



6S8W_1.6RP series

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

DC-DC Converter

6 Watt

- ⊕ Wide input voltage range (2:1)
- ⊕ No-load power consumption as low as 0.12W
- ⊕ High efficiency up to 87%
- ⊕ Isolation voltage: 1.6kVDC
- ⊕ Short circuit protection (SCP)
- ⊕ Operating temperature range: -40°C to +105°C
- ⊕ Over-current protection
- ⊕ Input under-voltage protection
- ⊕ International standard pin-out
- ⊕ Meets EN62368 standards

The 6S8W_1.6RP series is an excellent performance and high power density design. Wide 2:1 input voltage ranges: 9V-18V and 18V-36V.

It features efficiency up to 87%, 1600VDC isolation, operating temperature of -40°C to +105°C, input under-voltage protection, output over-current, short circuit protection, which make them widely applied in medical care, industrial control, electric power, instruments and communication fields.



Common specifications

Short circuit protection:	Continuous, automatic recovery
Cooling:	Free air convection
Operation temperature range:	-40°C~+105°C
Operation case temperature:	+110°C MAX
Storage temperature range:	-55°C ~+125°C
Storage humidity range:	5-95% RH, without condensing
Pin welding resistance temperature:	300°C MAX, 1.5mm from case for 10 sec
Vibration:	10-150Hz, 5G, 0.75mm. along X, Y and Z
Switching Frequency*:	500kHz TYP, PWM mode
Case material:	Flame-retardant, heat-resistant black plastic [UL94-V0]
MTBF (MIL-HDBK 217F @25°C):	1000 K hours
Weight:	4.9g
Dimensions:	22.00*9.50*12.00 mm

* Reduced frequency technology, test value: full load. When the load is reduced to below 50%, the switching frequency decreases with decreasing load.

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input current (full load/no load)	• 12VDC input		489/12	502/18	mA
	- 3.3V output		625/12	641/18	mA
	- others				
	• 24VDC input		238/5	245/12	mA
Reflected ripple current	- 3.3V output		305/5	313/12	mA
	- 5V output		305/10	313/16	mA
	- others				
Surge voltage (1 sec. max)	• 12VDC input	-0.7		25	VDC
	• 24VDC input	-0.7		50	VDC
Starting voltage	• 12VDC input			9	VDC
	• 24VDC input			18	VDC
Input under voltage protection	• 12VDC input	5.5	6.5		VDC
	• 24VDC input	12	15.5		VDC
Input filter	Capacitance filter				
Hot plug	Unavailable				

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.

Output specifications

Item	Test condition	Min	Typ	Max	Units
Voltage accuracy	5%-100% load		±1	±2	%
Line regulation	Vin=min to max, full load		±0.5	±1	%
Load regulation	5% to 100% full load		±0.5	±1.5	%
Transient response deviation	25% load step change • 3.3V/5V output • others		±5	±8	%
			±3	±5	%
Transient recovery time	25% load step change		300	500	µs
Temperature coefficient	full load			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth		50	100	mVp-p
Output over current protection	Input voltage range	110	160	230	%Io

EMC specifications

EMI	CE	CISPR22/EN55032 CLASS B (see EMC recommended circuit, fig. 2)
EMI	RE	CISPR22/EN55032 CLASS B (see EMC recommended circuit, fig. 2)
EMS	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 (see EMC recommended circuit, fig. 1) perf. Criteria B
EMS	Surge	IEC/EN61000-4-5 ±2KV (see EMC recommended circuit, fig. 1) perf. Criteria B
EMS	CS	IEC/EN61000-4-6 3 Vr.m.s perf. Criteria A

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 second	1600			VDC
Isolation resistance	500VDC, input to output	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		1000		pF

Example:

6S8W_1205S1.6RP

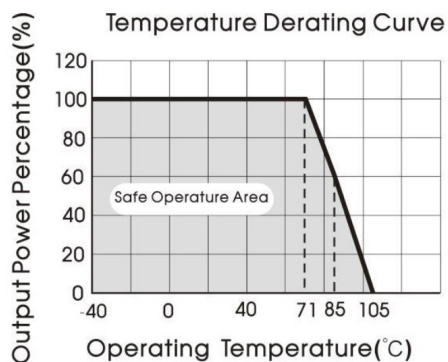
6 = 6 Watt; S8 = SIP8; W = wide input; 12 = 9-18Vin; 05 = 5Vout; S = Single Output; 1.6 = 1600VDC isolation; R = Regulated Output; P = Short Circuit Protection

6S8W_1.6RP series

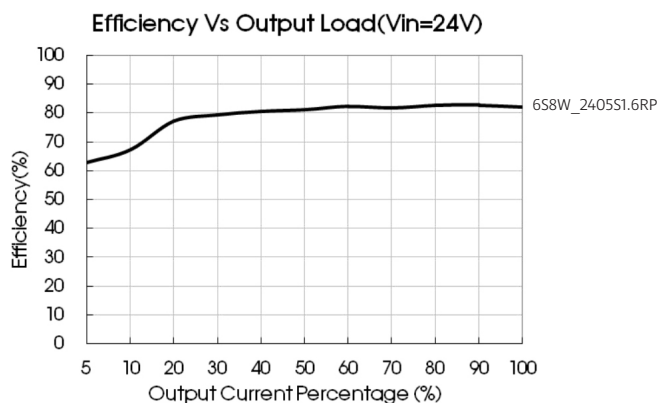
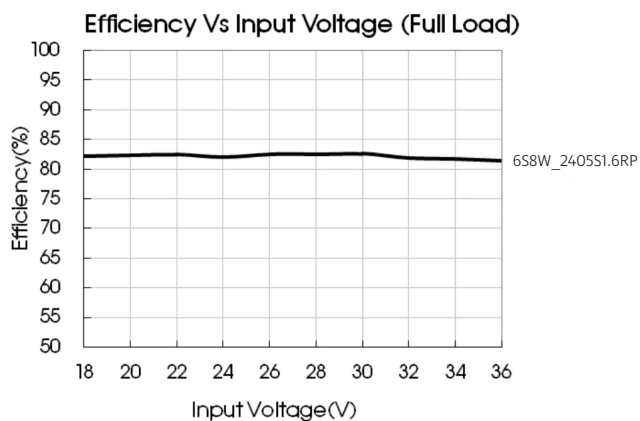
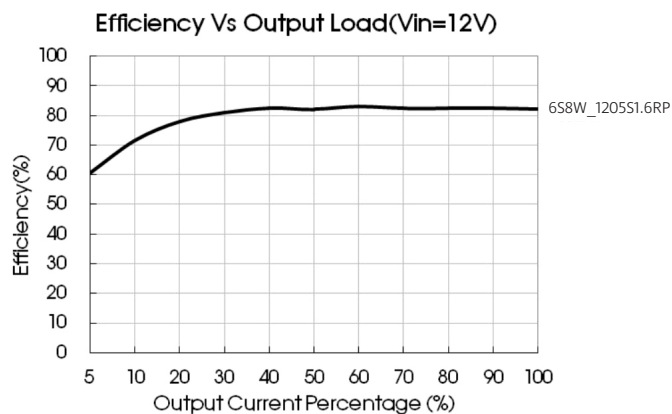
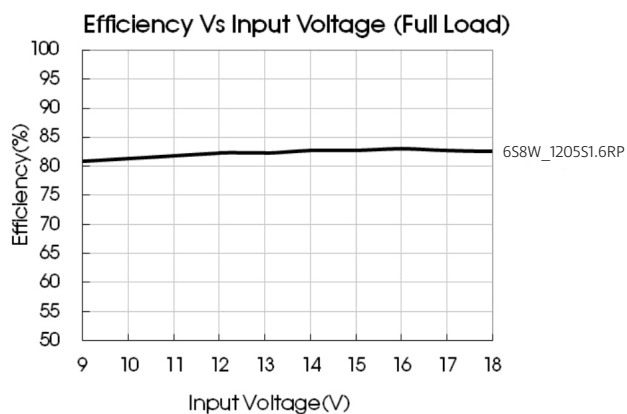
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Part Number	Input Voltage [VDC]			Output Voltage [VDC]	Output Current [mA, max.]	Efficiency [%, typ.]	Capacitive Load [max.]
	Nominal	Range	Max				
6S8W_1203S1.6RP	12	9-18	20	3.3	1350	76	1800
6S8W_1205S1.6RP	12	9-18	20	5	1200	80	1000
6S8W_1209S1.6RP	12	9-18	20	9	667	82	470
6S8W_1212S1.6RP	12	9-18	20	12	500	84	470
6S8W_1215S1.6RP	12	9-18	20	15	400	84	220
6S8W_1224S1.6RP	12	9-18	20	24	250	84	100
6S8W_2403S1.6RP	24	18-36	40	3.3	1350	78	1800
6S8W_2405S1.6RP	24	18-36	40	5	1200	82	1000
6S8W_2409S1.6RP	24	18-36	40	9	667	84	470
6S8W_2412S1.6RP	24	18-36	40	12	500	86	470
6S8W_2415S1.6RP	24	18-36	40	15	400	87	220
6S8W_2424S1.6RP	24	18-36	40	24	250	85	100

Typical characteristics



Efficiency



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Typical application

All the DC/DC converters of this series are tested according to the recommended circuit (below) before delivery.

If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors C_{in} and C_{out} or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



$C_{in}(\mu F)$	$C_{out}(\mu F)$
100	22

EMC solution recommended circuit

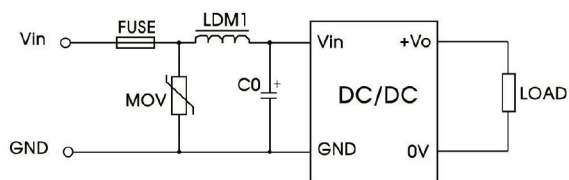


Fig. 1

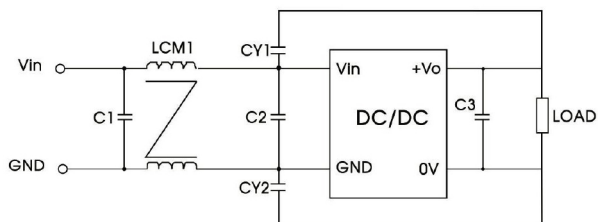


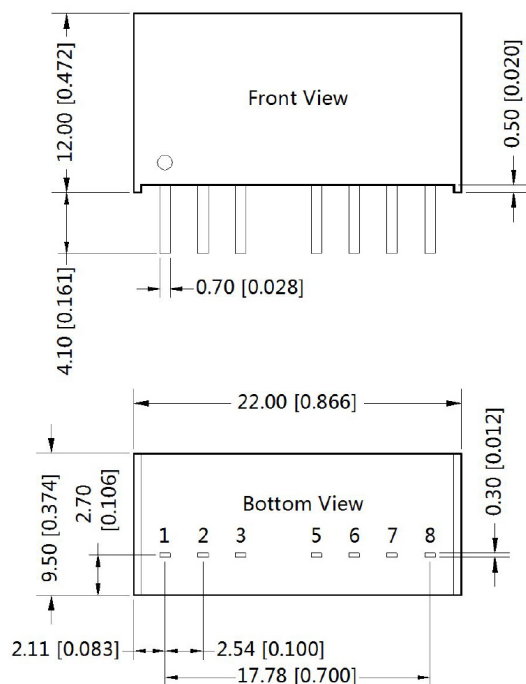
Fig. 2

Parameter description		
Model	$V_{in}: 12V$	$V_{in}: 24V$
$C0, C4$	$330\mu F/35V$	$330\mu F/50V$
$C1/C2$	$10\mu F/50V$	
$C3$	$22\mu F/50V$	
$LCM1$	$1.4-1.7mH$ (TN150P-RH 12.7*12.7*7.9)	

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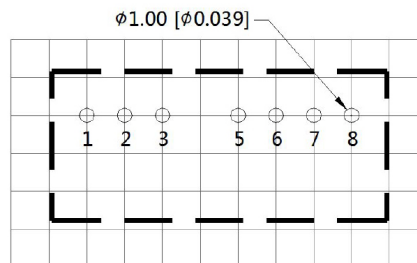
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Mechanical dimensions



Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

THIRD ANGLE PROJECTION



Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	V _{in}
3	Ctrl
5	NC
6	+V _o
7	0V
8	NC

NC: Pin to be isolated from circuitry