

## 3S8W4\_2RP & 3S8W4\_4RP series

3W - Dual/Single Output - Wide Input - Isolated & Regulated  
DC-DC Converter



### DC-DC Converter

3 Watt

- ⊕ Ultra Wide 4:1 Input Voltage Range
- ⊕ Very Low Stand-by (no-load) Power Consumption  
50mW typ and 150mW max.
- ⊕ High Efficiency up to 86%
- ⊕ 3W Single and Dual outputs
- ⊕ I/O Isolation 2kVDC and 4kVDC Option
- ⊕ Operating Temperature Range: -40°C to +85°C
- ⊕ Continuous Short Circuit Protection (SCP)
- ⊕ Remote ON/OFF Control
- ⊕ Internal PI-Filtering



The 3S8W4\_2RP & 3S8W4\_4RP series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is wide range (voltage range  $\leq 4:1$ )
- 2) Where isolation is necessary between input and output (isolation voltage  $\leq 2000\text{VDC}/4000\text{VDC}/$ )
- 3) Where the regulation of the output voltage and the output ripple noise are demanded

| Common specifications          |   |
|--------------------------------|---|
| Input filter:                  | Capacitor   |
| Short circuit protection:      | Continuous, automatic recovery  |
| Temperature rise at full load: | 15°C TYP  |
| Cooling:                       | Free air convection   |
| Operation temperature range:   | -40°C ~ +100°C  |
| Storage temperature range:     | -55°C ~ +125°C  |
| Storage humidity range:        | < 95%   |
| Lead temperature range:        | 300°C MAX, 1.5mm from case for 10 sec                                 |
| No-load power consumption:     | 50mW TYP / 150mW MAX  |
| Temperature coefficient:       | -40°C to +85°C ambient<br>0.015 %/°C MAX                              |
| Operating Frequency:           | 150kHz MIN  |
| Case material:                 | Non-conductive black plastic [UL94-V0]                                |
| Potting material:              | Epoxy [UL94-V0]   |
| MTBF (MIL-HDBK 217F):          | +25°C: 2184x10 <sup>3</sup> hours<br>+85°C: 298x10 <sup>3</sup> hours |
| Weight:                        | 4.7g  |

| Isolation specifications |                         |                     |     |     |       |
|--------------------------|-------------------------|---------------------|-----|-----|-------|
| Item                     | Test condition          | Min                 | Typ | Max | Units |
| Isolation voltage        | Tested for 1 second     | 2000<br>and<br>4000 |     |     | VDC   |
| Isolation resistance     | 500VDC, input to output | 15                  |     |     | GΩ    |
| Isolation capacitance    | 100KHz                  |                     | 30  |     | pF    |

**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                     |  |
| Output accuracy  | Nominal Vin and full load                         | ±2    |     |     | %                         |  |
| Line regulation  | Vin=min to max, full load                         | ±0.5  |     |     | %                         |  |
| Load regulation  | 20% to 100% full load                             | ±0.5  |     |     | %                         |  |
| Minimum load   |   | 0     |     |     | %                         |  |
| Temperature drift (Vout)   | Refer to recommended circuit                      | ±0.03 |     |     | %/°C                      |  |
| Output Ripple & Noise  | 20MHz Bandwidth                                   | 60    |     |     | mVp-p                     |  |
| Remote Power OFF (Vout)<br>(leave open if not used)<br>(15 VDC max.) | Device ON   |       |     |     | open or <0.8 VDC          |  |
|  | Device OFF<br>Device OFF (Stand by input current) |       |     |     | CTRL>1.5VDC<br>0.5mA max. |  |

**Example:**

3S8W4\_0505S2RP  
3=3Watt; S8= SIP8; W4=wide input (4:1); 4,5 - 9Vin; 5Vout;  
S= Single Output; 2= 2000VDC; R= Regulated Output  
P= Short Circuit Protection

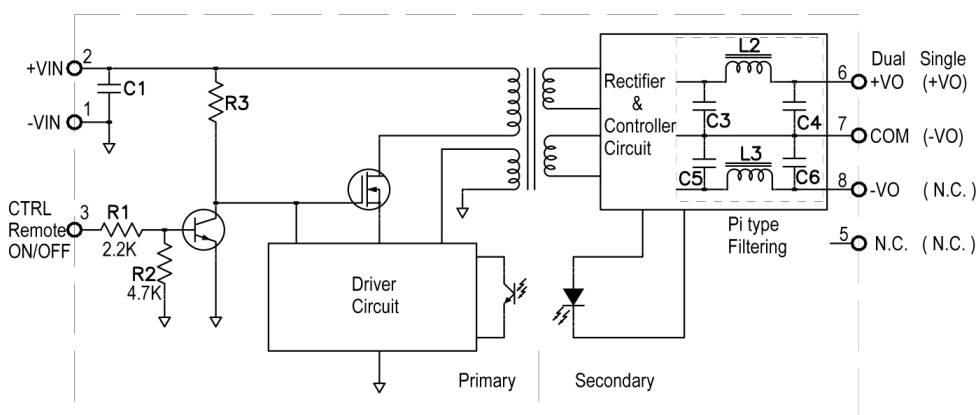
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| Part Number   | Input Voltage [V]   | Output Voltage [VDC] | Output Current [mA, max] | Efficiency [%, typ] | Max. Capacitive Load [ $\mu$ F] |
|---------------|---------------------|----------------------|--------------------------|---------------------|---------------------------------|
| 3S8W4_xx03SXR | 4.5-18, 9-36, 18-75 | 3.3                  | 600                      | 78-80               | 1000                            |
| 3S8W4_xx05SXR | 4.5-18, 9-36, 18-75 | 5                    | 600                      | 82-83               | 1000                            |
| 3S8W4_xx12SXR | 4.5-18, 9-36, 18-75 | 12                   | 250                      | 85                  | 470                             |
| 3S8W4_xx15SXR | 4.5-18, 9-36, 18-75 | 15                   | 200                      | 85                  | 330                             |
| 3S8W4_xx05DXR | 4.5-18, 9-36, 18-75 | $\pm 5$              | $\pm 300$                | 82-84               | $\pm 470$                       |
| 3S8W4_xx12DXR | 4.5-18, 9-36, 18-75 | $\pm 12$             | $\pm 125$                | 84-86               | $\pm 100$                       |
| 3S8W4_xx15DXR | 4.5-18, 9-36, 18-75 | $\pm 15$             | $\pm 100$                | 85-86               | $\pm 47$                        |

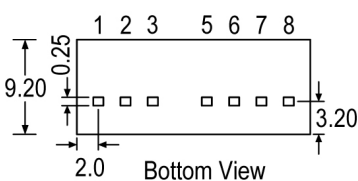
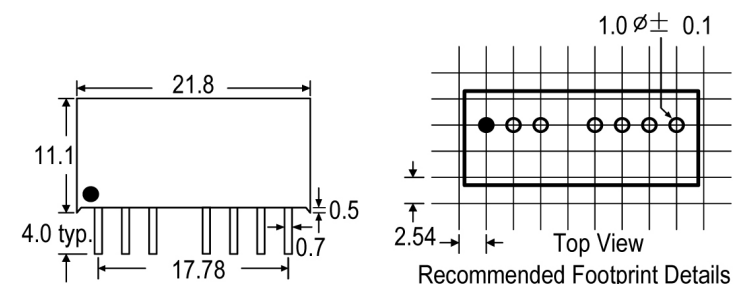
- X=2=2kVDC, X=4=4kVDC
- xx=Input Voltage (possible for other input and output voltage combinations on request)  
 Vin=4.5-18V, xx=12  
 Vin=9-36V, xx=24  
 Vin=18-75V, xx=48

## Functional block diagram



| Input Voltage | C1 Values       |
|---------------|-----------------|
| 4.5~18VDC     | 10 $\mu$ F/25V  |
| 9~36VDC       | 4.7 $\mu$ F/50V |
| 18~75VDC      | 1 $\mu$ F/100V  |

## Mechanical dimensions and foot-



XX.X  $\pm$  0.25 mm  
 XX.XX  $\pm$  0.15 mm

### Pin Connections

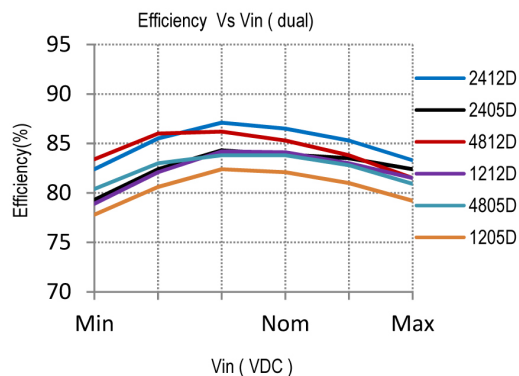
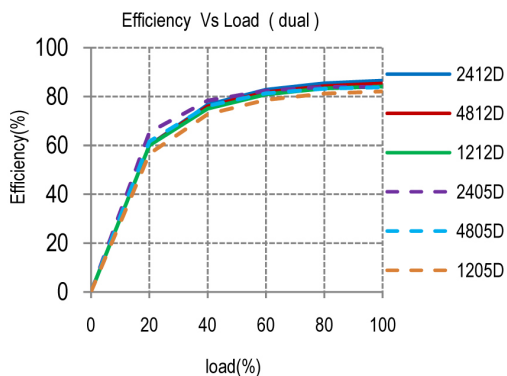
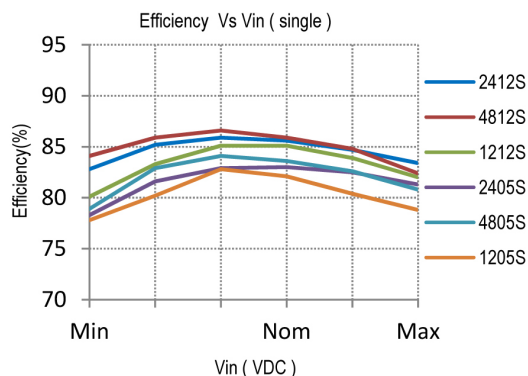
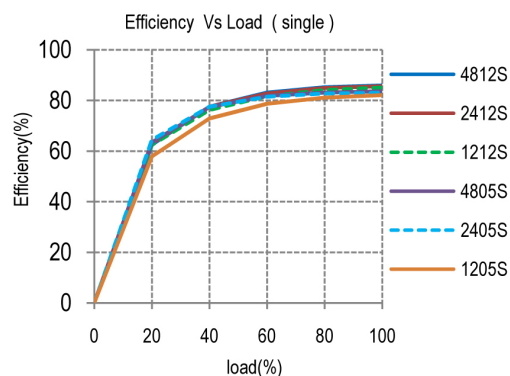
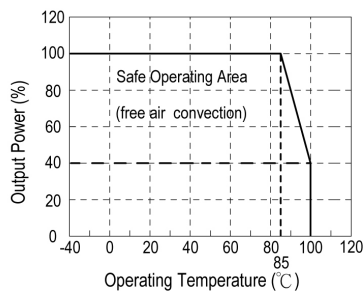
| Pin# | Single | Dual  |
|------|--------|-------|
| 1    | -Vin   | -Vin  |
| 2    | +Vin   | +Vin  |
| 3    | CTRL   | CTRL  |
| 5    | NC     | NC    |
| 6    | +Vout  | +Vout |
| 7    | -Vout  | COM   |
| 8    | NC     | -Vout |

NC=No Connection  
 CTRL=Remote ON/OFF Control

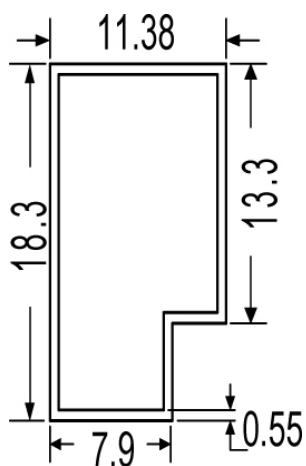
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### Typical characteristics



### Tube outline



**Note:**  
Unit: mm[inch]  
General tolerances: ±0.50mm

L=520mm  
Tube quantity: 23pcs