

1S8W_1.5RP series

1W - Single Output DC-DC Converter - Isolated & Regulated



- ⊕ SIP8 package
- ⊕ Operating temperature range: -40°C to +105°C
- ⊕ 1500VDC isolation voltage

- ⊕ 2:1 input voltage range
- ⊕ Output overcurrent protection
- ⊕ Short circuit protection (SCP)
- ⊕ MTBF: 1,000,000 hours

DC-DC Converter

1 Watt

Introducing our new 1S8W_1.5RP series, a compact and robust isolated DC-DC converter platform designed for reliable performance in industrial and demanding applications. Housed in a space-efficient SIP8 package, the series offers a wide 2:1 input voltage range and delivers dependable power conversion with 1500 VDC isolation. Engineered for extended operating conditions from -40°C to +105°C, it ensures stable operation even in harsh environments. Integrated output overcurrent protection and continuous short circuit protection (SCP) enhance system safety, while an MTBF of 1,000,000 hours supports long-term reliability and maintenance-free operation. The 1S8W_1.5RP series combines electrical robustness, thermal resilience, and compact design for seamless integration into modern power architectures.



Common specifications

Short circuit protection	Continuous, self recovery
Switching frequency	150 (min.), 208 (typ.), 300 (max.) kHz (full load, nominal input voltage)
Operation temperature	-40°C ~+85°C (with derating)
Storage temperature	-55°C ~+105°C
Pin welding can withstand the highest temperature	+300°C (soldering spot is 1.5mm away from case for 10 seconds)
Storage humidity	95% RH (non condensing)
MTBF: (MIL-HDBK-217F@25°C)	> 1,000,000 hours
Input filter	Capacitance filter
Hot plug	Unavailable
Case material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Package dimensions	22.00 x 12.00 x 9.50 mm
Weight	3.8g (typ.)
Cooling method	Free air convection

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (Full load/no load)	5V input		281/40	290/60	mA
	12V input		111/15	114/30	
	24V input		55/6	57/10	
	48V input		27/4	28/6	
Reflected ripple current	5VDC input		30		mA
	12VDC input		40		
	24VDC input		55		
	48VDC input		4		
Impulse voltage	5V input	-0.7		12	VDC
	12V input	-0.7		25	
	24V input	-0.7		50	
	48V input	-0.7		100	
Starting voltage	5VDC input			4.5	VDC
	12VDC input			9	
	24VDC input			18	
	48VDC input			36	
CTRL	Module off 0-0.7V turn off Module on No connect or 3.5-12V on				

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	5% - 100% load, input voltage range		±1.0	±3.0	%
No-load output voltage accuracy	Input voltage range	--	±1.5	±5.0	%
Linear regulation	Full load, Input voltage from low limit to high limit		±0.2	±0.5	%
Load regulation	5% - 100% load		±0.4	±0.75	%
Transient recovery time	25% load step change		0.5	2	ms
Transient response deviation	25% load step change		±2.5	±5	%
Temperature coefficient	Full load		±0.02	±0.03	%/°C

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500			VDC
Isolation resistance	Input-output, isolated voltage 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		120		pF

Example:

1S8W_2405S1.5RP

1 = 1Watt; S8 = SIP; W = Wide Input; 24 = 24Vin; 05 = 5Vout; S = Single Output; 1.5 = 1500VDC isolation; R = Regulated Output; P = Short circuit protection

- The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused ;
- Unless otherwise specified, the parameters in this datasheet were measured at 25°C, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load;
- All index test methods are based on our company's standards.

1S8W_1.5RP series

1W - Single Output DC-DC Converter - Isolated & Regulated

EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS B (the recommended circuit is shown in figure 3-②)	
EMI	RE	CISPR32/EN55032 CLASS B (the recommended circuit is shown in figure 3-②)	
EMS	ESD	IEC/EN61000-4-2 Contact $\pm 4\text{kV}$	Perf. criteria B
EMS	RS	IEC/EN61000-4-3 10V/m	Perf. criteria A
EMS	EFT	IEC/EN61000-4-4 $\pm 2\text{kV}$ (the recommended circuit is shown in figure 3-①)	Perf. criteria B
EMS	Surge	IEC/EN61000-4-5 line to line $\pm 2\text{kV}$ (the recommended circuit is shown in figure 3-③)	Perf. criteria B
EMS	Cs	IEC/EN61000-4-6 3 Vr.m.s	Perf. Criteria A

Product Selection Guide

Approval	Part number	Input Voltage Nominal/Range (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Output Current min. (mA)	Ripple & noise typ./max. (mVp-p)	Efficiency typ. (%)	Capacitive Load max. (μF)
	1S8W_0503S1.5RP	5 (4.5-9)	3.3	303	15	70/100	68	1800
	1S8W_0505S1.5RP	5 (4.5-9)	5	200	10	70/100	73	2200
	1S8W_0512S1.5RP	5 (4.5-9)	12	83	4	70/100	77	681
	1S8W_0515S1.5RP	5 (4.5-9)	15	67	3	70/100	74	470
	1S8W_0524S1.5RP	5 (4.5-9)	24	42	2	70/100	76	330
	1S8W_1203S1.5RP	12 (9-18)	3.3	303	15	100/150	75	2700
	1S8W_1205S1.5RP	12 (9-18)	5	200	10	100/150	76	2200
	1S8W_1209S1.5RP	12 (9-18)	9	111	6	100/150	78	1000
	1S8W_1212S1.5RP	12 (9-18)	12	83	4	100/150	82	680
	1S8W_1215S1.5RP	12 (9-18)	15	67	3	100/150	83	471
	1S8W_1224S1.5RP	12 (9-18)	24	42	2	100/150	81	330
	1S8W_2403S1.5RP	24 (18-36)	3.3	303	15	70/100	74	2700
	1S8W_2405S1.5RP	24 (18-36)	5	200	10	70/100	81	2200
	1S8W_2412S1.5RP	24 (18-36)	12	83	4	70/100	83	680
	1S8W_2415S1.5RP	24 (18-36)	15	67	3	70/100	83	470
	1S8W_2424S1.5RP	24 (18-36)	24	42	2	70/100	83	330
	1S8W_4803S1.5RP	48 (36-75)	3.3	303	15	100/150	75	2700
	1S8W_4805S1.5RP	48 (36-75)	5	200	10	100/150	76	2200
	1S8W_4812S1.5RP	48 (36-75)	12	83	4	100/150	80	680
	1S8W_4815S1.5RP	48 (36-75)	15	67	3	100/150	84	470

Approval	Part number	Input Voltage Nominal/Range (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Output Current min. (mA)	Ripple & noise typ./ max. (mVp-p)	Efficiency min/typ. (%)	Capacitive Load max. (μF)
	1S8W_0505D1.5RP	5 (4.5-9)	± 5	± 100	± 5	70/100	74	#1000
	1S8W_0512D1.5RP	5 (4.5-9)	± 12	± 42	± 2	70/100	77	#470
	1S8W_0515D1.5RP	5 (4.5-9)	± 15	± 33	± 2	70/100	77	#330
	1S8W_1205D1.5RP	12 (9-18)	± 5	± 100	± 5	100/150	78	#1000
	1S8W_1212D1.5RP	12 (9-18)	± 12	± 42	± 2	100/150	79	#470
	1S8W_1215D1.5RP	12 (9-18)	± 15	± 33	± 2	100/150	80	#330
	1S8W_2405D1.5RP	24 (18-36)	± 5	± 100	± 5	70/100	79	#1000
	1S8W_2412D1.5RP	24 (18-36)	± 12	± 42	± 2	70/100	83	#470
	1S8W_2415D1.5RP	24 (18-36)	± 15	± 33	± 2	70/100	83	#330
	1S8W_4805D1.5RP	48 (36-75)	± 5	± 100	± 5	100/150	79	#1000
	1S8W_4812D1.5RP	48 (36-75)	± 12	± 42	± 2	100/150	82	#470
	1S8W_4815D1.5RP	48 (36-75)	± 15	± 33	± 2	100/150	82	#330

Typical characteristics

Temperature derating graph

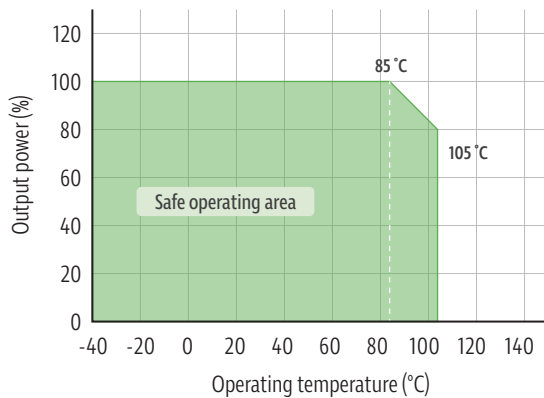
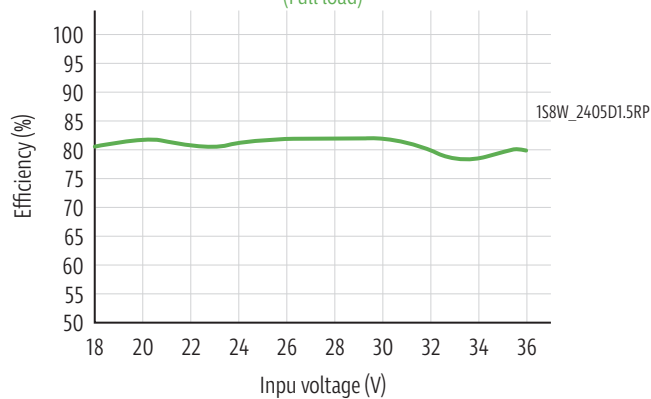
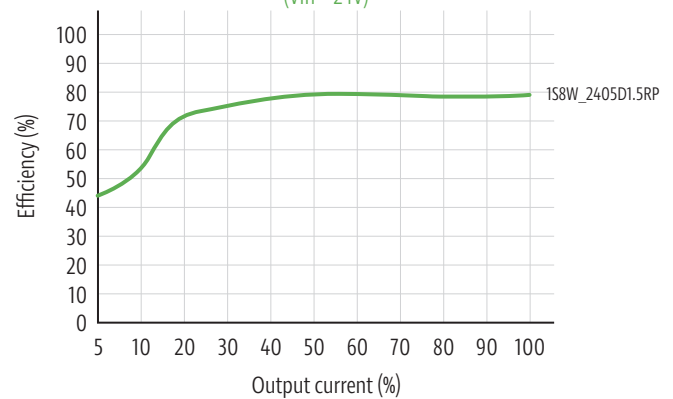


Figure 1

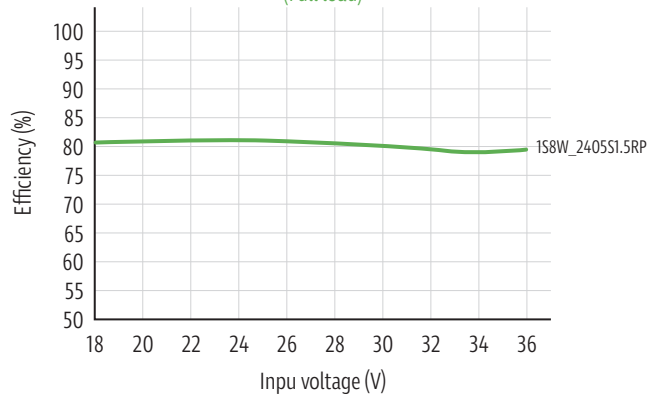
Efficiency vs input voltage
(Full load)



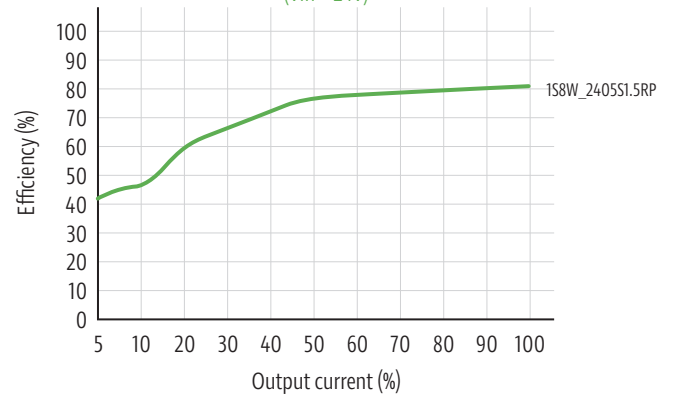
Efficiency vs output load
($V_{in} = 24V$)



Efficiency vs input voltage
(Full load)



Efficiency vs output load
($V_{in} = 24V$)



1S8W_1.5RP series

1W - Single Output DC-DC Converter - Isolated & Regulated

Typical circuit design and application

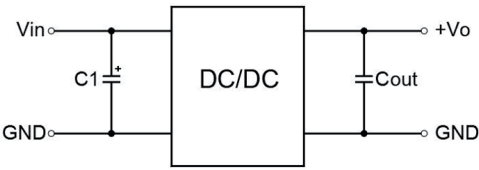


Figure 2

Recommended capacitive load value table

Cin (μF)	Cout (μF)
100	10

Recommended EMC circuit diagram

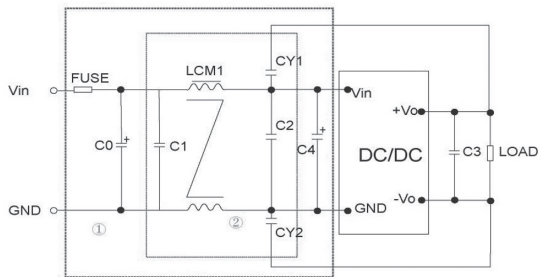


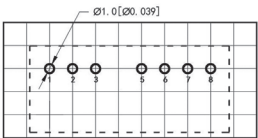
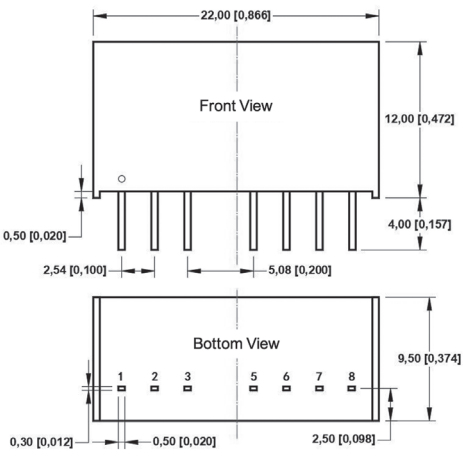
Figure 3

EMI recommended parameter table

Model	Vin: 12V	Vin: 24V
FUSE	Select according to the actual input current of the customer	
C0, C4	330uF/35V	330uF/50V
C1, C2	10μF/50V	10μF/50V
LCM1	1.4-1.7mH	1.4-1.7mH
C3	22μF/50V	22μF/50V
CY1, CY2	1nF/400VAC	1nF/400VAC

Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand.

Mechanical dimensions



Note: The grid distance is 2.54mm x 2.54mm

Pin definition table

Pin	Function (single)	Function (double)
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	-Vo	COM
8	NC	-Vo

NC: Pin to be isolated from circuitry

Note:
Unit: mm [inch]
Pin section tolerances: ±0.10 [±0.004]
General tolerances: ±0.50 [±0.020]