MORNSUN®

URB_MP-12W Series

12W, WIDE INPUT, ISOLATED & REGULATED SINGLE OUTPUT DC-DC CONVERTER

RoHS

FEATURES

Efficiency up to 88%
Wide (4:1) Input Range
12W Rated Power Output
1.5KVDC Input/Output Isolation
Operating Temperature: -40°C to+85°C
DIP24 Package
Industry Standard Pinout
Five-sided Metal Shielding Package
Over Voltage Protection
Output Short Circuit Protection
Remote ON/OFF

APPLICATIONS

The URB_MP-12W Series are particularly suited to data transfer equipments, battery operated equipments, tele-communication equipments, distributed power system, mix analog/digital system, remote control system, industrial robot system and other wide input voltage application fields.

MODEL SELECTION

URB2403MP-12W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

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PRODUCT PROGRAM

Part Number	Input				Output				Efficiency (%, Typ)
	Voltage (VDC)			No-load (typ, mA)	Voltage (VDC)	Current (mA)		Capacitance (Max,uF)	
	Nominal	Range	Max**			Max	Min		
URB2403MP-12W	24	9-36	40	55	3.3	3500	0	3000	85
URB2405MP-12W				55	5	2400	0	2000	86
URB2412MP-12W				25	12	1000	0	500	86
URB2415MP-12W				25	15	800	0	400	86
URB4803MP-12W	48	18-75	80	20	3.3	3500	0	3000	85
URB4805MP-12W				20	5	2400	0	2000	87
URB4812MP-12W				10	12	1000	0	500	87
URB4815MP-12W				10	15	800	0	400	88

**Input voltage can't exceed this value, or will cause the permanent damage.

INPUT SPECIFICATIONS

Item	Test Conditions		Min	Typ	Max	Units
Start-up time	Input voltage range refer to output load		--	500	--	mS
Under Voltage protection	Nominal input(24V)	DC-DC Module ON	--	8.8	9	VDC
		DC-DC Module OFF	--	8.3	8.5	
	Nominal input(48V)	DC-DC Module ON	--	17	17.5	
		DC-DC Module OFF	--	16.5	17	
CTRL	DC-DC Module ON		3	--	40	VDC
			Or open circuit			
	DC-DC Module OFF		0	--	1.2	VDC

OUTPUT SPECIFICATIONS

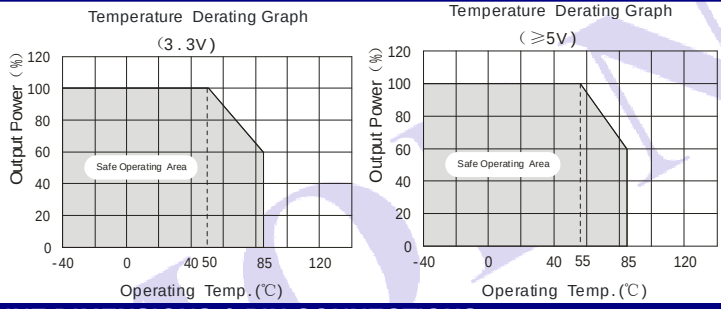
Item	Test Conditions		Min	Typ	Max	Units
Output Power	See product program		1.2	--	12	W
Ripple& Noise	20MHz Bandwidth		--	--	85	mV
Switching Frequency	From 10% to 100% load		350	400	450	KHz
Output Voltage Accuracy	Input voltage range refer to output load		--	±1	±3	%
Voltage regulation	Input voltage from low to high		--	±0.2	±0.5	
Load Regulation	Nominal input,10% to 100% load		--	±0.5	±1.5	
Temperature Drift(Vout)	25°C environment temperature		--	0.02	--	%/°C
Over voltage protection	Output voltage (VDC)	3.3	--	4.3	--	VDC
		5	--	6	--	
		12	--	13	--	
		15	--	16	--	
Short circuit protection	--		Continuous, automatic recovery			

COMMON SPECIFICATION

Item	Test Conditions		Min	Typ	Max	Units
Isolation voltage	Input/Output	Tested for 1 minute and 1 mA max	1500	--	--	VDC
	Input, Output and case		1500	--	--	
Isolation resistance	Input/Output	Tested at 500VDC	1000	--	--	MΩ
	Input, Output and case		1000	--	--	
Isolation Capacitance	100KHz/0.1V		--	--	1100	pF
Storage humidity			--	--	95	%
Operating temperature	With derating at 55°C,refer to Temperature Derating Graph		-40	--	85	°C
Storage temperature			-55	--	125	
MaximumCase Temp	On working temperature		--	95	105	
Lead temperature	1.5mm from case for 10 seconds		--	--	300	
MTBF	MIL-HDBK-217F(25°C)		1000	--	--	K hours
Weight			--	18.5	--	g
Case material	Copper plating nickel(Five-sided shield)					

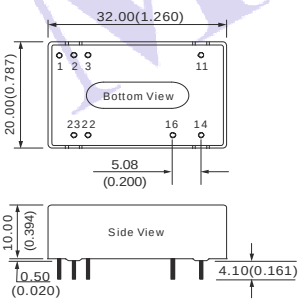
Note:
1. All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. When product begins to work, temperature may rise slowly until stabilize. It's normal that output voltage derating and efficiency reduce about 2 percent during this process.
3. Only typical model listed. If you need other model of this series (same power and package), please confirm input and output voltage, then phone us.
4. No parallel connection or plug and play.
5. The CTRL pin voltage is referenced to GND.
6. If product has no use for CTRL pin, it's name will change, add "X" in front of "MP" to distinguish.

TYPICAL CHARECTERISTICS



OUTLINE DIMENSIONS & PIN CONNECTIONS

MECHANICAL DIMENSIONS



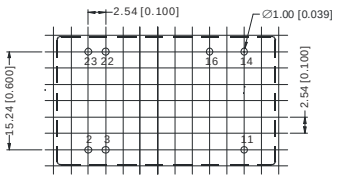
Note:
Unit:mm(inch)
Pin section:0.50mm(0.020inch)
Pin section tolerances:±0.05mm(±0.002inch)
General tolerances:±0.25mm(±0.010inch)

FOOTPRINT DETAILS

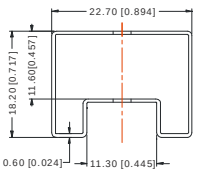
Pin	Function
1	CTRL
2,3	GND
11	NC
14	+Vo
16	0V
22,23	Vin

NC:No Connection

RECOMMENDED FOOTPRINT



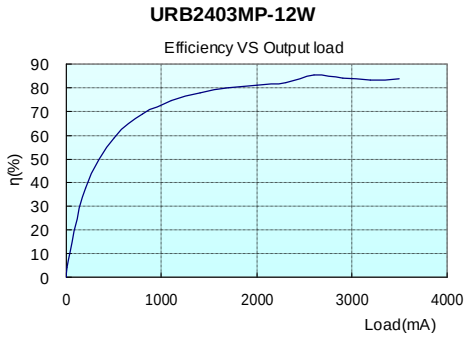
TUBE OUTLINE DIMENSIONS



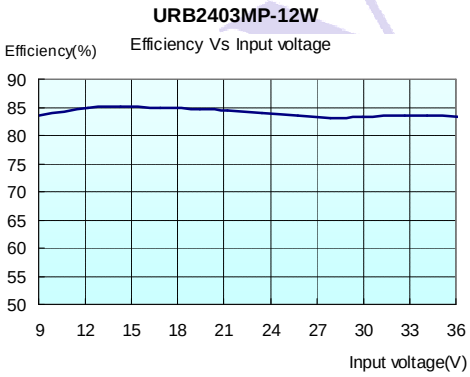
Note:
Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=530mm[20.866inch] Tube Quantity: 15pcs
L=220mm[8.661inch] Tube Quantity: 6pcs

EFFICIENCY CURVE

1) Efficiency Vs Load



2) Efficiency Vs Input voltage



APPLICATION NOTE

1.Recommended Circuit

All the URB_MP-12W Series have been tested according to the following recommended testing circuit before leaving factory. If you want to further decrease the input ripple, Cin is recommended to use 100uF. If ripple and noise are required, you can increase capacitance of Cout properly. However, the capacitance should not be higher than Max capacitance. (see Figure 1).

(Figure 1)

2.Recommended capacitance (Table 1

Output Voltage \ Capacitance		Cout	Cin(24V, 48V input)
Single	3.3V,5V	220μF	100μF
	12V 15V	100μF	