

FEATURES :

- High efficiency up to 82%
- Remote on/off function
- Soft start
- Permanent short circuit protection
- M class temperature range T_c :
-55°C~+105°C
- Electric strength: 1,500 V_{DC}

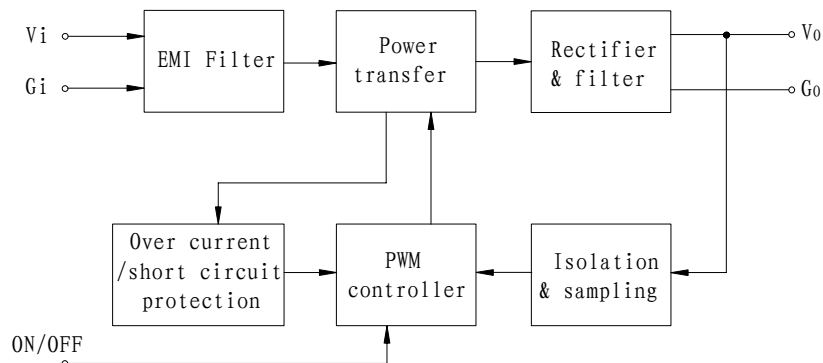


DESCRIPTION :

The WK31283R3S-25 is a full family of high performance DC-DC power modules designed for aerospace, military and high-end industrial applications. The modules are potted with a bi-component thermal conductive compound and packaged in a metallic case to ensure the module's integrity under high environmental conditions. Standard models are available with nominal input voltage of 28 volts in a voltage range of 16-40 volts. No external heat sink is required for the WK31283R3S-25 to supply 6.6W output power over the case temperature range of -55°C up to 105°C (M) or -40°C up to 85°C (I).

These modules use a frequency fixed switching technical at 400 kHz providing excellent reliability, low noise characteristics and high-power density. All the modules are designed with LC network filters to minimize reflected input current ripple and output voltage ripple. The modules include a soft-start, a permanent short circuit protection to ensure efficient module protections. The soft-start allows current limitation and eliminates inrush current during start-up. The short circuit protection completely protects the modules against short-circuits of any duration by a shut-down and restores to normal when the overload is removed. The design has been carried out with surface mount components and is manufactured in a fully automated process to guarantee high quality. Each module is tested with NHR converter automated test equipment.

BLOCK DIAGRAM:



ABSOLUTE MAXIMUM RATINGS:

Input Voltage:	50V _{DC} /100ms
Operating Temperature(T _C):	-55°C ~ 105°C (M)/-40°C ~ 85°C (I)
Storage Temperature range:	-55°C ~ 125°C
Pin-Solder Temperature (10s):	300°C

THE ELECTRICAL CHARACTERISTICS:

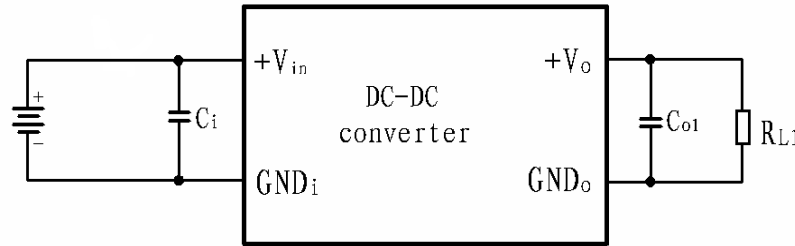
Parameter	Conditions ⁴⁾	MIN	TYP	MAX	Unit
Output voltage	V _{IN} =(16~40)V _{DC} No load~full load	3.23	3.3	3.37	V
Output current	V _{IN} =(16~40)V _{DC}	0	-	6	A
Output power	V _{IN} =(16~40)V _{DC}	-	-	20	W
Output ripple voltage ¹⁾	20MHz	-	50	100	mV _{p-p}
Line regulation	V _{IN} =(16~40)V _{DC}	-	10	50	mV
Load regulation	No load~full load	-	10	50	
Input voltage	Range	16	28	40	V
	50V/100ms	-	-	50	
Input current	No load	-	10	30	mA
	Off	-	3	10	
	short circuit ⁵⁾	-	-	80	
Input ripple current ³⁾	20MHz	-	100	300	mA _{p-p}
Efficiency	V _{IN} =28V _{DC} full load	77	82	-	%
Step load response ²⁾	50%~100%~50%load	-	±250	±400	mV
Step load recovery ²⁾		-	200	300	µs
Step line response ³⁾	(16~40~16)V _{DC}	-	±50	±200	mV
Step line recovery ³⁾		-	200	300	µs
Start-up delay	V _{IN} =28V _{DC} full load	-	10	30	ms
Start-up overshoot		-	0	50	mV _{pk}
Capacity load		-	-	2000	µf
Insulation resistance	≥100MΩ@500V _{DC} (input-output; input-case; output-case)				
Electric strength	1500V _{DC} , 1 min (input-output)				
On/Off	No connection or TTL high level, module operation				
Short circuit protection ⁵⁾	Protects the modules against short-circuits by shut-down, restores when the fault is removed				

Note:

- 1) Ripple voltage measure: Using twisted-pair measurement.
- 2) Step Load measure: Using twisted-pair measurement.
- 3) Guaranteed by design.
- 4) Unless otherwise specified, $T_A=25^{\circ}\text{C}$, $V_{IN} = 28V_{DC}$, 100% load.
- 5) Short circuit test: Keep only the under-test output in short circuit and leaves other outputs no load.

APPLICATION NOTE:

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



● **Output Short Circuit Protection (SCP)**

The short circuit protection device protects the module against short circuit of any duration and restores the module to normal operation when the short circuit is removed. It operates in “hiccup” mode by testing periodically if an overload is applied.

● **Remote On/Off Function**

The control pin 7(On/Off) can be used for applications requiring On/Off operation. A logic pulled low (<0.2V@1mA, referenced to -V_{IN}) on pin 7 disables the converter. No connection or high impedance on pin 7 enables the converter. By releasing the On/Off function, the converter will restart.

● **Ambient temperature & operating case temperature (class M)**

The WK31283R3S-25 series operating case temperature must not exceed 105°C. The maximum ambient temperature admissible for the DC-DC converter corresponding to the maximum operating case temperature of 105°C depends on the ambient airflow, the mounting/orientation, the cooling features and the power dissipated.

WARNING: Input can not be connected reverse, or destroy module

NOTE: Please weld four fixed pins prior to welding other pins.

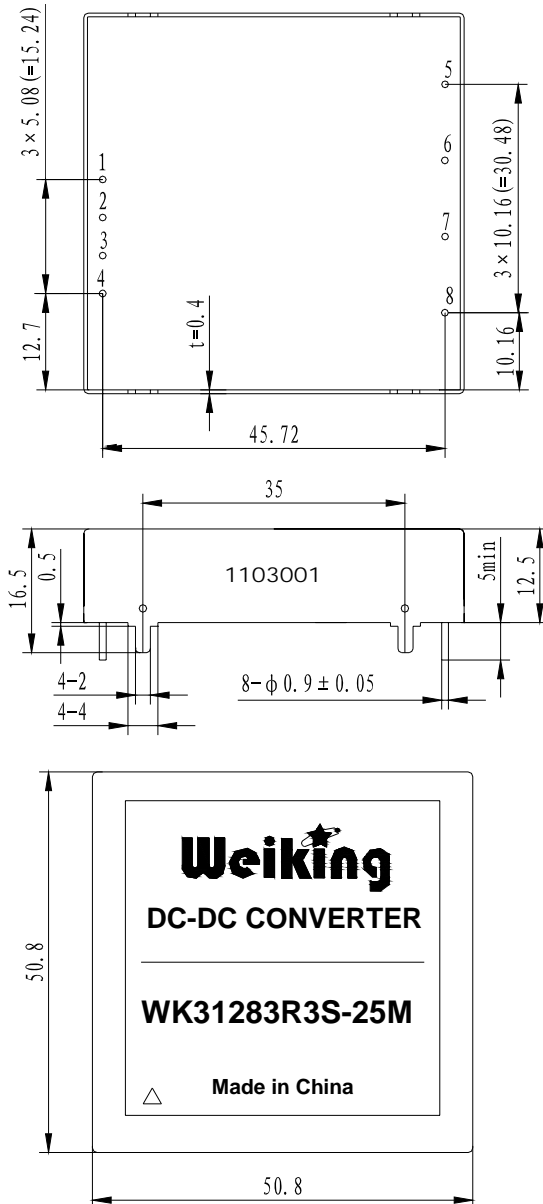
ENVIRONMENTAL SCREENING:

Class	NO.	Test Items	Methods	Request	Condition
I	1	Burn-in	---	100%	T _C =85°C 48h
M	1	Environmental Stress Screening (ESS)	MIL-STD-2164	100%	-
	2	Burn-in	---	100%	T _C =105°C 168h

DIMENSIONS & CONNECTIONS:

Weight: $\leq 80\text{g}$

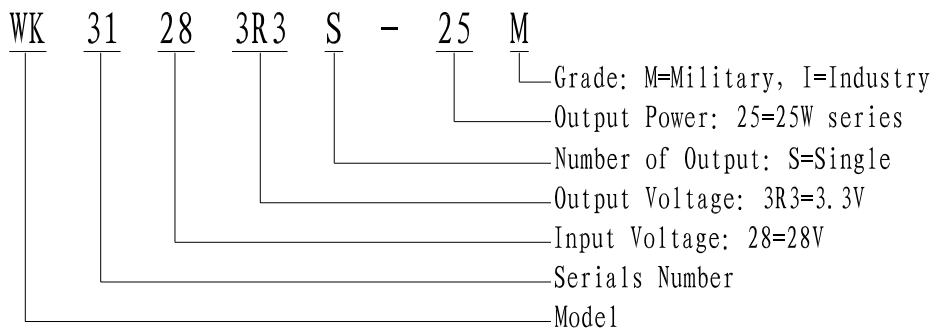
Dimensions and connections shown as below:



PIN	PIN FUNCTIONS	
1	+INPUT	Vin+
2	INPUT COMMON	Vin-
3	NO CONNECTION	
4	On/Off	
5	NO CONNECTION	
6	OUTPUT	Vo
7	COMMON	Go
8	NO CONNECTION	

尺寸单位: mm
未注公差: $\pm 0.3\text{mm}$

ORDERING INFORMATION:



MARK SPECIFICATION:

Serials Number: 1001001, which indicates this product has been manufactured in the 1st week of 2010, and the sequence number is 001.