DESCRIPTION: **10W 1.5KVDC Wide Voltage Input DC/DC Converters**

The rated output power converters is 10W,the outline dimensions is "25.4*25.4*10.16",

2;1、4:1 wide input voltage range,the voltage range is 9-18V、18-36V、36-72V、9V-36V,18V-72V .The accuracy of the converter can reach ±1%,it can be widely used in telecommunications,railway transportation, instrument and etc.

FEATURES

10W output	Mini packaging	High switching frequency , High output density
Operation temp.-40℃~+85℃	Metal shell package (full shield)	Long-term short-circuit protection, Auto recovery
1.5KVDC isolated	RoHS compliant	International standardized pins

SELECTION GUIDE

Part Number	Input Voltage			Output			Efficiency (Typ)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		%
	Rated	Range values	Max.		Min.	Max.	
SVRB 2405 YMD-10WR4	24(2:1)	18-36	40	5	100	2000	80
SVRB 2409 YMD-10WR4	24(2:1)	18-36	40	9	56	1111	82
SVRB 2412 YMD-10WR4	24(2:1)	18-36	40	12	42	833	84
SVRB 2415 YMD-10WR4	24(2:1)	18-36	40	15	34	667	84
SVRB 2424 YMD-10WR4	24(2:1)	18-36	40	24	21	417	85
SVRA 2405 YMD-10WR4	24(2:1)	18-36	40	±5	±50	±1000	80
SVRA 2409 YMD-10WR4	24(2:1)	18-36	40	±9	±28	±555	82
SVRA 2412 YMD-10WR4	24(2:1)	18-36	40	±12	±21	±416	84
SVRA 2415 YMD-10WR4	24(2:1)	18-36	40	±15	±17	±333	85
SVRA 2424 YMD-10WR4	24(2:1)	18-36	40	±24	±10	±208	85
SVRB 4805 YMD-10WR4	48(2:1)	36-72	75	5	100	2000	82
SVRB 4809 YMD-10WR4	48(2:1)	36-72	75	9	56	1111	82
SVRB 4812 YMD-10WR4	48(2:1)	36-72	75	12	42	833	83
SVRB 4815 YMD-10WR4	48(2:1)	36-72	75	15	34	667	84
SVRB 4824 YMD-10WR4	48(2:1)	36-72	75	24	21	417	85
SVRA 4805 YMD-10WR4	48(2:1)	36-72	75	±5	±50	±1000	81
SVRA 4809 YMD-10WR4	48(2:1)	36-72	75	±9	±28	±555	86
SVRA 4812 YMD-10WR4	48(2:1)	36-72	75	±12	±21	±416	85
SVRA 4815 YMD-10WR4	48(2:1)	36-72	75	±15	±17	±333	85
SVRA 4824 YMD-10WR4	48(2:1)	36-72	75	±24	±10	208	86
SURA 2403 YMD-10WR4	24(4:1)	9-36	40	±3.3	±50	±1000	77
SURA 2405 YMD-10WR4	24(4:1)	9-36	40	±5	±50	±1000	81
SURA 2409 YMD-10WR4	24(4:1)	9-36	40	±9	±28	±555	82
SURA 2412 YMD-10WR4	24(4:1)	9-36	40	±12	±21	±417	83
SURA 2415 YMD-10WR4	24(4:1)	9-36	40	±15	±17	±333	84
SURA 2424 YMD-10WR4	24(4:1)	9-36	40	±24	±10	±208	84
SURB 2403 YMD-10WR4	24(4:1)	9-36	40	3.3	100	2000	77
SURB 2405 YMD-10WR4	24(4:1)	9-36	40	5	100	2000	80
SURB 2409 YMD-10WR4	24(4:1)	9-36	40	9	56	1111	82
SURB 2412 YMD-10WR4	24(4:1)	9-36	40	12	41	833	83
SURB 2415 YMD-10WR4	24(4:1)	9-36	40	15	33	667	83
SURB 2424 YMD-10WR4	24(4:1)	9-36	40	24	21	417	85
SURA 4803 YMD-10WR4	48(4:1)	18-72	75	±3.3	±50	±1000	77
SURA 4805 YMD-10WR4	48(4:1)	18-72	75	±5	±50	±1000	81
SURA 4809 YMD-10WR4	48(4:1)	18-72	75	±9	±28	±555	82
SURA 4812 YMD-10WR4	48(4:1)	18-72	75	±12	±21	±417	83
SURA 4815 YMD-10WR4	48(4:1)	18-72	75	±15	±17	±333	84
SURA 4824 YMD-10WR4	48(4:1)	18-72	75	±24	±10	±208	84
SURB 4803 YMD-10WR4	48(4:1)	18-72	75	3.3	100	2000	77
SURB 4805 YMD-10WR4	48(4:1)	18-72	75	5	100	2000	81
SURB 4809 YMD-10WR4	48(4:1)	18-72	75	9	56	1111	82
SURB 4812 YMD-10WR4	48(4:1)	18-72	75	12	41	833	83
SURB 4815 YMD-10WR4	48(4:1)	18-72	75	15	33	667	83
SURB 4824 YMD-10WR4	48(4:1)	18-72	75	24	21	417	84

suffix “/3H” for 3KVDCisolated，suffix “N” for no CNT pin，

SVRA, SVRB / SURA, SURB YMD-10WR4

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

GENERAL CHARACTERISTICS

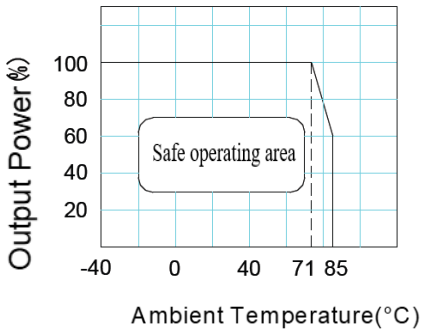
Parameter	Conditions	Min	Typ	Max	Units
Isolation voltage	Input-Ouput, test 1min, leakage current <1MA	1500			VDC
Insulation resistance	500VDC	1000			MΩ
Storage humidity		5		95	%
operation temperature		-40		85	℃
Storage temperature		-55		125	℃
Working case temperature rise			20	30	℃
Pin resistance to welding temperature	welding point is 1.5 mm away from the shell ,operates 10s			300	℃
Output Short -circuit protection		Continuous ,Auto recovery			
MTTF		100			10khrs
Net weight			12		g
Cooling	Free air convection				
Case material	Metal case				

OUTPUT CHARACTERISTICS

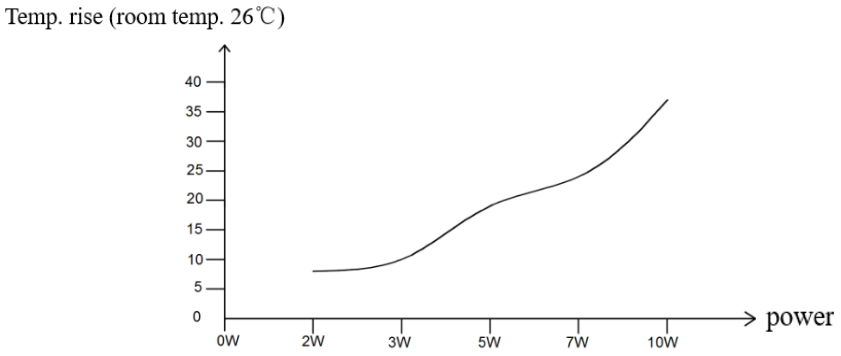
parameter	Test conditions	Min	Typ	Max	Units
Output power		0.5		10	W
output voltage accuracy	Main circuit positive		±1.0	±2.0	%
output voltage accuracy	Auxiliary circuit negative		±2.0	±3.0	%
Line regulation	Rated load, Input voltage variation ± 1%		±0.2	±0.5	%
Load regulation	nominal input, the main load varies from 10% to 100%		±0.5	±1.0	%
Temperature drift coefficient	Rated load			±0.03	%/℃
Ripple and noise	Bandwidth 20MHz, using parallel line method for auxiliary		50	100	mVp-p
Switching frequency	Rated input volatge	300			KHz
Input filtering type		Π type			
Hot plug		Not Supported			
* Remote control CNT	Power on	CNT pin is floating or connect to high level (3.3-12.0VDC)			
* Remote control CNT	Power off	CNT pin connect to GND or connect to low level (0-1.2VDC)			
*The CNT pin voltage is relative to the input GND					

*Module in every environment temperature rating, case temperature under shall not exceed the maximum case temperature level.

TEMPERATURE DERATING GRAPHS



CASE TEMPERATURE RISING GRAPHS



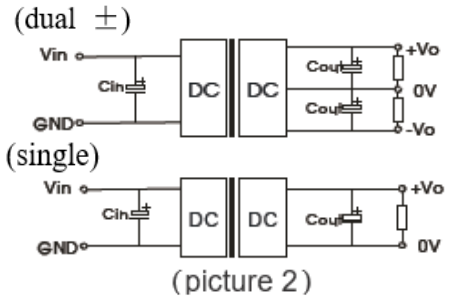
EMC CHARACTERISTICS

EMI	Conduction interference	CISPR32/EN55032 CLASS A（bare machine）/ CLASS B（refer to circuit 3-②）
EMI	Radiation interference	CISPR32/EN55032 CLASS A（bare machine）/ CLASS B（refer to circuit 3-②）
EMS	Electrostatic Discharge	IEC/EN61000-4-2 Contact ±4kV perf. Criteria B
EMS	Radiation immunity	IEC/EN61000-4-3 10V/m perf. Criteria A
EMS	Burst immunity (EFT)	IEC/EN61000-4-4 ±2kV（refer to circuit 3-①） perf. Criteria B
EMS	Surge immunity	IEC/EN61000-4-5 line to line ±2kV（refer to circuit 3-①） perf. Criteria B
EMS	Conducted interference immunity	IEC/EN61000-4-6 3 Vr.m.s perf. Criteria A
EMS	Voltage sag,drop,and short-term interruption immunity	IEC/EN61000-4-29 0%, 70% perf. Criteria B

TYPICAL APPLICATION CIRCUIT

1. TYPICAL APPLICATION CIRCUIT

All parts are tested according to（picture 2）recommended cicuit before leaving factory.

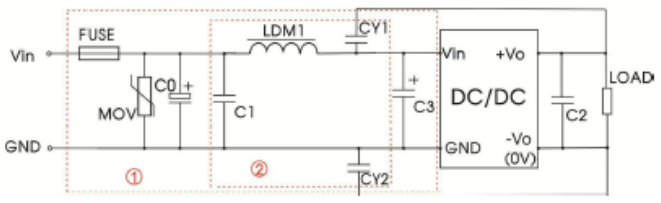


(picture 2)

Vin(VDC)	Vout(VDC)	Cin	Cout
24	3.3/5/±5	100μF/50V	10μF/16V
	9/12/15/±9/±12/±15		10μF/25V
	24/±24		10μF/50V
48	3.3/5/±5	10μF - 47μF/100V	10μF/16V
	9/12/15/±9/±12/±15		10μF/25V
	24/±24		10μF/50V

for further reduction of input and output ripple is required, the external capacitance Cin and Cout of the input and output can be increased or series to a equivalent capacitor with small impedance value can be selected, but the capacitance value cannot exceed the maximum capacitive load of the product

2. EMC Solutions - Recommended Circuits



Circuits 3

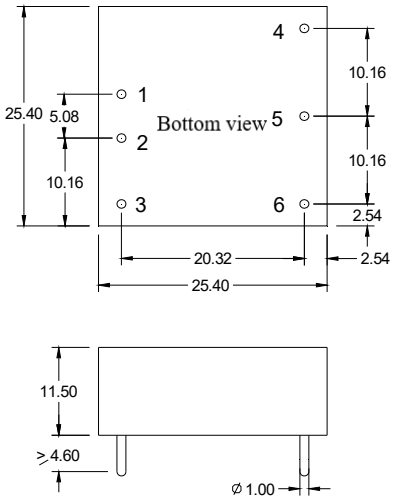
circuit 3-① for EMS test, circuit 3-② for EMI filtering

parameters introduction

PN	Vin: 24VDC	Vin: 48VDC
FUSE	Select according to the actual input current	
MOV	20D470K	14D101K
C0、C3	330μF/50V	330μF/100V
C1	1μF/50V	1μF/100V
C2	refer to the Cout in picture2	
LDM1	4.7μH	
CY1、CY2	1nF/2kV	

MECHANICAL DIMENSIONS

DIP



Units: mm

Pin diameter tolerance：±0.10 mm otherTolerance:±0.5mm

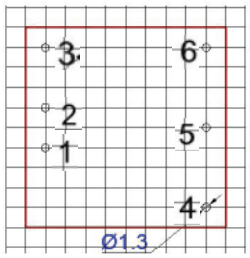
PIN CONNECTIONS

Side view

PIN	single	dual
1	+Vin	+Vin
2	-Vin	-Vin
3	CNT	CNT
4	+Vo	+Vo
5	NP	0V
6	GND	-Vo

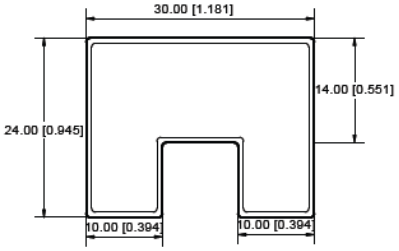
suffix "N" for no CNT pin

RECOMMENDED PCB



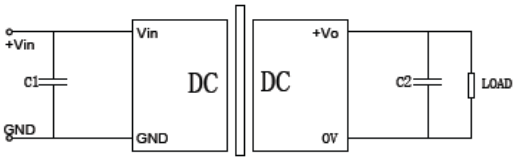
Grid spacing :2.54*2.54mm

TUBE OUTLINE DIMENSIONS

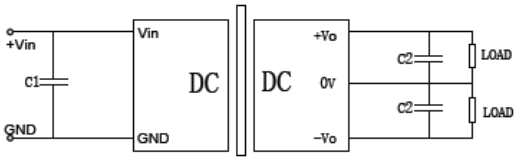


RECOMMEND CIRCUIT for general application

Single Output:



Dual Output:



C1、C2 selection reference					
Input voltage	External C1	Single output	External C2	Dual output	External C2
5VDC	100uF	3.3/5VDC	1000uF	±3.3/5VDC	470uF
12VDC	47uF	9VDC	470uF	±9VDC	220uF
24VDC	47uF	12/15VDC	220uF	±12/±15VDC	100Uf
48VDC	10uF	24VDC	100uF	±24VDC	47uF

USING ATTENTIONS

1、 Try to avoid using it without load: When the power consumption of the load is less than 5% of the module's rated output power, it is recommended to connect a false load externally at the output end or choose a module with lower rated power. The false load (resistance) can be calculated based on 5-10% of the module's rated power ， RESISTANCE=U^2/（5%×10W）;

2、 Avoid excessive output external capacitance: The output terminal external capacitance C2 should not be too large, otherwise it may cause overcurrent or poor startup of the module during startup. The specific selection should be based on selection reference table ；

3、 For situations with high requirements for ripple noise, an LC filtering circuit should be connected externally. The resonant frequency of the LC filter should be much lower than the switching frequency of the DC/DC module to prevent mutual interference, which may cause an increase in output ripple or module damage.(see below reference)