



## 15DMW4\_1.5 series

15W - Single/Dual Output - Wide Input - Isolated & Regulated  
1" x 1" DC-DC Converter

### DC-DC Converter

15 Watt

- ⊕ Wide 4:1 input voltage range
- ⊕ High efficiency up to 88%
- ⊕ Remote On/Off
- ⊕ Input/output isolation voltage: 1.5kVDC
- ⊕ Short Circuit Protection (SCP)
- ⊕ Operating temperature range: -40°C to +85°C
- ⊕ 100% burned in
- ⊕ 15W DIP package
- ⊕ RoHS compliant
- ⊕ Customer design available

The 15DMW4\_1.5 series are isolated 15W DC-DC converters. Designed with high efficiency, they allow the operating temperature range of these units to be -40°C to +85°C (with derating) in a 6 pin DIP package with industry-standard footprint. Further features include wide 4:1 input voltage range, remote on/off control, trimmable output, short-circuit protection and over voltage protection.

These converters are well suitable for battery operated equipment, measurement equipment, telecom, wireless network, Industry control system, everywhere where isolated, tightly regulated voltages and compact size are required.



Common specifications	
Short circuit protection:	Hiccup, continuous, automatic recovery
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C (with derating)
Storage temperature range:	-55°C~+125°C
Maximum case temperature:	105°C MAX
Switching frequency (fixed):	400kHz TYP
Storage humidity range:	95% MAX
Case material:	Nickel-coated copper (six-sided)
Base material:	Non-conductive FR4
Potting material:	Epoxy (UL94V-0)
MTBF (MIL-HDBK-217F @25°C):	560,000 hours
Weight:	16.5g

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input to output			1500	VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance			1000		pF

**Example:**  
**15DMW4\_2415S1.5**  
 15 = 15Watt; D = DIP; M =series; W4 = wide input (4:1) 9-36Vin;  
 15Vout; S = single output; 1.5 = 1500VDC

#### Note:

1. Only typical model listed. Non-standard models will be different from the above, please contact us for more details.
2. All specifications are measured at TA = 25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on corporate standards.

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input filter	Pi Type					
Protection	Fuse recommended					
Starting voltage	• 24VDC input • 48VDC input	8.7 16.9	9 18		VDC	
Under-voltage turn-off	• 24VDC input • 48VDC input	8.3 16.2	9 18		VDC	
Surge voltage (100msec. max.)	• 24VDC input • 48VDC input			50 100	V	
Remote ON/OFF	• Converter: ON • Converter: OFF  • Off idle current			Open or 3.0V<Vr<15V Short circuit pin 6 and pin 2 or 0V<Vr<1.2V 2.5	mA	
Reflected input ripple current			30		mA	
Conducted noise (input)	EN 55022 level A, FCC part 15, level A with external capacitor					

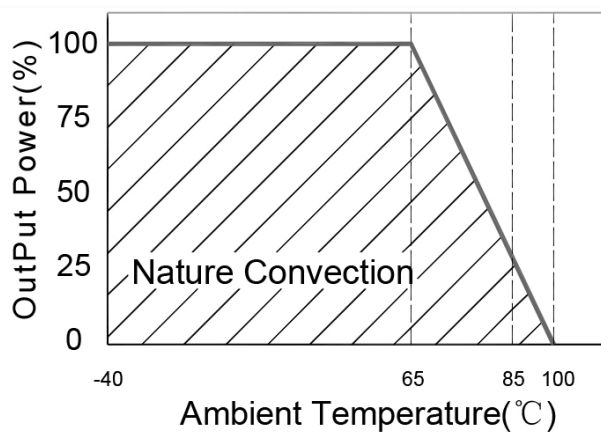
Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Voltage tolerance				±2	%	
Line regulation	Vmin - Vmax			0.5	%	
Load regulation	• 25% load to full load • Balanced load (dual)			±0.5 ±1	%	
Load variation	Dual models unbalanced load			5	%	
Output voltage adjustment range	only for single output models			±10	%	
Temperature drift	Vout			±0.02	%/°C	
Ripple and noise	20MHz Bandwidth			100	mVp-p	
Output current limitation	at 150 % typ.of Iout max., constant current					
Transient response setting time	25% load step change		300		μs	
Transient response over shoot	di/dt=0.8A/μs			≤ ±5% of Vo (≤ ±6% for 3.3Vout)		
Start-up time	Nominal Vin and constant resistive load		450		ms	
Over load protection	% of full load at nominal input	110			%	
Over voltage protection	• 3.3V output • 5V output • 12V output • 15V output	3.7 5.6 13.5 16.8		5.4 7 19.6 20.5	VDC	

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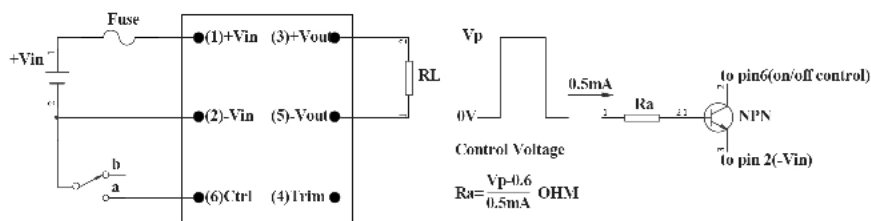
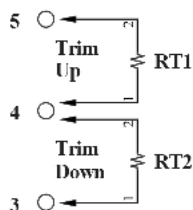
Part Number	Input Voltage [VDC]		Output Voltage [VDC]	Output Current [mA] Full load	Input Current [mA]		Efficiency [% , Typ.]	Capacitive load [μF, Max.]
	Nominal	Range			No load	Full load		
15DMW4_2403S1.5	24	9-36	3.3	4000	50	639	86	1000
15DMW4_2405S1.5	24	9-36	5	3000	40	718	87	1000
15DMW4_2412S1.5	24	9-36	12	1250	20	710	88	330
15DMW4_2415S1.5	24	9-36	15	1000	20	710	88	220
15DMW4_4803S1.5	48	18-75	3.3	4000	30	319	86	1000
15DMW4_4805S1.5	48	18-75	5	3000	40	359	87	1000
15DMW4_4812S1.5	48	18-75	12	1250	10	355	88	330
15DMW4_4815S1.5	48	18-75	15	1000	10	355	88	220
15DMW4_2412D1.5	24	9-36	±12	±625	20	710	88	±150
15DMW4_2415D1.5	24	9-36	±15	±500	20	710	88	±100
15DMW4_4812D1.5	48	18-75	±12	±625	10	355	88	±150
15DMW4_4815D1.5	48	18-75	±15	±500	10	355	88	±100

## Typical characteristics



## Output voltage adjustment      Control pin suggest circuit

Output can be externally trimmed by using the method shown below.



When pin6 short to pin2, D/D ON => OFF  
When pin6 leave open, D/D => ON

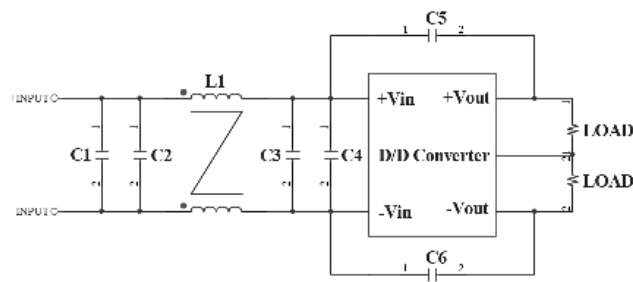
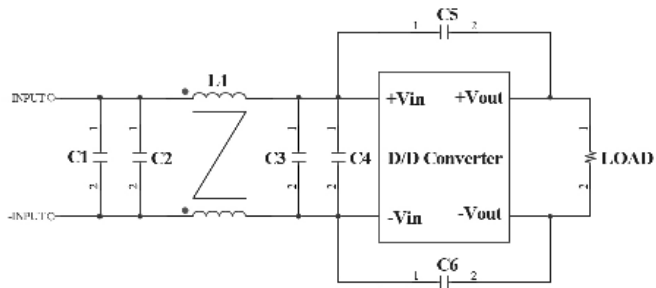
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## EMC considerations

Suggested Schematic to comply with EN55022 Conducted Noise emission Class

B



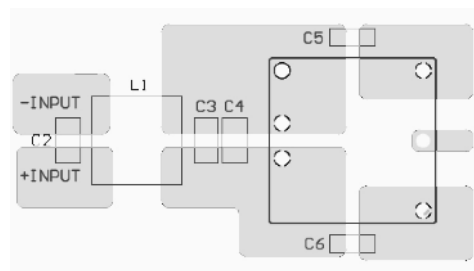
Following components are needed to comply with EN55022 Class B conducted noise:

15DMW4\_24xxS1.5

Component	Value	Voltage	Reference
C2, C3	6.8μF	50V	1812 MLCC
C5, C6	1000pF	2KV	1206 MLCC
L1	325μH		Common Mode Choke

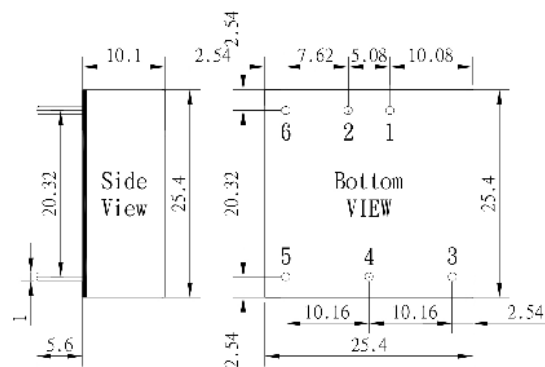
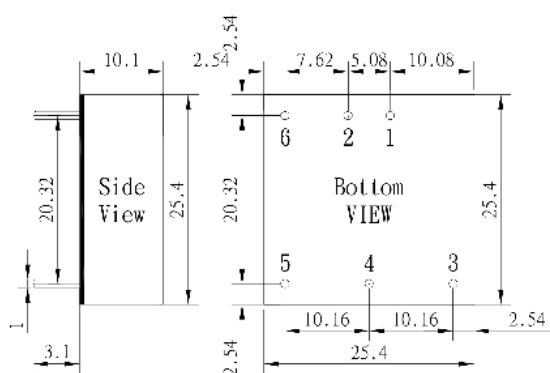
15DMW4\_48xxS1.5

Component	Value	Voltage	Reference
C2, C3, C4	2.2μF	100V	1812 MLCC
C5, C6	1000pF	2KV	1206 MLCC
L1	325μH		Common Mode Choke



Recommended Layout with input Filter

## Mechanical dimensions



Special type: 15DMW4\_2412D1.5/PL3.1

Note:  
Unit: mm  
General tolerances: ±0.5mm  
Pin size tolerances: ±0.35mm

Pin connection						
Pin	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Ctrl On/Off
Dual	+Vin	-Vin	+Vout	COM	-Vout	Ctrl On/Off