

FEATURES

- ◆ Wide (4:1) Input Range
- ◆ Short Circuit Protection (automatic recovery)
- ◆ 3000VDC Isolation
- ◆ Operating Temperature: -40°C ~ +85°C
- ◆ Excellent load and line regulation
- ◆ Ultra-compact SIP-8 packaged
- ◆ Internal SMD construction
- ◆ Remote On/Off control
- ◆ Small footprint: 21.8*9.2mm
- ◆ Excellent load and line regulation

MODEL SELECTION

WRF^①24^②12^③Z^④S^⑤-3W^⑥

- ① Product Series ② Input Voltage
③ Output Voltage ④ Wide (4:1) Input Range
⑤ SIP Package Style ⑥ Rated Power

APPLICATIONS

The WRE_ZS-3W & WRF_ZS-3W 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 ≤ 4:1);
- 2) Where isolation is necessary between input and output (Isolation voltage ≤ 3000VDC);
- 3) Where the regulation of the Output voltage and the output ripple noise are demanded.



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SELECTION GUIDE

Order code	Input		Output		Efficiency (% Typ.)
	Voltage(VDC)		Voltage	Current(mA)	
	Nominal	Range	(VDC)	Max.	
WRF1203ZS-700	12	4.5-18	3.3	700	81
WRF2403ZS-700	24	9-36	3.3	700	81
WRF2403ZS-3W	24	9-36	3.3	700	81
WRF2405ZS-3W	24	9-36	5	600	83
WRF2412ZS-3W	24	9-36	12	250	74
WRF2415ZS-3W	24	9-36	15	200	76
WRE2405ZS-3W	24	9-36	±5	±300	81
WRE2412ZS-3W	24	9-36	±12	±125	81
WRE2415ZS-3W	24	9-36	±15	±100	85
WRF4803ZS-3W	48	18-75	3.3	700	83
WRF4805ZS-3W	48	18-75	5	600	85
WRF4812ZS-3W	48	18-75	12	250	74
WRF4815ZS-3W	48	18-75	15	200	78
WRE4805ZS-3W	48	18-75	±5	±300	80
WRE4812ZS-3W	48	18-75	±12	±125	80
WRE4815ZS-3W	48	18-75	±15	±100	85

NOTE:
Case material: non-conductive plastic
Weight: 4.8g (0.17oz)

Input Specifications

Parameter	Conditions	Max.
Input current at full load	24Vin models:	170mAmax.
	48Vin models:	85mAmax.
Surge voltage (100 msec. max.)	24Vin models:	50Vmax.
	48Vin models:	100Vmax.
Input current at no load	24Vin models:	25mA typ.
	48Vin models:	15mA typ.
Input filter	EN 55022 level A, FCC part 15, level A with external capacitor	

The WR-ZS-3W series is a new family of isolated 3W DC/DC converters with regulated output, featuring ultra-wide 4:1 input voltage range. The product comes in a ultra-compact SIP plastic package with a small footprint occupying only 2.0 cm² (0.3 square in.) of board space. An excellent efficiency allows -40° to +85°C operation temperatures.

Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in battery-powered equipment and instrumentation.

Order code Input voltage Output voltage Output current max. Effie

Output Specifications

Parameter	Conditions
Voltage set accuracy	± 1 % max
Regulation	– Input variation Vin min. to Vin max. 0.2 % max.
	– Load variation 5 – 100% single output models: 1.0% max.
	dual output models: 1.0 % max. balanced load
	– Load cross regulation 25/100% 5.0 % max. (dual output models)
Minimum load	not required
Temperature coefficient	0.1 %/K
Ripple and noise (20 MHz Bandwidth)	30 mVpk-pk max.
Start up time	– Power On 30 ms typ.
(constant resistive load)	– Remote On 30 ms typ.
Transient response setting time (25% load step change)	500 µs typ
Temperature coefficient	± 0.1 %/°C
Short circuit protection	continuous, automatic recovery
Capacitive load	3.3 VDC output models: 1'760 µF max.
	5 VDC output models: 1'000 µF max.
	12 VDC output models: 170 µF max.
	15 VDC output models: 110 µF max.
	±5 VDC output models: ± 470 µF max.
	± 12 VDC output models: ± 100 µF max.
	± 15 VDC output models: ± 47 µF max.

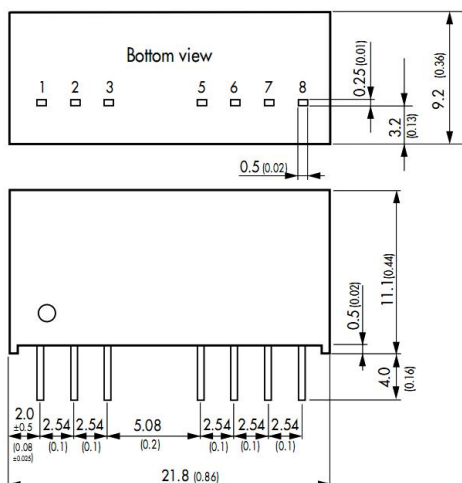
General Specifications

Parameter	Conditions
Temperature ranges	– Operating – 40 °C ~ + 85 °C (no derating)
	– Case temperature +100 °C max.
	– Storage – 55 °C ~ + 125 °C
Load derating	3.5 %/K above 70°C
Humidity (non condensing)	95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F ground benign)	>1.7Mio h @ 25°C
Isolation voltage (60 sec)	– Input/Output 3'000 VDC
Isolation capacity	– Input/Output 200 pF max.
Isolation resistance	– Input/Output (500 VDC) >1 GOhm
Switching frequency	100 kHz (PWM)
Remote On/Off	– On: open or high impedance
	– Off: 2...4 mA current applied via 1KOhm resistor
	– Off stand by input current 2.5 mA max.
Vibration and thermal shock	MIL-STD-810E
Safety standards	UL /cUL 60950-1, EN 60950-1, IEC 60950-1
Safety approvals	– UL/cUL pending

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



Note:

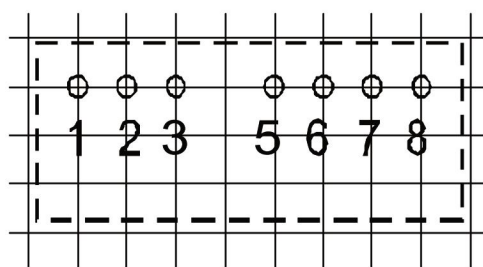
Unit:mm[inch]

Pin section tolerances:±0.10mm[±0.004inch]

General tolerances:±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

Dual/Single Output



RECOMMENDED FOOTPRINT

Top view grid:2.54mm(0.1inch)

diameter:1.00mm(0.039inch)

FOOTPRINT DETAILS

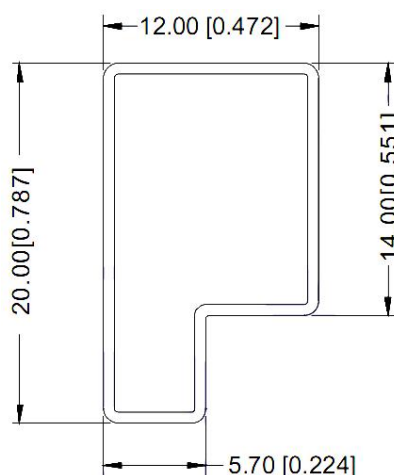
Pin	Single	Dual
1	-Vin(GND)	-Vin(GND)
2	+Vin(Vcc)	+Vin(Vcc)
3	Remote On/Off	Remote On/Off
5	No function	No function
6	+Vout	+Vout
7	-Vout	Common
8	No function	-Vout

Note:specifications can be changed any time without notice.

When the environment temperature is higher than 71℃, the product output power should be less than 60% of the rated power.

No parallel connection or plug and play.

TUBE OUTLINE DIMENSIONS



Note:

Unit :mm[inch]

General tolerances:±0.50mm[±0.020inch]

L=530mm[20.866inch] Tube Quantity: 22pcs

L=220mm[8.661inch] Tube Quantity:8pcs

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.
3. All specifications measured at Ta=25℃, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.