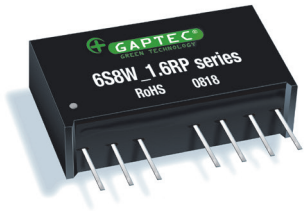
6S8W_1.6RP series

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 - 3.3V output - others • 24VDC input - 3.3V output - 5V output - others		 489/12 625/12 238/5 305/5 305/10	 502/18 641/18 245/12 313/12 313/16	 mA mA mA mA mA
Reflected ripple current			50		mA
Surge voltage (1 sec. max)	• 12VDC input • 24VDC input	-0.7 -0.7		25 50	VDC VDC
Starting voltage	• 12VDC input • 24VDC input			9 18	VDC VDC
Input under voltage protection	• 12VDC input • 24VDC input	5.5 12	6.5 15.5		VDC VDC
Input filter	Capacitance filter				
Hot plug	Unavailable				

Note:
1. All specifications measured at Ta = 25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
2. 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 ±3	 ±8 ±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 (see EMC recommended circuit, fig. 1)	±2KV	perf. Criteria B
EMS	Surge	IEC/EN61000-4-5 (see EMC recommended circuit, fig. 1)	±2KV	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

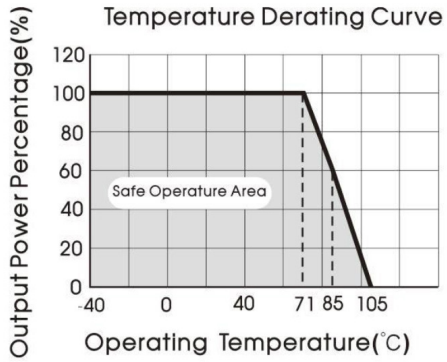
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Specifications subject to change without notice.

6S8W_1.6RP series

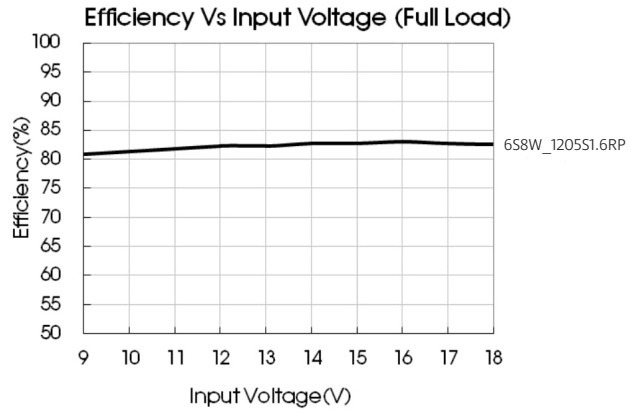
6W - Single Output - Wide Input - Isolated & Regulated
DC-DC Converter

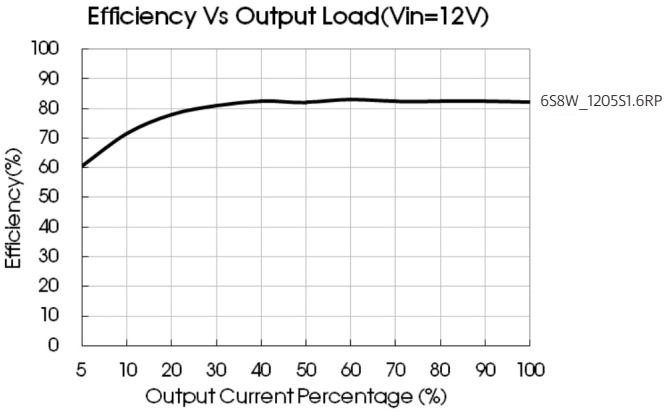
Part Number	Input Voltage [VDC]			Output Voltage [VDC]	Output Current [mA, max.]	Efficiency [%, typ.]	Capacitive Load [max.]
	Nominal	Range	Max				
6S8W_1203S1.6RP	12	9-18	20	3.3	1350	76	1800
6S8W_1205S1.6RP	12	9-18	20	5	1200	80	1000
6S8W_1209S1.6RP	12	9-18	20	9	667	82	470
6S8W_1212S1.6RP	12	9-18	20	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

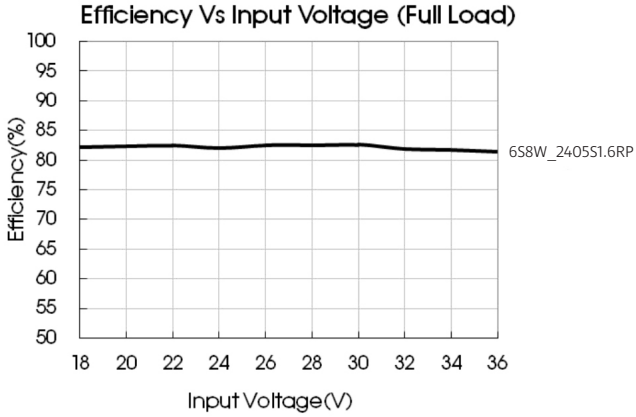
Typical characteristics

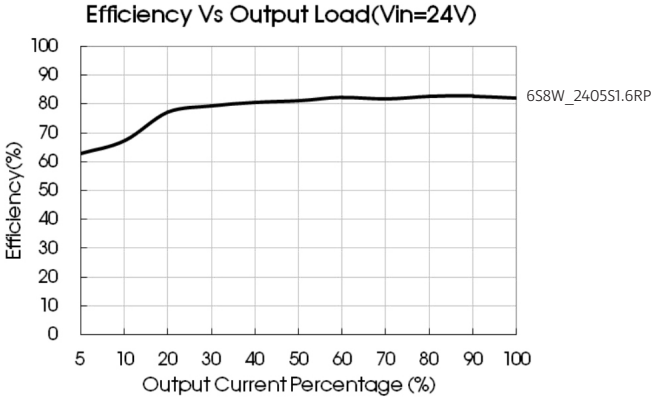


Efficiency









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 Cin and Cout or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



Cin(uF)	Cout(uF)
100	22

EMC solution recommended circuit

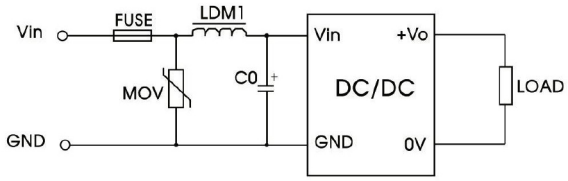


Fig. 1

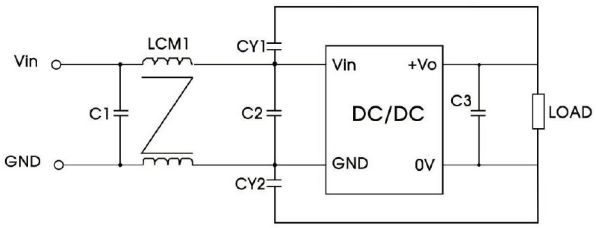
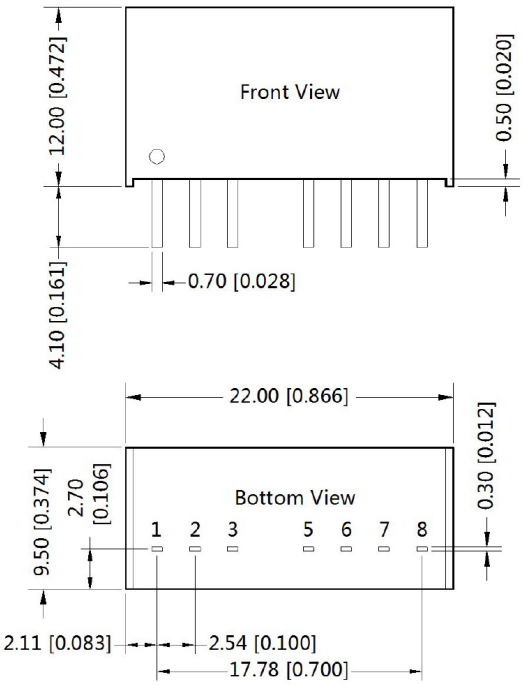


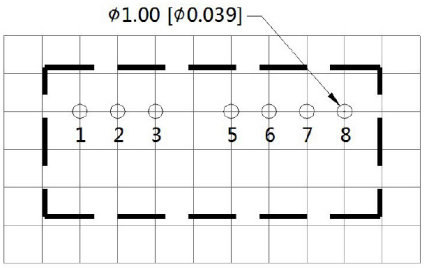
Fig. 2

Parameter description		
Model	Vin: 12V	Vin: 24V
C0, C4	330μF/35V	330μF/50V
C1/C2	10μF/50V	
C3	22μF/50V	
LCM1	1.4-1.7mH (TN150P-RH 12.7*12.7*7.9)	

Mechanical dimensions



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



Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

NC: Pin to be isolated from circuitry