



## 0.5T8B2\_1.5UP series

0.5W - Single Output DC-DC Converter - Isolated & Unregulated

### DC-DC Converter

0.5 Watt

- ⊕ Compact 8-pin SMD package
- ⊕ Extremely low no-load input current of just 5mA
- ⊕ Continuous protection against short circuits
- ⊕ Achieves efficiency levels up to 85%
- ⊕ Available with unregulated output types
- ⊕ Provides 1.5kVDC isolation
- ⊕ Operates within a temperature range of -40°C to +105°C
- ⊕ Meets IEC62368, UL62368, and EN62368 approvals

Introducing our latest 0.5T8B2\_1.5UP series featuring an 8-pin SMD package designed for optimal performance. With a no-load input current as low as 5mA, this product ensures energy efficiency and cost-effectiveness. It provides continuous short-circuit protection and boasts a high efficiency of up to 85%. The unregulated output types and 1.5kVDC isolation make it versatile for various applications. It operates reliably in a wide temperature range from -40°C to +105°C, adhering to industry standard pinout. Additionally, it meets the rigorous IEC62368, UL62368, and EN62368 approvals, ensuring compliance with global safety standards.



Common specifications	
Short circuit protection	Continuous
Operation temperature	-40°C ~+105°C (with derating)
Storage temperature	-55°C ~+125°C
Humidity	95 %RH (Non condensing)
MTBF: (MIL-HDBK-217F@25°C)	3,500,000 hours
Case material	DAP
Switching frequency	Full load, nominal input@3.3V, 5V Vin 215/370kHz Full load, nominal input@other Vin 250kHz
Dimensions	12.7 x 7.6 x 6.25 mm
Weight	1.2 g (typ.)
Cooling	Free air Convection

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage Range	• Vo, Io Nom @Vin: 3.3V, 5V, 9V		±10		%
	• Vo, Io Nom @Vin: 12V, 15V, 24V		±20		%
Input filter	Capacitor				

#### Example:

#### 0.5T8B2\_0509S1.5UP

0.5 = 0.5Watt; T8 = SMT8; B2 = Pinning; 05 = 5Vin; 09 = 9Vout; S = Single Output; 1.5 = 1.5kVDC; U = Unregulated Output; P = Short Circuit Protection

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Voltage tolerance	100% full load			±5	%	
Line regulation	For 1.0% of Vin		1.2		%	
	3.3V		15	20	%	
	5V		10	15	%	
	9V		8	10	%	
	12V		7	10	%	
Load regulation (10% To 100%)	15V		6	10	%	
	24V		5	10	%	
Ripple & noise* BW = DC To 20MHz	• Vo: 3.3V, 5V, 9V, 12V, 15V		30	75	mVp-p	
	• Vo: 24V		50	100	mVp-p	

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Insulation resistance	500VDC	1000			MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		20		pF
Isolation voltage	1 minute		1500		VDC

EMC specifications		
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMI	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B

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### Product Selection Guide

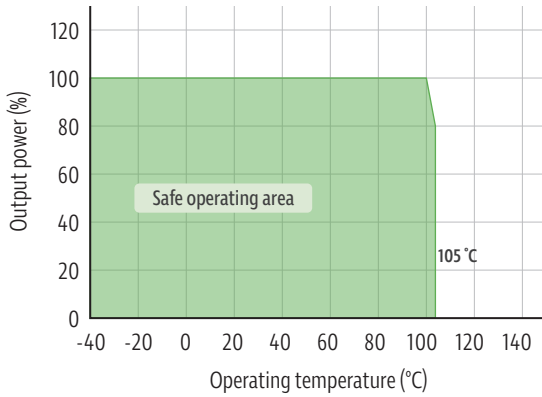
Approval	Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Full Load Efficiency (%) typ.	Capacitive Load (μF)max.
	0.5T8B2_0303S1.5UP	3.3	3.3	303	75	2400
	0.5T8B2_0305S1.5UP	3.3	5	200	82	2400
	0.5T8B2_0309S1.5UP	3.3	9	112	83	1000
	0.5T8B2_0312S1.5UP	3.3	12	84	84	470
	0.5T8B2_0315S1.5UP	3.3	15	67	84	330
	0.5T8B2_0324S1.5UP	3.3	24	42	85	100
	0.5T8B2_0503S1.5UP	5	3.3	303	75	2400
	0.5T8B2_0505S1.5UP	5	5	200	82	2400
	0.5T8B2_0509S1.5UP	5	9	112	83	1000
	0.5T8B2_0512S1.5UP	5	12	84	84	470
	0.5T8B2_0515S1.5UP	5	15	67	84	330
	0.5T8B2_0524S1.5UP	5	24	42	85	100
	0.5T8B2_0903S1.5UP	9	3.3	303	75	2400
	0.5T8B2_0905S1.5UP	9	5	200	82	2400
	0.5T8B2_0909S1.5UP	9	9	112	83	1000
	0.5T8B2_0912S1.5UP	9	12	84	84	470
	0.5T8B2_0915S1.5UP	9	15	67	84	330
	0.5T8B2_0924S1.5UP	9	24	42	85	100
	0.5T8B2_1203S1.5UP	12	3.3	303	75	2400
	0.5T8B2_1205S1.5UP	12	5	200	82	2400
	0.5T8B2_1209S1.5UP	12	9	112	83	1000
	0.5T8B2_1212S1.5UP	12	12	84	84	470
	0.5T8B2_1215S1.5UP	12	15	67	84	330
	0.5T8B2_1224S1.5UP	12	24	42	85	100
	0.5T8B2_1503S1.5UP	15	3.3	303	75	2400
	0.5T8B2_1505S1.5UP	15	5	200	82	2400
	0.5T8B2_1509S1.5UP	15	9	112	83	1000
	0.5T8B2_1512S1.5UP	15	12	84	84	470
	0.5T8B2_1515S1.5UP	15	15	67	84	330
	0.5T8B2_1524S1.5UP	15	24	42	85	100
	0.5T8B2_2403S1.5UP	24	3.3	303	75	2400
	0.5T8B2_2405S1.5UP	24	5	200	82	2400
	0.5T8B2_2409S1.5UP	24	9	112	83	1000
	0.5T8B2_2412S1.5UP	24	12	84	84	470
	0.5T8B2_2415S1.5UP	24	15	67	84	330

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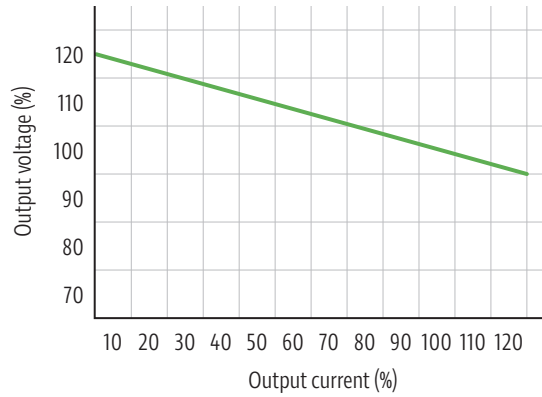
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## Typical characteristics

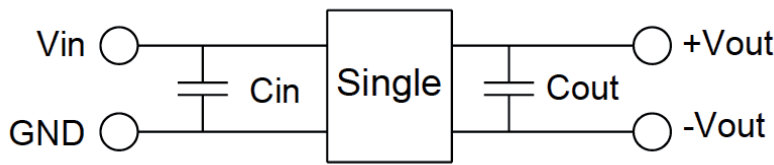
Temperature derating graph



Tolerance envelope graph



## Recommended test circuit



Vin	Cin	Single Vout	Cout
3.3VDC	4.7μF/25V	3.3VDC	10μF/16V
5VDC	4.7μF/25V	5VDC	10μF/16V
9VDC	4.7μF/25V	9VDC	2.2μF/16V
12VDC	2.2μF/25V	12VDC	2.2μF/25V
15VDC	2.2μF/25V	15VDC	1μF/25V

## EMC (CLASS B) compliance circuit

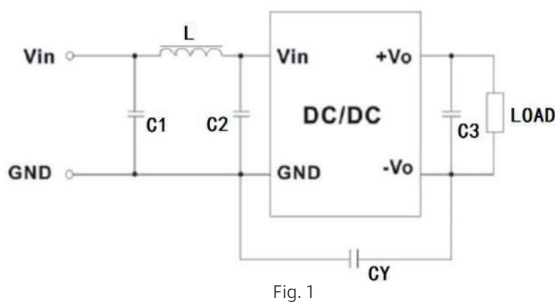
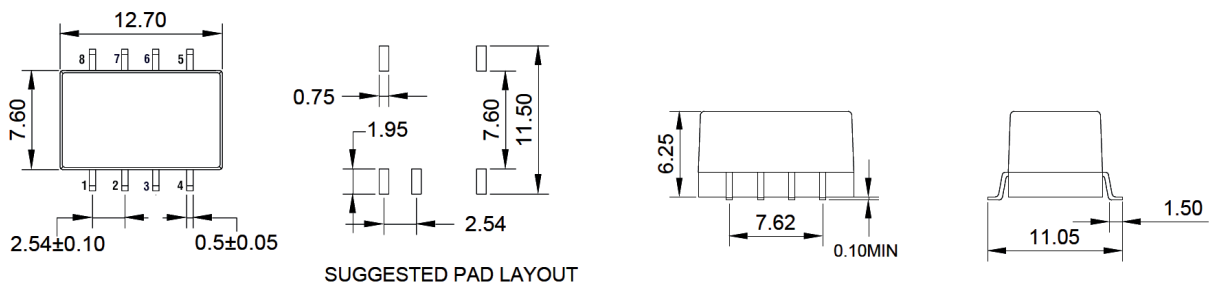


Fig. 1

EMC recommended circuit value table

EMI	Component	Value
EMI	C1	4.7μF /50V
EMI	C2	4.7μF /50V
EMI	CY	1nF/4kV
EMI	C3	Recommended test circuit
EMI	L	6.8μH

## Mechanical dimensions



SUGGESTED PAD LAYOUT

PIN	1	3	7	8	14	Other
Single	-Vin	+Vin	-Vout	+Vout	NC	NO PIN