

6S8W4_3RP Series

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

DC-DC Converter

6 Watt

- ⊕ Wide input voltage range (4:1)
- ⊕ Operating temperature range: -40°C to +71°C
- ⊕ High efficiency up to 87%
- ⊕ Isolation voltage: 3KVDC
- ⊕ Short circuit protection (SCP)
- ⊕ Highest power density in 8 Pin SIL package
- ⊕ International standard pin-out
- ⊕ No minimum load required
- ⊕ Remote on/off control

The 6S8W4_3RP series offers an excellent performance and high power density design. Wide 4:1 input voltage ranges: 9V-36V and 18V-75V.

It features efficiency up to 87%, 3000VDC isolation, operating temperature of -40°C to +71°C, short circuit protection and new PWM construction. Widely applied in medical care, industrial control, electric power, instruments and communication fields.



Common specifications

Short circuit protection:	Continuous, automatic recovery
Cooling:	Nature convection
Operation temperature range:	-40°C~+71°C
Case temperature:	+100°C MAX
Storage temperature range:	-55°C ~+125°C
Storage humidity range:	95% relH
Soldering temperature:	260°C MAX, 1.5mm from case for 10 sec
Switching Frequency:	580kHz TYP
Case material:	Non-conductive black plastic
Potting material:	Epoxy [UL94-V0]
Pin material:	C5191R-H solder-coated
MTBF (MIL-HDBK 217F @25°C):	800 K hours
Weight:	4.5g
Dimensions:	21.84*9.14*11.18 mm

Input specifications

Item	Test condition	Min	Typ	Max	Units
Start up time	nominal Vin and constant resistive load		30		ms
Input filter	Capacitor filter				
Surge voltage (100ms max)	• 24V models • 48V models			50 100	VDC VDC
Reflected ripple current	• 24Vin • 48Vin		20 40		mApk-pk mApk-pk
Remote ON/OFF	• ON • OFF		Open or high impedance 2-4mA input current (via 1KΩ)		
	OFF stand by input current*		2.5		mA

* Nominal Vin.

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 second	3000			VDC
Isolation resistance	500VDC, input to output	1			GΩ
Isolation capacity			50		pF

Output specifications

Item	Test condition	Min	Typ	Max	Units
Voltage accuracy				±1	%
Line regulation				±0.2	%
Load regulation	0% to 100% full load • Single • 3.3V/5V + Dual output			±0.5 ±1.0	% %
Cross regulation*	Dual output		±5		%
Ripple & Noise**	20MHz Bandwidth			125	mVp-p
Transient response deviation	25% load step change • 3.3V/5V output • others			±5 ±3	% %
Transient recovery time	25% load step change		250		μs
Temperature coefficient	full load			±0.02	%/°C

* One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within 5%.

** Measured with a 0.1μF ceramic capacitor.

EMC specifications

EMI	CE*	EN55022	CLASS A
EMI	RE	EN55022	CLASS A
EMS	ESD	IEC/EN61000-4-2	perf. Criteria A
EMS	RS	IEC/EN61000-4-3	perf. Criteria A
EMS	EFT**	IEC/EN61000-4-4	perf. Criteria A
EMS	Surge**	IEC/EN61000-4-5	perf. Criteria A
EMS	CS	IEC/EN61000-4-6	perf. Criteria A
EMS	PFMF	IEC/EN61000-4-8	perf. Criteria A

* Input filter components are required to help meet conducted emission class A. Which application refer to the EMI filter section on page xx.

** An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.

Example:

6S8W4_2405S1.6RP
6= 6Watt; S8= SIP8; W4= wide input 4:1; 9-36Vin; 5Vout; S= Single Output; 1.6= 1600VDC; R= Regulated Output; P= Short Circuit Protection

Note:

- All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- In this datasheet, all the test methods of indications are based on corporate standards.

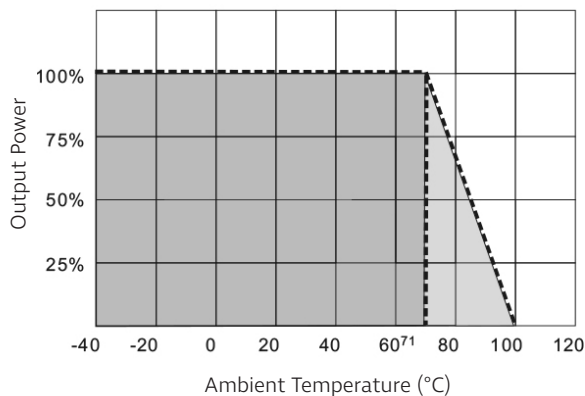
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Part Number	Input Voltage [VDC]			Input current		Output Voltage [VDC]	Output Current [mA, max.]	Efficiency [%, typ.]	Capacitive Load [μ F, max.]
	Nominal	Range	Max	No load [mA, max]	Full load [mA, typ]				
6S8W4_2403S3RP	24	9-36	40	6	261	3.3	1500	79	4700
6S8W4_2405S3RP	24	9-36	40	6	298	5	1200	84	2200
6S8W4_2409S3RP	24	9-36	40	6	290	9	666	86	1000
6S8W4_2412S3RP	24	9-36	40	6	287	12	500	87	470
6S8W4_2415S3RP	24	9-36	40	6	287	15	400	87	220
6S8W4_2424S3RP	24	9-36	40	6	287	24	250	87	100
6S8W4_4803S3RP	48	18-75	80	6	131	3.3	1500	79	4700
6S8W4_4805S3RP	48	18-75	80	6	151	5	1200	83	2200
6S8W4_4809S3RP	48	18-75	80	6	148	9	666	85	1000
6S8W4_4812S3RP	48	18-75	80	6	144	12	500	87	470
6S8W4_4815S3RP	48	18-75	80	6	144	15	400	87	220
6S8W4_4824S3RP	48	18-75	80	6	144	24	250	87	100
6S8W4_2405D3RP	24	9-36	40	6	298	\pm 5	\pm 600	84	\pm 330
6S8W4_2412D3RP	24	9-36	40	6	291	\pm 12	\pm 250	86	\pm 220
6S8W4_2415D3RP	24	9-36	40	6	287	\pm 15	\pm 200	87	\pm 100
6S8W4_4805D3RP	48	18-75	80	6	152	\pm 5	\pm 600	82	\pm 330
6S8W4_4812D3RP	48	18-75	80	6	147	\pm 12	\pm 250	85	\pm 220
6S8W4_4815D3RP	48	18-75	80	6	145	\pm 15	\pm 200	86	\pm 100

Typical characteristics

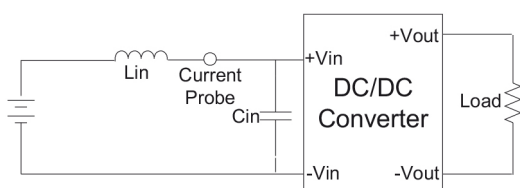
Derating Curve



Test configurations

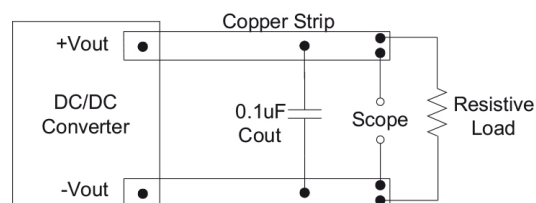
Input reflected ripple current test step

Input reflected ripple current is measured through a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR<1.0 Ω at 100KHz) at nominal input and full load.



Output ripple & noise measurement test

Use a capacitor C_{out} (0.1 μ F) measurement. The Scope measurement bandwidth is 0-20MHz.



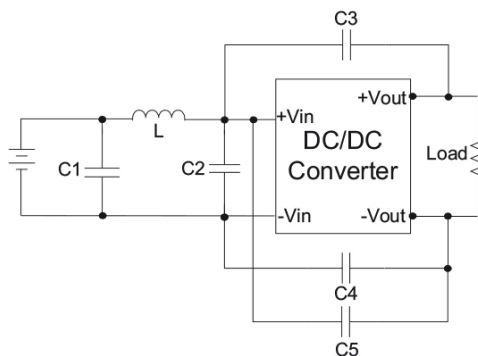
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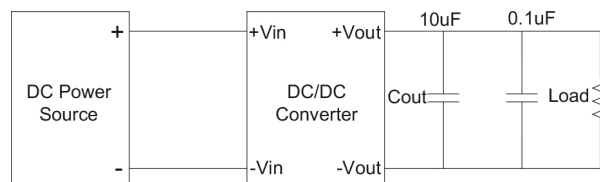
EMI filter

Input filter components (C1, C2, C3, C4, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



Output ripple & noise reduction

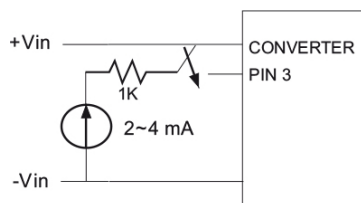
To reduce ripple & noise, it is recommended to use a 0.1µF ceramic disk capacitor and a 10µF electrolytic capacitor at the output.



	C1&C2	L	C3&C4	C5
6S8W4_24xx3RP	MLCC 10µF/35V	12µH	MLCC 470pF/3KV	
6S8W4_48xx3RP	MLCC 2.2µF/100V	12µH	MLCC 1000pF/3KV	MLCC 1000pF/3KV

CTRL module ON/OFF

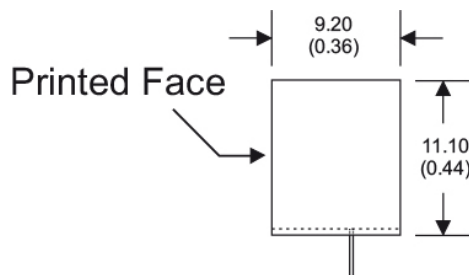
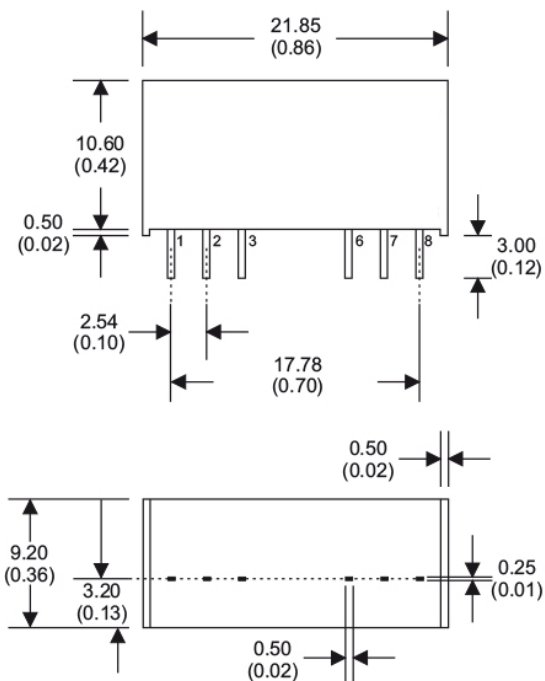
ON: open or high impedance
OFF: 2-4mA input current (via 1K)



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Mechanical dimensions



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	-V Input	-V Input
2	+V Input	+V Input
3	Remote On/Off	Remote On/Off
5	N.C.	N.C.
6	+V Output	+V Output
7	-V Output	Common
8	N.C.	-V Output

Note:

All dimensions are typical in mm (inch)

Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)

Pin pitch and length tolerance: ± 0.35 (± 0.014)

Pin to case tolerance: ± 0.5 (± 0.02)

Case tolerance: ± 0.5 (± 0.02)

Stand-off tolerance: ± 0.1 (± 0.004)