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1W isolated DC-DC converter Fixed input voltage, unregulated single output









Patent Protection RoHS



FEATURES

- Ultra-small, ultra-thin DFN package (9.00 x 7.00 x 3.10mm)
- Isolation capacitance as low as 8pF
- I/O isolation test voltage 3k VDC
- Operating ambient temperature range: -40°C to +125°C
- High efficiency up to 85%
- Continuous short-circuit protection
- Meet IEC62368, UL62368, EN62368 standards
- AEC-Q100 approved (under testing)

B05xxMT-1WR4 is designed for use in distributed power supply systems and especially suitable in applications such as digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

Selection Guide											
		Input Voltage (VDC)	O	utput	Full Load	Capacitive					
Certification	Part No.	Part No. Nominal		Current(mA)	Efficiency (%)	Load(µF)					
		(Range)	(VDC)	Max./Min.	Min./Typ.	Max.					
UL/CE/CB	B0505MT-1WR4	5	5	200/20	81/85	2400					
(Pending)	DOGGGIVII TVVICA	(4.5-5.5)	0	200/20	01/00	2400					

Input Specifications								
Item	Operating Conditions	Min.	Тур.	Max.	Unit			
Input Current (full load / no-load)	5VDC input		235/7	247/15	mA			
Reflected Ripple Current*			10		mA			
Surge Voltage (1sec. max.)	5VDC input	-0.7	-	9	VDC			
Input Filter			Capaci	tance filter				
Hot Plug Unavailable								
Note: * Please refer to DC-DC Con	verter Application Note for detailed description of reflecte	d ripple current testi	na method.					

Output Specificatio	ns						
Item	Operating Conditions	Min.	Тур.	Max.	Unit		
Voltage Accuracy		See output regulation curve (Fig. 1)					
Linear Regulation	Input voltage change: ±1%	-		1.2			
Load Regulation	10%-100% load		8	15	%		
Ripple & Noise*	20MHz bandwidth		30	75	mVp-p		
Temperature Coefficient	Full load		±0.02		%/℃		
Short-circuit Protection Continuous, self-recovery							
Note: * The "parallel cable" meth	nod is used for ripple and noise test, please refer to DC-DC Cor	verter Application I	Notes for specif	ic information			

General Specificati	ons				
Item	Operating Conditions	Min.	Тур.	Max.	Unit
Isolation	Input-output electric strength test for 1 minute with a	3000		-	VDC
	leakage current of 1mA max.	1500		-	VAC
Insulation Resistance	Input-output resistance at 500VDC	1000		-	ΜΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		8		pF
Operating Temperature	Derating when operating temperature \geq 105 °C , (see Fig. 2)	-40	_	125	$^{\circ}$
Storage Temperature		-55		125	Ü

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DC/DC Converter B05xxMT-1WR4 Series

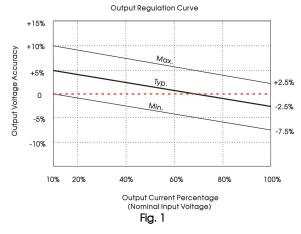
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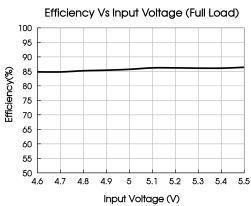
Case Temperature Rise	Ta=25°C	_	10		$^{\circ}$			
Storage Humidity	Non-condensing	ng 9:						
Reflow Soldering Temperature*		Peak temp. $\!\!\!<\!\!245^{\circ}\!$						
Vibration		10-150Hz, 0.75mm, 5G, 90Min. along X, Y and Z						
Switching Frequency	Full load, nominal input voltage		300		KHz			
MTBF	MIL-HDBK-217F@25℃	7500	-		K hours			
Moisture Sensitivity Level (MSL)								
Note: * See also IPC/JEDEC J-STD-020D.1.								

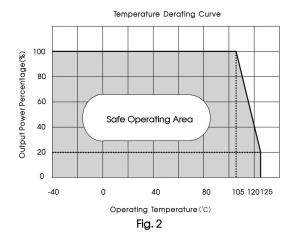
Mechanical Specifications							
Case Material	sse Material Black epoxy resin; flame-retardant and heat-resistant (UL94 V-0)						
Dimensions	9.00 x 7.00 x 3.10 mm						
Weight	0.5(Typ.)						
Cooling Method Free air convection							

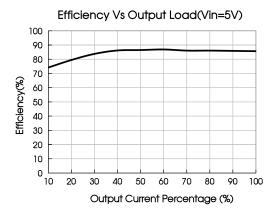
Electromagnetic Compatibility (EMC)								
Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)					
ETTISSIOTIS	RE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)					
	ESD	IEC/EN61000-4-2	Contact ±8kV perf. Criteria B					
Immunity	RS	IEC/EN61000-4-3	10V/m perf. Criteria A					
	CS	IEC/EN61000-4-6	3Vr.m.s perf. Criteria A					

Typical Characteristic Curves









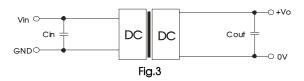


Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.3.

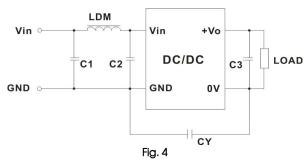
Choosing suitable filter capacitor values is very important for a smooth operation of the modules. For recommended input and output capacitor values refer to Table 1.



 Vin(VDC)
 Cin(μF)
 Vo (VDC)
 Cout(μF)

 5
 4.7
 5
 10

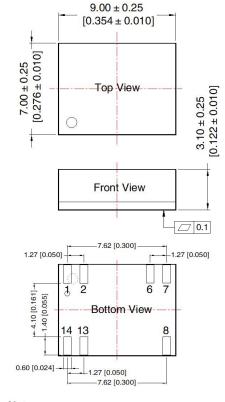
2. EMC (CLASS B) compliance circuit

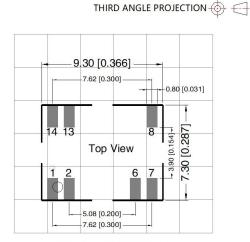


	Idble 2: R	ecommenae	ed EIVIC Tiller values
Input	Output vo	ltage(VDC)	5
		C1/C2	4.7µF /25V
voltage	Emissions	CY	47pF/4KVDC
5VDC	Emissions	C3	Refer to the Cout in table 1
		LDM	6.8µH

3. For additional information, please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout





Note: Grid 2.54*2.54mm

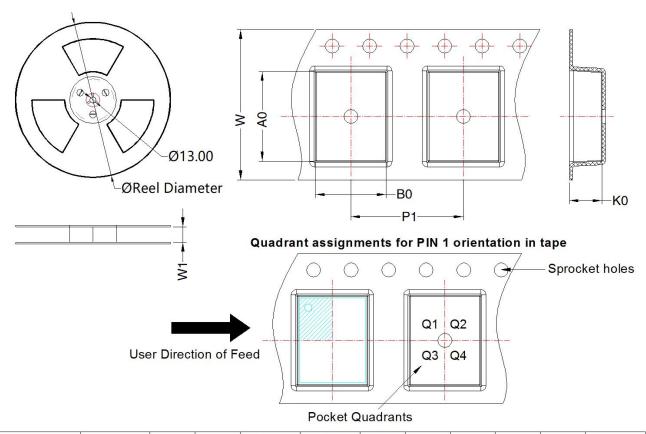
Pin-Out							
Pin	Function						
1,2	GND						
6,7	OV						
8	+Vo						
13,14	Vin						

Note:

Unit:mm[inch]

Pin diameter tolerances: ±0.10[±0.004]

Tape/Reel packaging



Device	Package Type	Pin	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
BxxMT-1WR4	DFN 7x9	7	1200	330.0	12.4	9.56	7.56	3.5	12.0	16.0	Q1

Notes:

- For additional information on Product Packaging please refer to <u>www.mornsun-power.com</u>. Tape/Reel packaging bag number: 58240017;
- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 3. The maximum capacitive load offered were tested at input voltage range and full load;
- 4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- 5. All index testing methods in this datasheet are based on our company corporate standards;
- 6. We can provide product customization service, please contact our technicians directly for specific information;
- 7. Products are related to laws and regulations: see "Features" and "EMC";
- 8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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