



## 3S8W\_4.3RP Series

3W - Wide Input - Isolated & Regulated DC-DC Converter

### DC-DC Converter

3 Watt

- ⊕ 2:1 wide input voltage range
- ⊕ 4.3KVDC isolation
- ⊕ Production process in accordance with TS16949 system control, components meet AEC-Q100 standards, applied to automobile industry
- ⊕ RoHS compliance
- ⊕ Operating temperature: -40°C to +105°C
- ⊕ International standard pin-out
- ⊕ High efficiency up to 82%

The 3S8W\_4.3RP Series series are isolated 3W DC-DC products with 2:1 input voltage, output power, extremely wide range of voltage input of 7-18VDC and an isolation voltage of 4300VDC.

They feature a production process in accordance with TS16949 system control, the components meet AEC-Q100 standards.

The product is special designed for automobile application.



Common specifications	
Short circuit protection:	None, input voltage range
Cooling:	Free air convection
Operation temperature range:	-40°C~+105°C
Storage temperature range:	-55°C ~+125°C
Pin welding resistance temperature:	300°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
Vibration:	10-55Hz, 10G, 30 Min. along X, Y and Z
Case material:	Plastic [UL94-V0]
MTBF (MIL-HDBK-217F@25°C):	>1,000,000 hours
Weight:	5g

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Input current (full load/no load)	12VDC input		305/30	313/50	mA
Reflected ripple current	12VDC input		30		mA
Input impulse voltage (1 sec. max.)		-0.7		30	VDC
Starting voltage			6.5	7	VDC
No load power consumption			0.36		W
Input filter	Filter capacitor				
Hot plug	Unavailable				

#### Note:

1. Recommended used in more than 5% load, if the load is lower than 5%, then the ripple index of the product may exceed the specification, but does not affect the reliability of the product;
2. The max. capacitive load should be tested within the input voltage range and under full load conditions;
3. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25 , humidity<75%RH, when inputting nominal voltage and outputting rated load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Output power		0.17		3	W
Output voltage accuracy	5% to 100% load		±5	±10	%
Line regulation	Input voltage from low to high, full load		±5	±10	%
Load regulation	5% to 100% load		±5	±10	%
Temperature coefficient	100% load			±0.03	%/°C
Ripple&Noise*	20MHz bandwidth		100	200	mV
Transient recovery time	25% load step change		0.5	3	ms
Switching frequency (PFM mode)	100% load, nominal input voltage		380		KHz

\* Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute, leakage current less than 1 mA	4300			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/0.1V		30		pF

#### Model selection:

WCT\*\*\_xxyyN##O

W=Watt; C= Case; T=Type; \*\*= Voltage Variation (omitted ± 10%);  
 xx= Vin; yy= Vout; N= Numbers of Output; ##= Isolation (kVDC);  
 O= output regulation

#### Example:

3S8W\_0505S4.3RP

3= 3Watt; S8= SIP8; W= wide input; 7-18Vin; 5Vout; S= Single Output; 4.3= 4300VDC; R= Regulated Output; P= Short Circuit Protection

Part Number	Input Voltage [VDC]		Output Voltage [VDC]	Output Current [mA]		Capacitive load [μF, Max.]	Efficiency [%, Typ.]	
	Nominal	Range Max <sup>1)</sup>		Max	Min			
3S8W_1215S4.3RP	12	7-18	20	15	200	10	680	83

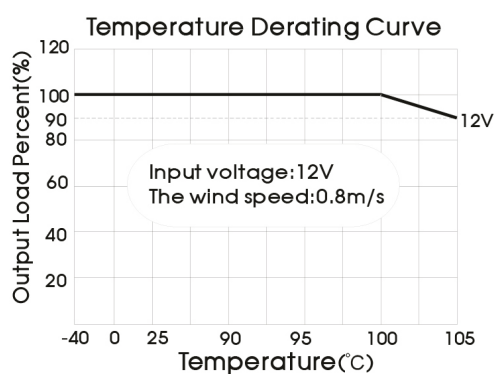
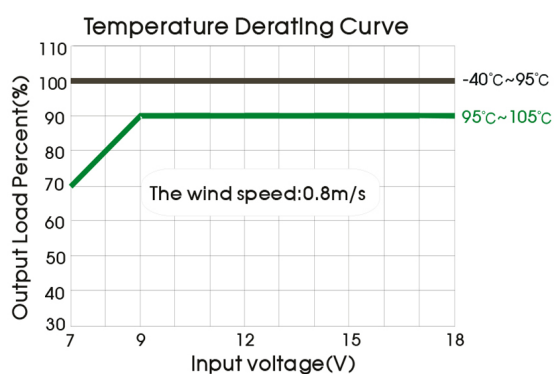
1) Absolute maximum rating without damage on the converter, but it isn't recommended.

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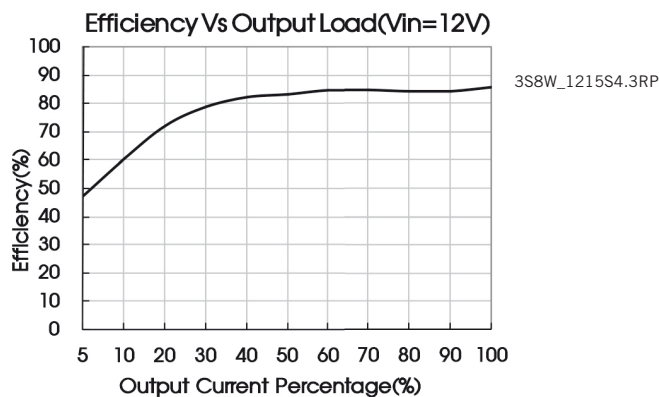
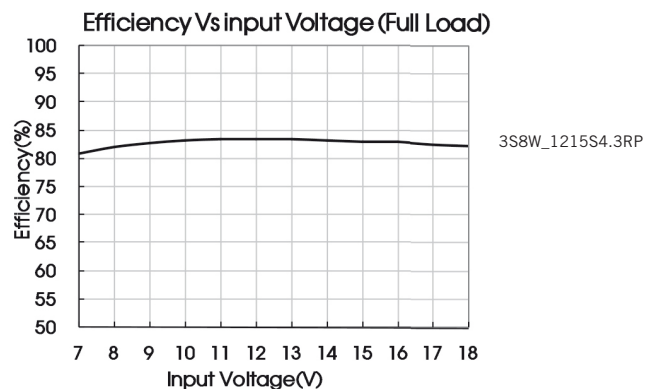
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EMC specifications				
EMI	CE	CISPR25/EN55025 CLASS 3 (External Circuit Refer to EMC recommended circuit, ② and ③)		
EMI	RE	CISPR25/EN55025 CLASS 3 (External Circuit Refer to EMC recommended circuit, ② and ③)		
EMS	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
EMS	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
EMS	EFT	IEC/EN61000-4-4	±2KV	perf. Criteria B (External Circuit Refer to EMC recommended circuit, ①)
EMS	Surge	IEC/EN61000-4-5	±2KV	perf. Criteria B (External Circuit Refer to EMC recommended circuit, ①)
EMS	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A

## Typical characteristics



## Efficiency



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### Typical application circuit

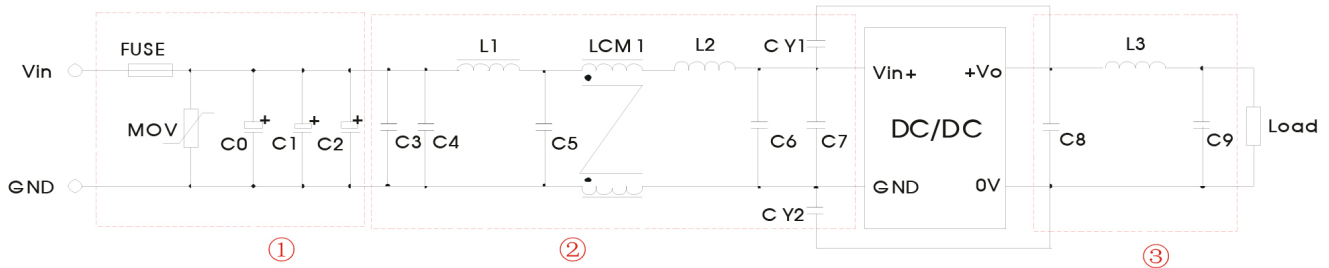
All the DC/DC converters of this series are tested according to the recommended circuit before delivery.

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.



Vin	12V
Cin	100 $\mu$ F
Cout	100 $\mu$ F

### EMC solution-recommended circuit



**Note:**

1. Part ① is used for EMS test, parts ② and ③ is used for EMI filtering. Choose according to requirements.

**Recommended external circuit parameters:**

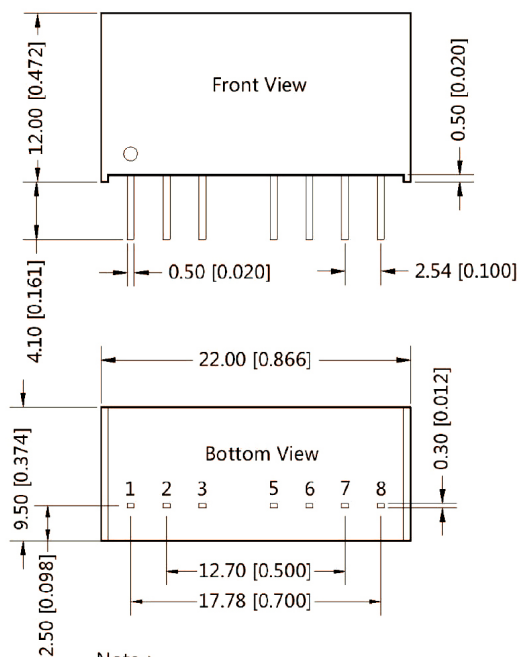
Model	Vin: 12V
FUSE	Choose according to actual input current
MOV	S14K20
C0, C1, C2	330 $\mu$ F/50V
C3	4.7 $\mu$ F/50V
C4	10 $\mu$ F/50V
L1	330 $\mu$ H
C5	0.1 $\mu$ F/50V
LCM1	10mH
L2, L3	600 $\Omega$ /100MHz
C6, C8, C9	0.1nF/50V
C7	1nF/50V
CY1, CY2	561K/400VAC

The product does not support output in parallel with power per liter use.

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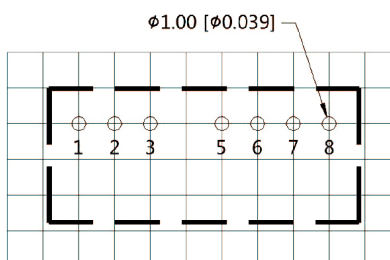
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### Mechanical dimensions



Note :  
 Unit:mm[inch]  
 Pin section tolerances: $\pm 0.10[\pm 0.004]$   
 General tolerances: $\pm 0.25[\pm 0.010]$

THIRD ANGLE PROJECTION



Note : Grid 2.54\*2.54mm

Pin-Out	
Pin	Function
1	GND
2	V <sub>in</sub>
3	NC
5	NC
6	+V <sub>o</sub>
7	0V
8	CS

NC: No connection