

FEATURES:

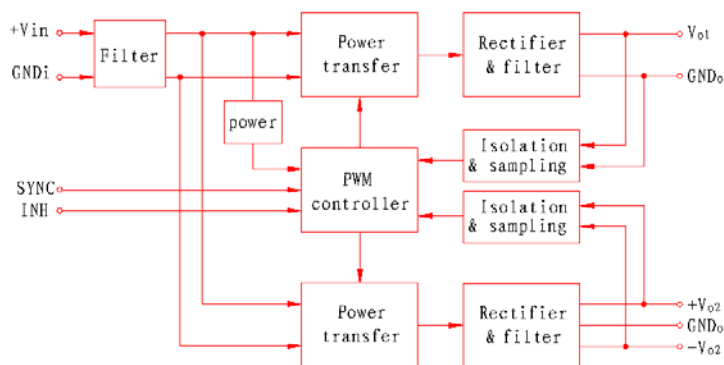
- High reliability, compact package
- Photoelectric isolation
- Input voltage range: 16V_{DC} to 40V_{DC}
- Output power: 30W
- Inhibit function
- Short circuit protection
- DIP hermetical



DESCRIPTION:

The WK302851*T-30 series modules, which adopt Thick-Film Microcircuit Technology, parallel seam welding process, are perfect converters with high reliability necessary for some applications such as aviation, aerospace and military. The output voltages are 5V and $\pm 12V$ or $\pm 15V$. The output power is 30W. The switching frequency is fixed at 400 kHz to minimize noise. The input filter circuit is designed to reduce the electro-magnetic interference. The typical input voltage is 28V, and ranges from 16V to 40V. The WK302851*T-30 series also provide some control functions such as shut down and short circuit protection.

BLOCK DIAGRAM:



ABSOLUTE MAXIMUM RATINGS:

Output Power:	30W
Operating Temp(T _C):	-55°C~105°C (M) /-40°C~85°C (E/I)
Storage Temp:	-55°C~125°C (M/E/I)
Pin-Solder Temp (10s):	300°C

THE ELECTRICAL CHARACTERISTICS:

PARAMETER	CONDITIONS ¹⁾		WK3028512T-30			WK3028515T-30			UNITS	
			MIN	TYP	MAX	MIN	TYP	MAX		
OUTPUT VOLTAGE	$V_{IN}=28V_{DC}$	+5V	4.90	5.00	5.10	4.90	5.00	5.10	V_{DC}	
		$\pm V_O$	11.82	12.00	12.18	14.78	15.00	15.22		
	MIN~MAX T_C	+5V	4.84	5.00	5.16	4.84	5.00	5.16		
		$\pm V_O$	11.67	12.00	12.33	14.60	15.00	15.40		
OUTPUT CURRENT	$V_{IN}=16V_{DC}\sim 40V_{DC}$	+5V	-	-	4.0	-	-	4.0	A	
		$\pm V_O$	-	-	0.42	-	-	0.33		
OUTPUT POWER	$V_{IN}=28V_{DC}$	+5V	-	-	20	-	-	20	W	
		$\pm V_O$	-	-	10	-	-	10		
OUTPUT RIPPLE VOLTAGE ²⁾	$V_{IN}=28V_{DC}$ FULL LOAD 20MHZ	+5V	-	50	80	-	50	80	mV_{P-P}	
		$\pm V_O$	-	30	80	-	30	80		
	MIN~MAX T_C	+5V	-	50	100	-	50	100		
		$\pm V_O$	-	50	100	-	50	100		
LINE REGULATION	$V_{IN}=16V_{DC}\sim 40V_{DC}$	+5V	-	20	30	-	20	30	mV	
		$\pm V_O$	-	20	30	-	20	30		
	MIN~MAX T_C	+5V	-	30	50	-	30	50		
		$\pm V_O$	-	30	50	-	30	50		
LOAD REGULATION	$V_{IN}=28V_{DC}$ NO~FULL LOAD	+5V	-	30	50	-	30	50	mV	
		$\pm V_O$	-	30	50	-	30	50		
	MIN~MAX T_C	+5V	-	30	50	-	30	50		
		$\pm V_O$	-	30	50	-	30	50		
CROSS REGULATION	20%~80%	$\pm V_O$	-	2	3	-	2	3	%	
	10%~50%		-	2	3	-	2	3		
INPUT VOLTAGE	CONTINUOUS		16	28	40	16	28	40	V	
	50V/50ms		-	-	50	-	-	50		
INPUT CURRENT	NO LOAD		-	50	100	-	50	100	mA	
	FULL LOAD		-	1350	-	-	1350	-		
	INHIBITED		-	10	50	-	10	50		
EFFICIENCY	$V_{IN}=28V_{DC}$, FULL LOAD		75	79	-	75	79	-	%	
SHORT CIRCUIT POWER DISSIPATION	$V_{IN}=28V_{DC}$		-	5	8	-	5	8	W	
STEP LOAD RESPONSE TRANSIENT	$V_{IN}=28V_{DC}$	+5V	-	300	500	-	300	500	mV	
		$\pm V_O$	-	200	300	-	200	300		
STEP LOAD RESPONSE TRANSIENT RECOVERY ³⁾	50%~100%~50%	+5V	-	200	300	-	200	300	μs	
		$\pm V_O$	-	200	300	-	200	300		
START-UP	DELAY	$V_{IN}=28V_{DC}$ FULL LOAD	-	-	10	20	-	10	20	ms
	FULL LOAD OVERSHOOT		+5V	-	50	100	-	50	100	mV
			$\pm V_O$	-	50	100	-	50	100	
MAXIMUM ADMISSIBLE CAPACITY LOAD	$V_{IN}=28V_{DC}$ FULL LOAD	+5V	-	-	1000	-	-	1000	μF	
		$\pm V_O$	-	-	220	-	-	220		
INSULATION RESISTANCE ⁴⁾	$\geq 100M\Omega @ 500V_{DC}$ (INPUT - OUTPUT; ANY PINS TO CASE)									

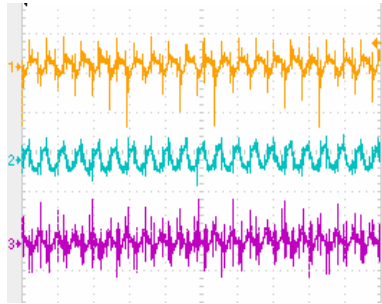
NOTE:

- 1) Unless otherwise specified, $T_a=25^{\circ}\text{C}$, $28\text{V}_{\text{DC}} V_{\text{in}}$, 100% load.
- 2) Using tip and barrel measurement.
- 3) To need times that Output voltage is renewed to 1% range of the stability value.
- 4) Only under the control of being machining for insulation resistance, each circuit should be assured to suffice need.

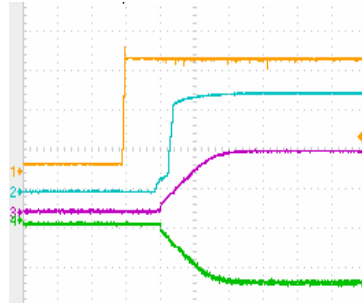
TYPICAL PERFORMANCE CURVES:

E.g. WK3028512T-30:

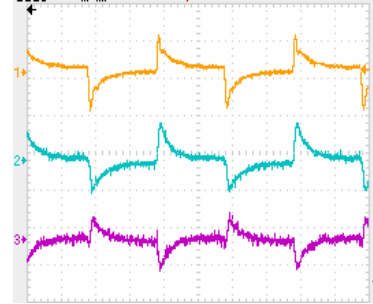
1: Output Ripple Voltage



2: Start - Up

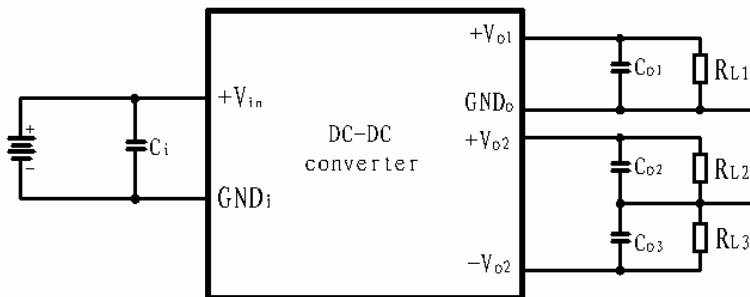


3: Step load Response



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 8 is necessary for normal operation of the converter. Shut down may be implemented by simply pulling the Pin below 0.3V referenced to input common. The INH pin should be empty when not in use.

- **SHORT CIRCUIT PROTECTION**

The WK302851*T-30 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 .

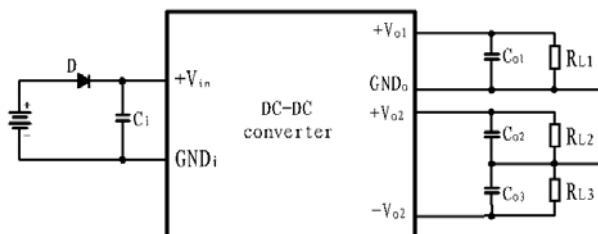
- **SYNCHRONIZATION**

The WK302851*T-30* series of DC-DC converters allow the designer to match the switching frequency of the converter to the frequency of the system clock by synchronization pin. Frequency

ranges from 900 kHz to 1 MHz, the level from 4.5V to 5.5V, and the Pulse-Width from 15 ns to 150 ns. A connection to pin 9 is not necessary for not in use.

● 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/I):

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%	+105°C 160h (M)/ +85°C 96h (E)
5	Final Electrical Test	Natural temperature	MIL-PRF-38534	100%	+25°C
		High temperature		100%	T _c : +105°C(M)/ +85°C(E)
		Low temperature		100%	-55°C(M)/ -40°C(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°C 48h
3	Final Electrical Test		MIL-PRF-38534	100%	+25°C
4	External Visual		MIL-STD-883 Method 2009	100%	---

MECHANICAL SPECIFICATIONS:

Volume: 17cm³

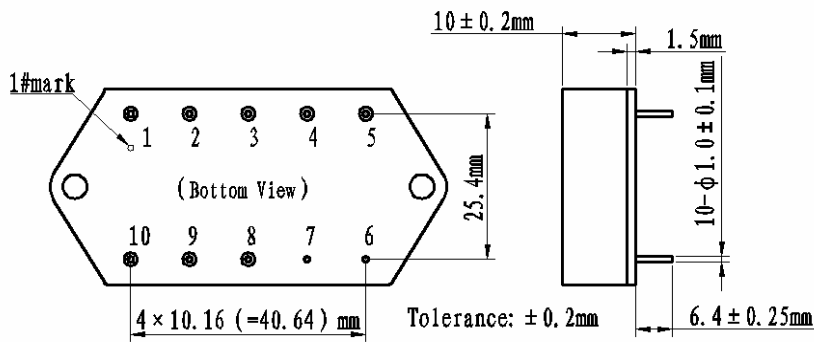
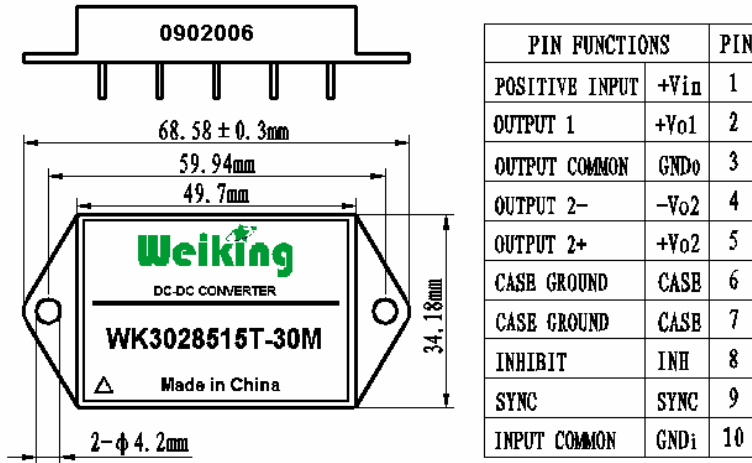
Weight: ≤75g

Packages: H and K for customers to choose

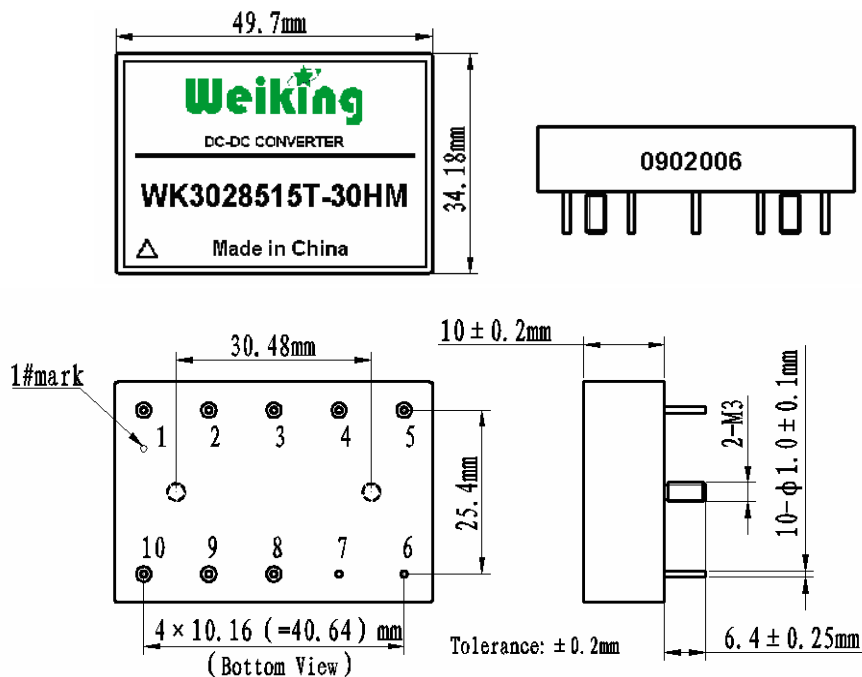
Encapsulation: Hermetically Sealed Welded Seam

Package Material: Cold Rolled Steel

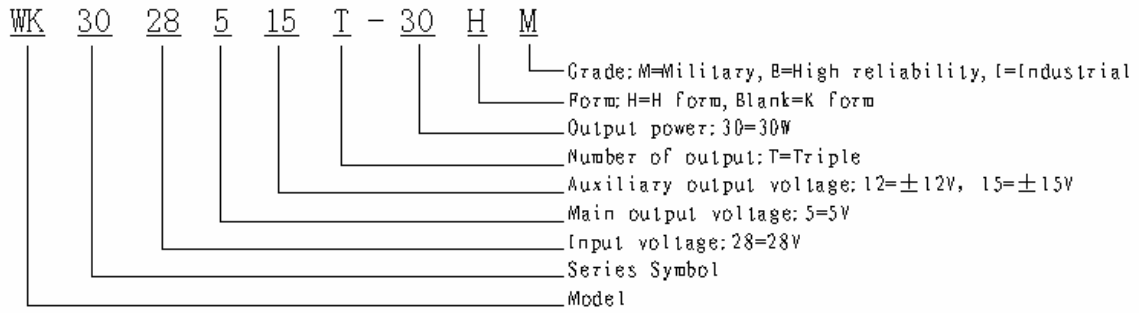
K form (e.g. WK3028515T-30M) :



H form (e.g. WK3028515T-30HM) :



ORDERING INFORMATION:



MARK SPECIFICATION:

Serials Number: 0902 006, which indicates this product has been manufactured in the 2nd week of 2009, and the sequence number is 006.