



6S8W_3RP series

6W - Single/Dual Output DC-DC Converter - Wide Input - Isolated & Regulated

DC-DC Converter

6 Watt

- ⊕ SIP8 package
- ⊕ Operating temperature range: -40°C to +85°C
- ⊕ 3000VDC isolation
- ⊕ 2:1 input voltage range
- ⊕ Up to 87% efficiency
- ⊕ Input undervoltage protection
- ⊕ Short circuit protection
- ⊕ Overcurrent protection

Introducing our new 6S8W_3RP series in a compact SIP8 package. With an operating temperature range from -40°C to +85°C, 3000VDC isolation, and a 2:1 input voltage range, this series is built for versatility and reliability. Delivering up to 87% efficiency, it also comes equipped with input undervoltage, short circuit, and overcurrent protection, ensuring safe and stable performance even in demanding applications.



Common specifications	
Short circuit protection	Input voltage range, continuous, self recovery
Switching frequency	500 kHz (Full load, nominal input voltage)
Operation temperature	-40°C ~+85°C (with derating)
Storage temperature	-55°C ~+125°C
Pin welding can withstand the highest temperature	+300°C (soldering spot is 1.5mm away from case for 10 seconds)
Storage humidity	5~95% RH (non-condensing)
MTBF: (MIL-HDBK-217F@25°C)	1,000,000 hours
Input filter	Capacitance filter
Hot plug	Unavailable
Vibration	10-150Hz, 5G, 30 Min. along X, Y and Z
Case material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Package dimensions	22.00 x 9.50 x 12.00 mm
Weight	4.6g (typ.)
Cooling method	Free air convection

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output voltage accuracy (5% - 100% load)	Vo1		±1.0	±2.0		%
	Vo2		±3.0	±5.0		
Linear regulation (full load, input voltage from low limit to high limit)	Vo1		±0.5	±1.0		%
	Vo2		±0.4	±1.0		
Load regulation (5% - 100% load)	Vo1		±0.5	±1.5		%
	Vo2		±1.0	±1.5		
Transient recovery time	25% load step change		0.3	0.5		ms
Transient response Deviation (25% load step change)	3.3V, 5V output		±5	±8		%
	Other voltage		±3	±5		
Temperature coefficient	Full load			±0.03		%/°C
Ripple & noise	20MHz bandwidth, 5% - 100% Load, parallel line test method		50	100		mVp-p
Over current protection	Input voltage range	110	160	230		%Io

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000				VDC
Isolation resistance	Input-output, insulated voltage 500VDC	1000				MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		120			pF

Example:
6S8W_2405S3RP
 6 = 6Watt; S8 = SIP; W = Wide input; 24 = 24Vin; 05 = 5Vout; S = Single Output;
 3 = 3000VDC 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 standards.

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input current (full load/no load)	5VDC nominal		1538/28	1579/45		mA
	12VDC nominal					
	• 3.3VDC Output		489/12	502/18		
	• Other Output		625/12	641/18		
	24VDC nominal					
Reflected ripple current	• 3.3VDC Output		238/5	245/12		mA
	• 5VDC Output		305/5	313/12		
	• Other Output		298/10	305/16		
	48VDC nominal		156/5	160/12		
Impulse voltage	5VDC nominal input	-0.7		12		VDC
	12VDC nominal input	-0.7		25		
	24VDC nominal input	-0.7		50		
	48VDC nominal input	-0.7		100		
Starting voltage	5VDC nominal input			4.5		VDC
	12VDC nominal input			9		
	24VDC nominal input			18		
	48VDC nominal input			36		
Undervoltage protection	5VDC nominal input	--	--	4.5		VDC
	12VDC nominal input	5.5	6.5	--		
	24VDC nominal input	12	15.5	--		
	48VDC nominal input	26	30	--		
CTRL	Module off 0 - 0.7V turn off Module on no connect or 3.5 - 12V on					

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EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS B (Recommended circuit diagram Figure 3-②)	
EMI	RE	CISPR32/EN55032 CLASS B (Recommended circuit diagram Figure 3-②)	
EMI	ESD	IEC/EN61000-4-2 contact±4kV	perf. criteria B
EMS	RS	IEC/EN61000-4-3 10V/m	Perf. criteria A
EMS	EFT	IEC/EN61000-4-4 ±2kV (recommended circuit diagram Figure 3-①)	Perf. criteria B
EMS	Surge	IEC/EN61000-4-5 line to line±2KV (recommended circuit diagram Figure 3-①)	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)	Input Voltage Max. (VDC)	Output Voltage (VDC)	Output Current (mA) Max./Min.	Full Load Efficiency (%) Typ.	Capacitive Load Max. (µF)
	6S8W_0505S3RP	5 (4.5-9)	12	5	1200/0	78	1000
	6S8W_0512S3RP	5 (4.5-9)	12	12	500/0	80	470
	6S8W_0515S3RP	5 (4.5-9)	12	15	400/0	80	220
	6S8W_0524S3RP	5 (4.5-9)	12	24	250/0	80	100
	6S8W_1203S3RP	12 (9-18)	20	3.3	1350/0	76	1800
	6S8W_1205S3RP	12 (9-18)	20	5	1200/0	80	1000
	6S8W_1209S3RP	12 (9-18)	20	9	667/0	82	470
	6S8W_1212S3RP	12 (9-18)	20	12	500/0	84	470
	6S8W_1215S3RP	12 (9-18)	20	15	400/0	84	220
	6S8W_1224S3RP	12 (9-18)	20	24	250/0	84	100
	6S8W_2403S3RP	24 (18-36)	40	3.3	1350/0	76	1800
	6S8W_2405S3RP	24 (18-36)	40	5	1200/0	82	1000
	6S8W_2409S3RP	24 (18-36)	40	9	667/0	84	470
	6S8W_2412S3RP	24 (18-36)	40	12	500/0	86	470
	6S8W_2415S3RP	24 (18-36)	40	15	400/0	87	220
	6S8W_2424S3RP	24 (18-36)	40	24	250/0	87	100
	6S8W_4805S3RP	48 (36-75)	80	5	1200/0	80	1000

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	6S8W_0505S3RP	5 (4.5-9)	12	±5	±500/0	78	#500
	6S8W_0512S3RP	5 (4.5-9)	12	±12	±208/0	80	#220
	6S8W_0515S3RP	5 (4.5-9)	12	±15	±167/0	80	#100
	6S8W_0524S3RP	5 (4.5-9)	12	±24	±104/0	80	#50

Typical characteristics

Temperature derating graph

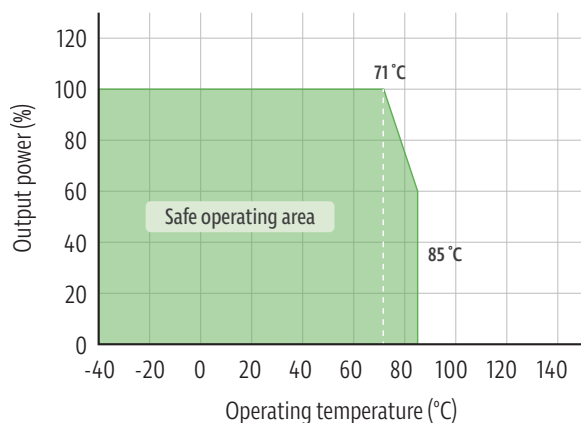


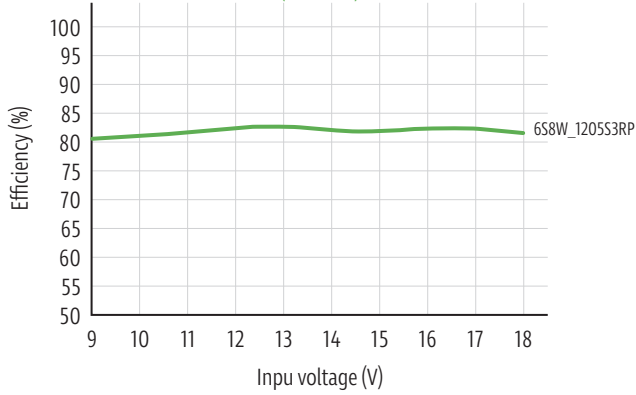
Figure 1

6S8W_3RP series

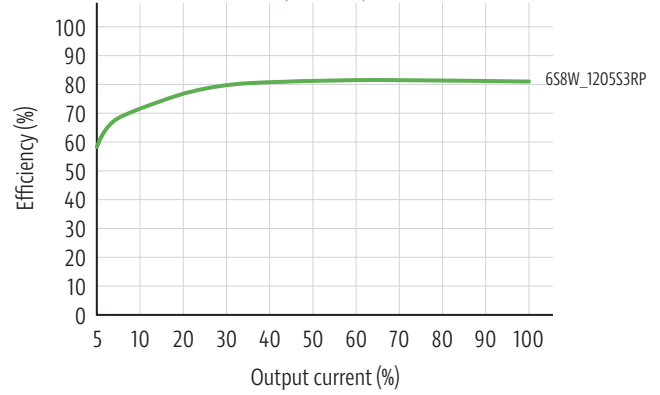
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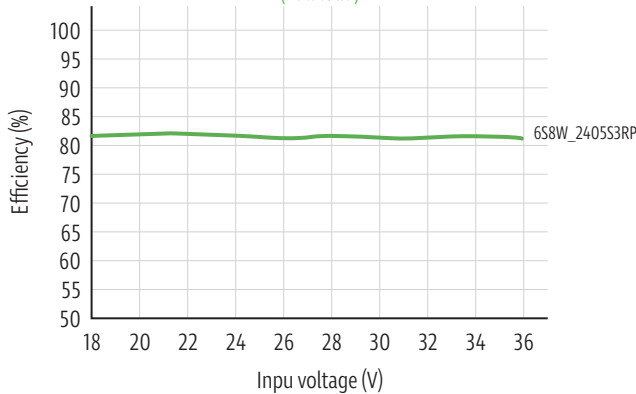
Efficiency vs input voltage
(Full load)



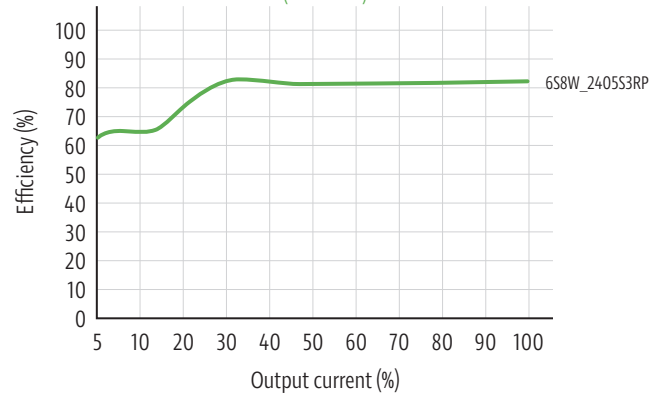
Efficiency vs output load
($V_{in} = 24V$)



Efficiency vs input voltage
(Full load)



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



Typical circuit design and application

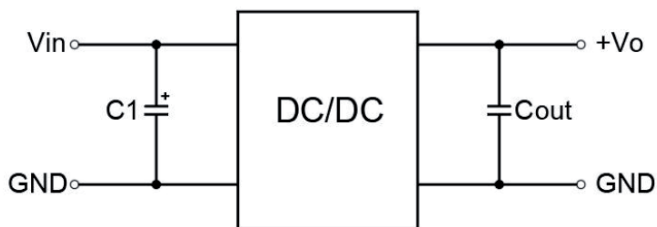


Figure 2

Recommended Capacitive Load Value Table

Cin (μF)	Cout (μF)
100	22

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Recommended EMC circuit diagram

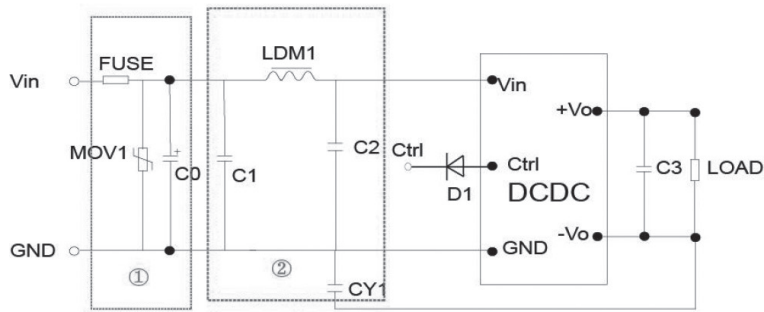


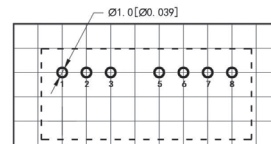
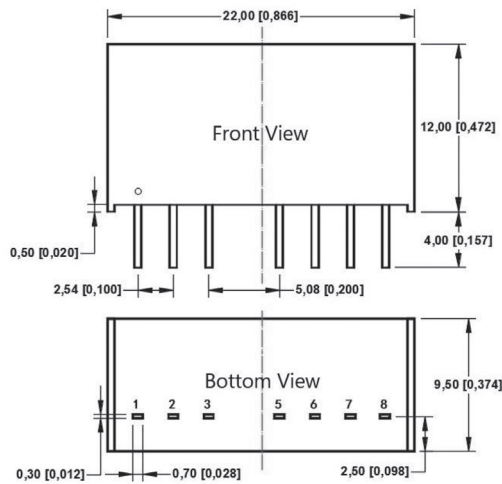
Figure 3

EMI recommended component parameters

Model	Vin: 12V	Vin: 24V
FUSE	Select according to the actual input current of the customer	
C0, C4	330uF/35V	330uF/50V
C1, C2	10uF/50V	
LCM1	1.4-1.7mH	
C3	22uF/50V	
CY1, CY2	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*2.54mm

Pin Definition Table		
Pin No.	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

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