Weiking Electronics Manufacturing (Xi'an) Co., Ltd

WKI285R2S-5H Series DC-DC Converters

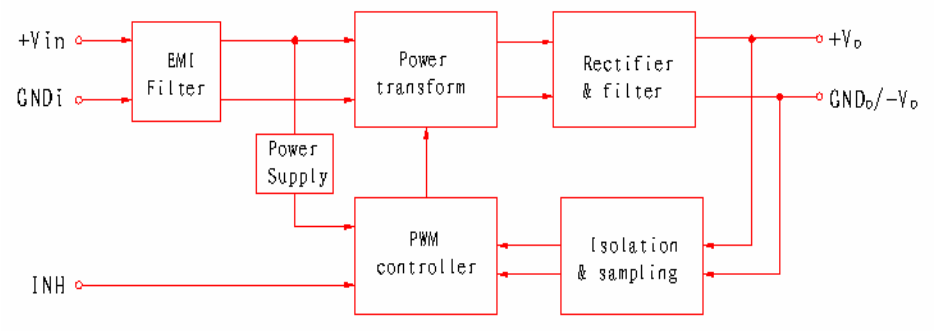
FEATURES:

- **High reliability, compact size**
- **Photoelectric isolation**
- **Input voltage range: $16V_{DC}$ to $40V_{DC}$**
- **Output power: 5W**
- **Inhibit function**
- **Short circuit protection**
- **DIP hermetical**

DESCRIPTION:

The WKI285R2S-5H series module, which adopts Thick-Film Microcircuit Technology, parallel seam welding process, is a kind of perfect converter with high reliability necessary for some applications such as aviation, aerospace and military. The single output voltage is 5.2V. The output power is 5W. The input filter circuit is designed to reduce the electro-magnetic interference. The typical input voltage is 28V, and the ranges from 16V to 40V. The switching frequency is fixed at 430 KHz to minimize noise. The WKI285R2S-5H series also provides some control functions such as shut down, and short circuit protection.

BLOCK DIAGRAM:



ABSOLUTE MAXIMUM RATINGS:

Output Power:	5W
Operating Temp(T_C):	-55℃～105℃（M）/-40℃～85℃（E/I）
Storage Temp:	-55℃～125℃（M/E/I）
Pin-Solder Temp (10s):	300℃

THE ELECTRICAL CHARACTERISTICS:

PARAMETER	CONDITIONS[1]	WKI285R2S-5H			UNITS
		MIN	TYP	MAX	
OUTPUT VOLTAGE	V_{IN}=28V_{DC}	5.15	5.20	5.25	V
OUTPUT CURRENT	V_{IN}=16V_{DC}～40V_{DC}	0	—	960	mA
OUTPUT POWER	V_{IN}=16V_{DC}～40V_{DC}	—	—	5	W
OUTPUT RIPPLE VOLTAGE [2]	V_{IN}=28V_{DC}、FULL LOAD、20MHz	—	30	50	mV_{p-p}
	MIN～MAX T_C	—	50	100	
LINE REGULATION	V_{IN}=16V_{DC}～40V_{DC}	—	10	20	mV
	MIN～MAX T_C	—	30	50	
LOAD REGULATION	V_{IN}=28V_{DC}	—	10	20	mV
	MIN～MAX T_C	—	30	50	
INPUT VOLTAGE	CONTINUOUS	16	28	40	V
	50V/50ms	—	—	50	
INPUT CURRENT	NO LOAD	—	10	20	mA
	FULL LOAD	—	238	—	
	INHIBITED	—	3	6	
INPUT RIPPLE CURRENT [3]	V_{IN}= 28V_{DC}、FULL LOAD、20MHz	—	25	50	mA_{p-p}
EFFICIENCY	V_{IN}=28V_{DC}、FULL LOAD	71	75	—	%
SHORT CIRCUIT POWER DISSIPATION	V_{IN}=28V_{DC}	—	0.2	1	W
STEP LOAD RESPONSE TRANSIENT	V_{IN}=28V_{DC} 50%～100%～50%	—	±100	±200	mV
STEP LOAD RESPONSE TRANSIENT RECOVERY [4]		—	200	300	μs
STEP LINE RESPONSE TRANSIENT	16V_{DC}～40V_{DC}～16V_{DC}	—	50	100	mV
STEP LINE RESPONSE TRANSIENT RECOVERY [4]		—	200	300	μs
START-UP	DELAY	—	5	10	ms
	FULL LOAD OVERSHOOT	—	—	50	mV_{pk}
INSULATION RESISTANCE [5]	≥100MΩ @ 500VDC（INPUT - OUTPUT；ANY PINS TO CASE）				

NOTE：

1）Unless otherwise specified, Ta=25℃, 28V_{DC} Vin, 100% load.

2）Using tip and barrel measurement.

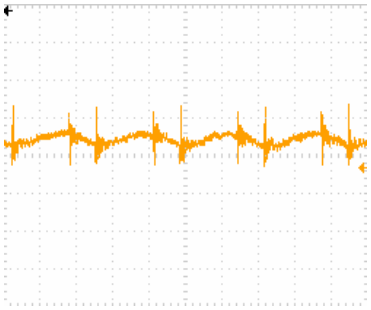
3）Design guarantee.

4）To need times that Output voltage is renewed to 1% range of the stability value.

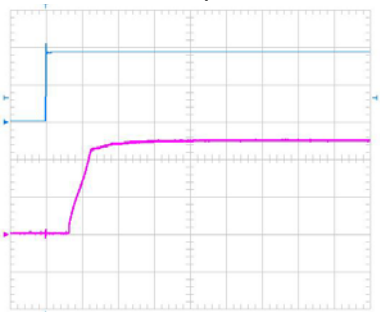
5）Only under the control of being machining for insulation resistance, each circuit should be assured to suffice need.

TYPICAL PERFORMANCE CURVES:

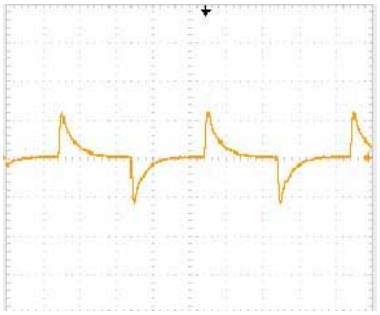
1：Output Ripple Voltage



2：Start - Up

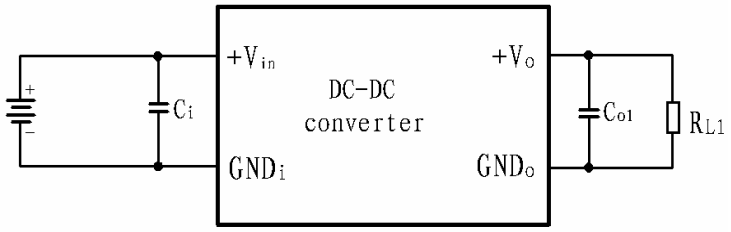


3：Step load Response



APPLICATION NOTE:

- **DC-DC converter typical connection shown as below:**



- **INHIBIT FUNCTION**

The INH pin is used to achieve the function of external shut down. No connection to Pin 5 is necessary for normal operation of the converter. Shut down may be implemented by simply pulling the Pin 5 below 0.3V referenced to input common. The INH pin should be empty when not in use.

- **SHORT CIRCUIT PROTECTION**

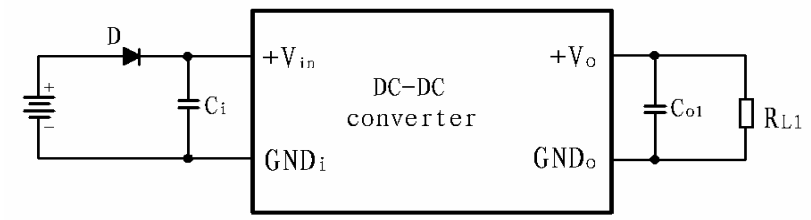
The WKI285R2S-5H series of DC-DC converters has the function of short circuit protection. When it is working under load fault condition, the converter will automatically activate the short circuit protection and restore when the fault is removed.

- **RIPPLE VOLTAGE**

While the output ripple voltage can't satisfy your application, it can still be suppressed by adding a filter capacitor between outputs and GND_O.

- **REVERSE POLARITY PROTECTION**

To avoid the input reverse connection, it's advised to connect a diode in series with the input pin of the converter. (Shown as below)



Notes：

1）Please properly connect pins of power module to PCB following instructions of part's specification.

2）To prevent pins of power module from being stressed to cause glass insulators cracked and power module leaked, please install power module with fixed flanges or screws prior to welding pins of power module.

3）The bottom of power module should be stressed to heat sink tightly. If necessary, thermal washers and shockproof gaskets are employed.

4）In any case, bending of pins should be avoided to keep glass insulators from cracking and prevent power module from leaking.

ENVIRONMENTAL SCREENING:

M/E：

Num	TEST ITEMS		METHODS	REQUEST	CONDITIONS
1	Internal Visual		MIL-STD-883 Method 2017	100%	---
2	Temp-Cycle		MIL-STD-883 Method 1010	100%	-55°C to +125°C，10 times
3	Constant Acceleration		MIL-STD-883 Method 2001	100%	3000g，Y1，1min
4	Burn-in		MIL-STD-883 Method 1015	100%	T_C :+105℃ 160h (M)
					T_C :+85℃ 96h (E)
5	Final Electrical Test	Natural temperature	MIL-PRF-38534	100%	+25℃
		High temperature		100%	T_C : +105℃(M)
					T_C : +85℃(E)
		Low temperature		100%	-55℃(M)/ -40℃(E)
6	Seal (Fine and Gross)		MIL-STD-883 Method 1014	100%	Fine Leak, Cond. A1
					Gross Leak, Cond. C1
7	External Visual		MIL-STD-883 Method 2009	100%	---

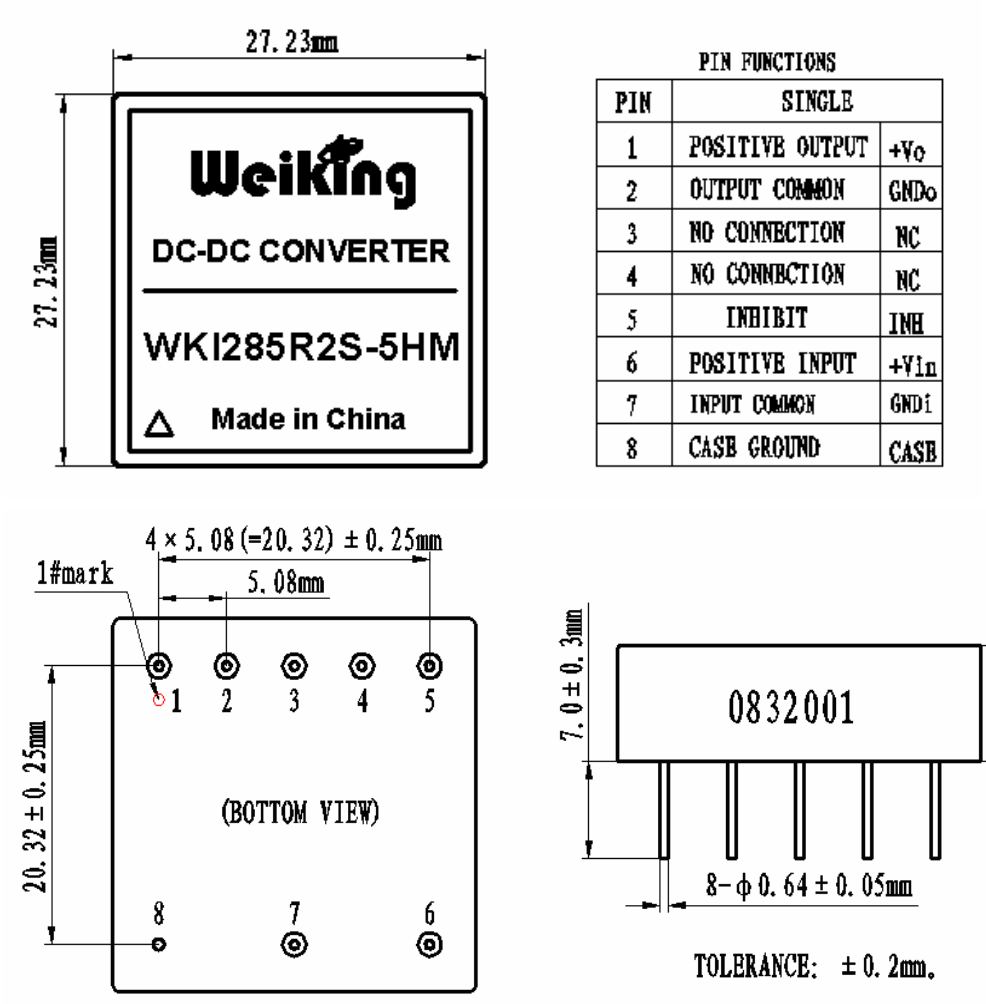
I：

Num	TEST ITEMS	METHODS	REQUEST	CONDITIONS
1	Internal Visual	MIL-STD-883 Method 2017	100%	---
2	Burn-in	MIL-STD-883 Method 1015	100%	T_C : +85℃ 48h
3	Final Electrical Test	MIL-PRF-38534	100%	+25℃
4	External Visual	MIL-STD-883 Method 2009	100%	---

MECHANICAL SPECIFICATIONS:

Volume: 6.3cm^3 Weight: ≤25g Shell Material: Cold Rolled Steel

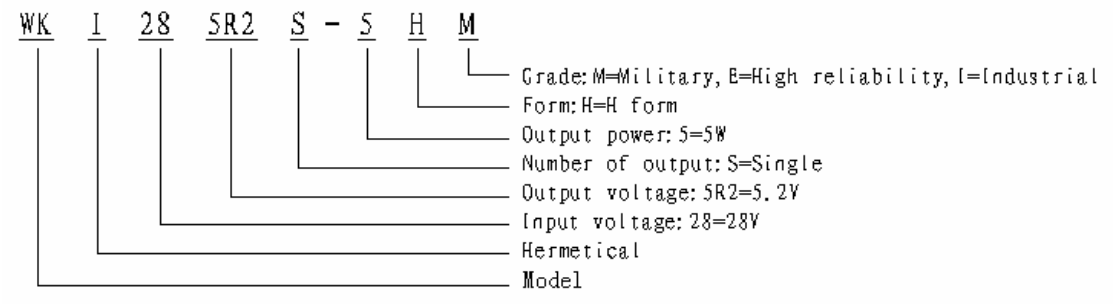
H form ：



PIN FUNCTIONS

PIN	SINGLE	
1	POSITIVE OUTPUT	+Vo
2	OUTPUT COMMON	GNDo
3	NO CONNECTION	NC
4	NO CONNECTION	NC
5	INHIBIT	INH
6	POSITIVE INPUT	+Vin
7	INPUT COMMON	GNDi
8	CASE GROUND	CASE

ORDERING INFORMATION:



MARK SPECIFICATION:

Serials Number: 0832 001, which indicates this product has been manufactured in the 32nd week of 2008, and the sequence number is 001.