand-by Power Consumption	0.5W (Max.)				
Input Filter	Capacitor Filter				

Output Specifications

Positive Output Voltage Accuracy	Full voltage full load	+Vo	≤±2.0%		
Negative Output Voltage Accuracy		-Vo	≤±3.0%		
No Load Output Voltage Accuracy		Vo	Primary Output:≤±3.0%, Secondary Output:≤±5.0%		
Line Regulation	Nominal load, full voltage range	Vo	Primary Output:≤±0.2%, Secondary Output:≤±0.5%		
Load Regulation	10% ~ 100% nominal load	Vo	Primary Output:≤±0.5%, Secondary Output:≤±0.75%		
Cross Regulation	Dual output, Primary output 50% load, secondary output 10%-100% load		≤±5.0%		
Ripple & Noise*	Nominal load, nominal voltage	≤100mVp-p (20MHz bandwidth)			
Temperature Drift Coefficient	100% full load	±0.03%/°C			
Dynamic Response	25% nominal load step change	ΔVo/Δt	≤±5.0%/0.5ms(Typ.)		
Output Short Circuit Protection	Continuous, Self-recovery				

Note: 1.Un-balancing loads of dual output:±5%;
2. Ripple & Noise Tested by twisted-pair method, for details please check Design and Application Circuit.

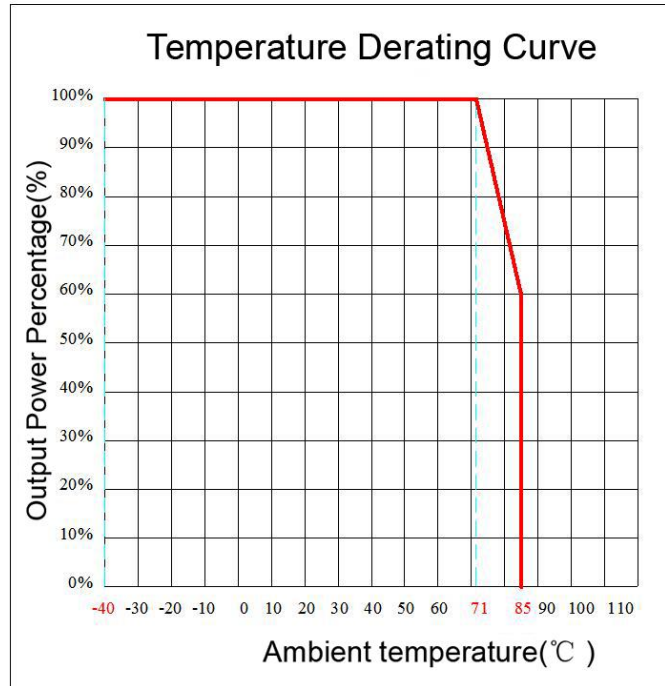
General Specifications

Switching Frequency	typical	450KHz (Typ.)
Operating Temperature	Refer to Temperature Derating Curve	-40°C ~ +85°C
Storage Temperature		-55°C ~ +125°C
Max Case Temperature	Within Temperature Derating Curve	+105°C
Relative Humidity	No condensing	5%~95%
Case Material		Black flame-retardant heat-resistant Plastic(UL94 V-0)
Product Weight		4.37g (Typ.)
Isolation Voltage	Input to Output	1500Vdc ≤ 0.5mA / 1min
MTBF	MIL-HDBK-217F@25°C	2X10 ⁵ Hrs

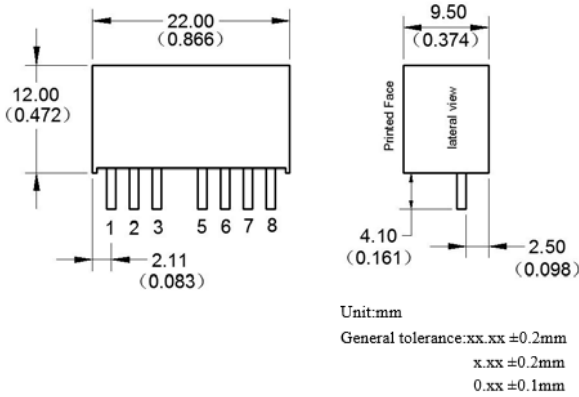
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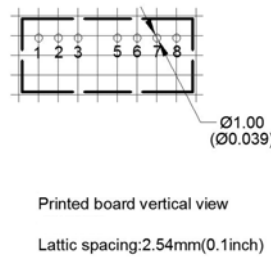
Temperature Derating Curve



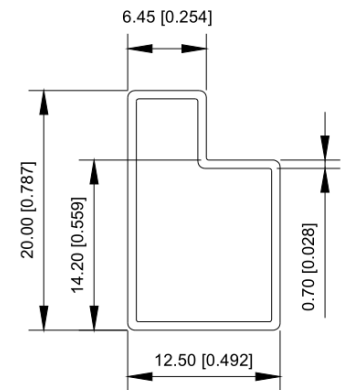
Packing Dimension



Packing Dimension



Recommend PCB Layout



Note:
Unit:mm[inch]
General tolerance:x.x ±0.5mm[x.x±0.020 inch]
0.x ±0.2mm[x.x±0.008 inch]
Tube length: 220mm[8.66 inch] package qty: 9pcs
Inner box: 235*160*82mm package: 9tubes*4 layers
Outer box:335*225*280mm package:6 boxes*1CTN

Packing

Pin Function

	1	2	3	4	5	6	7	8
Single(S)	GND	+Vin	Ctrl	--	NC	+Vo	0V	CS
Dual(D)	GND	+Vin	Ctrl	--	NC	+Vo	0V	-Vo

Note: if the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Pin Function

Packing Code	L x W x H	
E	22 x 9.5 x 12mm	0.866x 0.374 x 0.472inch

Design and Application Circuit Recommended

1.CS terminal

This terminal provides a connection point to connect the inside main filter capacitor of output terminal for the DC/DC converter(capacitor positive) , and can further improve the output ripple and noise through connecting a low ESR capacitor(Normal CS≤47uF) between this terminal and the 7 pin (capacitor negative).

2. Output Load Request

a. To ensure this module operate efficiently and reliably, the minimum load recommended not to be less than 10% of the nominal load. If the actual power is too small, please connect a resistor in parallel at output terminal, the resistance equal to 10% nominal load. If use positive negative dual output product, please try to avoid big unbalances between loads, or the original output voltage accuracy cannot be ensured.

b. The maximum capacitive load is tested under nominal input full load; if use it under no load condition, should try to decrease the output capacitive load or connect a resistor in parallel at output terminal, the resistance equal to 10% nominal load, otherwise it may cause the output voltage be un-stable or even exceed the original output voltage accuracy range

3.Recommended Circuit

DC/DC test circuit: If customers want to further decrease input& output ripple, the capacitance of external capacitor can be increased properly, but the maximum capacitance of the filter capacitor should be less than the maximum capacitive load, otherwise it will make it difficult to turn-on the module.

Normal Recommend: Ci:100uF (18V) / 10uF (36V)

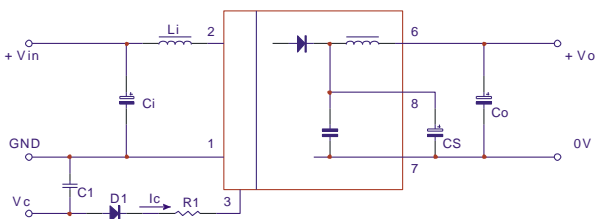
Li:4.7uH~120uH

CS:10uF~22uF

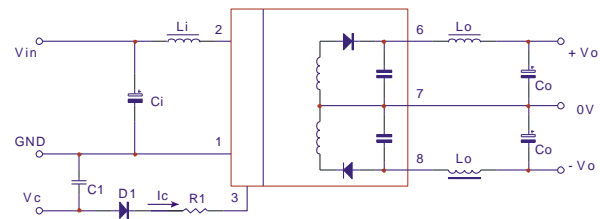
Co:100uF (Typ.)

Lo:2.2uH~10uH

C1:47nF/100V



Single Output



Positive Negative Dual Output

Photo 13

4.CTRL Terminal

Suspended or high resistance, output of module runs normally; Connect to high level(relative to input ground), module turns off.

Note: The proper current flowing into this pin is 5-10mA, it will cause permanent damage to module if the current exceed its maximum value(typically 20mA). The R is calculated according to the following formula:

$$R = \frac{Vc - Vd - 0.7}{Ic} - 330 \quad (\text{See Photo 13})$$

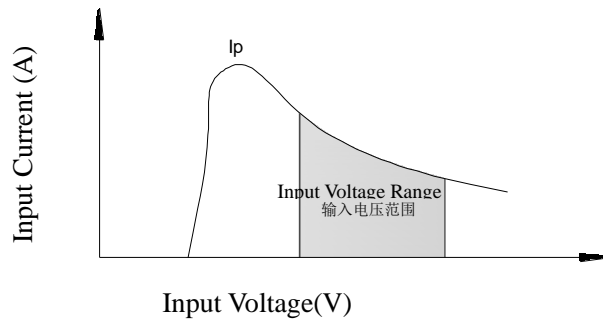


Vc is input voltage of Ctrl pin, Vd is forward voltage drop of D1, 0.7V and 330Ω are module's bipolar junction transistor voltage drop and inside connecting resistor of input terminal for control pin respectively, Ic is the input current of control terminal.

5.Input Current

When unstable power supply connected, please ensure that the output voltage fluctuating range of power supply and the ripple voltage is within the module's index, output current of input power supply must be able to meet instant turn-on current Ip of the DC/DC converter (see below picture).

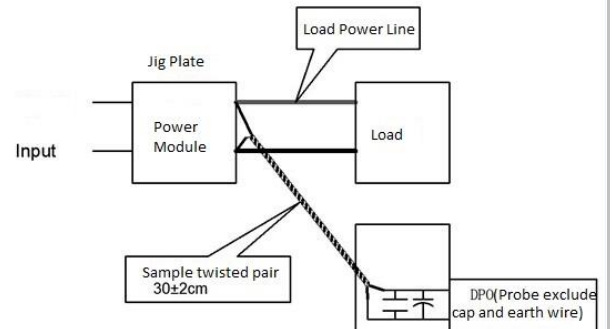
Normally: $I_p \leq 1.4 * I_{in_max}$



5.Ripple & Noise Test:(Twisted pair method, 20MHZ bandwidth)

a. 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

b. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



Note:

1. This product cannot be used in parallel, and do not support hot-plugging;
2. All index testing methods in this datasheet are based on our Company's corporate standards
3. The product specification may be changed at any time without prior notice.