

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

PRODUCT PROGRAM

Part Number	Input			No-load (typ, mA)	Output			Efficiency (% Typ)	
	Voltage (VDC)				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.

APPLICATIONS

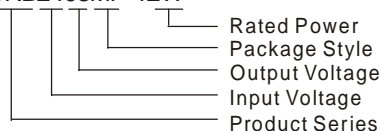
The URB_MP-12W Series are particularly suited to data transfer equipments, battery operated equipments, tele-communication equipments, distributed power system, mix analog/digital system, remote control system, industrial robot system and other wide input voltage application fields.

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
		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

MODEL SELECTION

URB2403MP-12W



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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	--
		5	--	6	--
		12	--	13	--
		15	--	16	--
Short circuit protection	--	Continuous, automatic recovery			

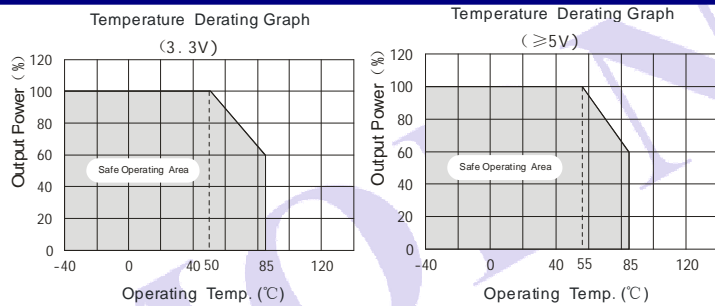
COMMON SPECIFICATION

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		
Maximum Case 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)					

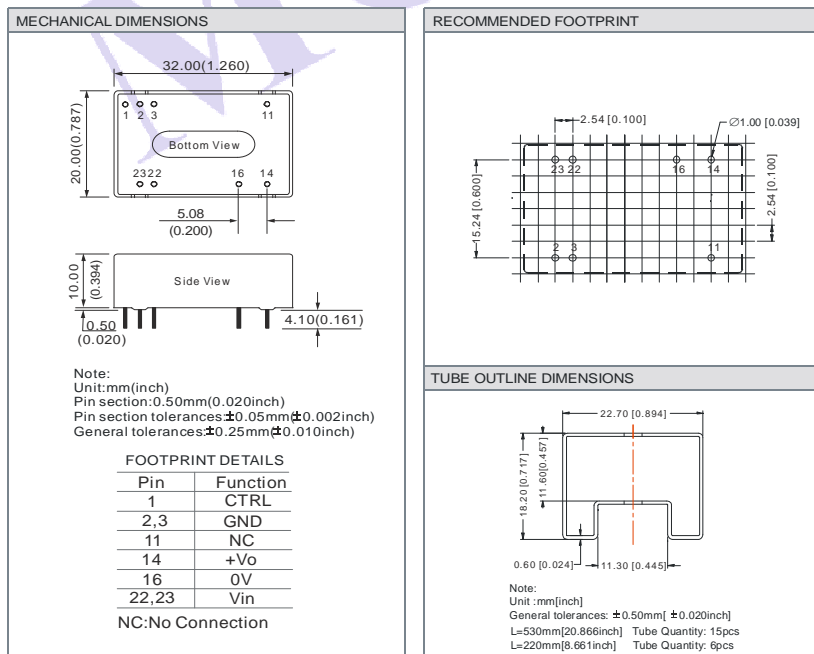
Note:

- All specifications measured at $T_A=25^\circ\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 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.
- 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.
- No parallel connection or plug and play.
- The CTRL pin voltage is referenced to GND.
- If product has no use for CTRL pin, it's name will change, add "X" in front of "MP" to distinguish.

TYPICAL CHARACTERISTICS

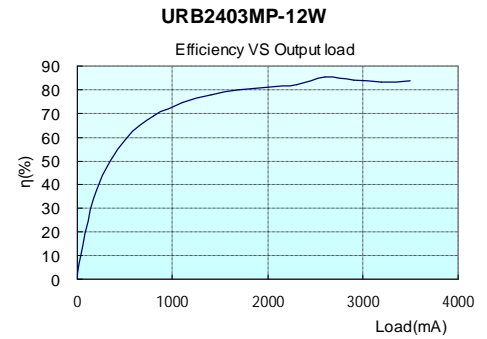


OUTLINE DIMENSIONS & PIN CONNECTIONS

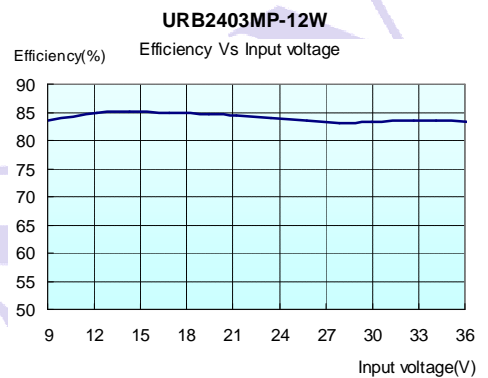


EFFICIENCY CURVE

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, C_{in} is recommended to use 100uF. If ripple and noise are required, you can increase capacitance of C_{out} properly. However, the capacitance should not be higher than Max capacitance. (see Figure 1).



(Figure 1)

2.Recommended capacitance (Table 1)

Output Voltage	Capacitance	
	C_{out}	C_{in} (24V, 48V input)
Single	3.3V,5V	220 μF
	12V 15V	100 μF