

15DMW_S & 15DMW_D Series

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



DC-DC Converter

15 Watt

- ⊕ Wide 2:1 input voltage range
- ⊕ High efficiency up to 89%
- ⊕ Remote On/Off
- ⊕ Input/output isolation voltage: 1.5K VDC
- ⊕ Short circuit protection (SCP)
- ⊕ Operating temperature range: -40°C to +85°C
- ⊕ 100% burned in
- ⊕ 15W DIL package
- ⊕ RoHS compliant
- ⊕ Customer design available

The 15DMW_S & 15DMW_D 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 2:1 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:	100°C MAX
Switching frequency (fixed):	400kHz TYP, pulse width modulation PWM
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

Model selection:
WCTV_xxyyN##
W= Watt; **C**=Case; **T**= Type; **V**= Voltage Variation (omitted ± 10%);
xx= Vin; **yy**= Vout; **N**= Numbers of Output; **##**= Isolation (kVDC)
Example:
15DMW_2415S1.5
15= 15Watt; **D**= DIP; **M**=series; **W**= wide input (2:1) **18-36Vin**;
15Vout; **S**= single output; **1.5**=1500VDC

Note:

- Only typical model listed. Non-standard models will be different from the above, please contact us for more details.
- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 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	12VDC input 24VDC input 48VDC input		9 17 33		VDC VDC VDC
Under-voltage turn-off	12VDC input 24VDC input 48VDC input	5.5 14	8 16.5 30.5		VDC VDC VDC
Remote ON/OFF	- Converter: ON - Converter: OFF - Off idle current		Open or 3.0V<Vr<12V Short circuit pin 6 and pin 2 or 0V<Vr<1.2V 2.5		mA

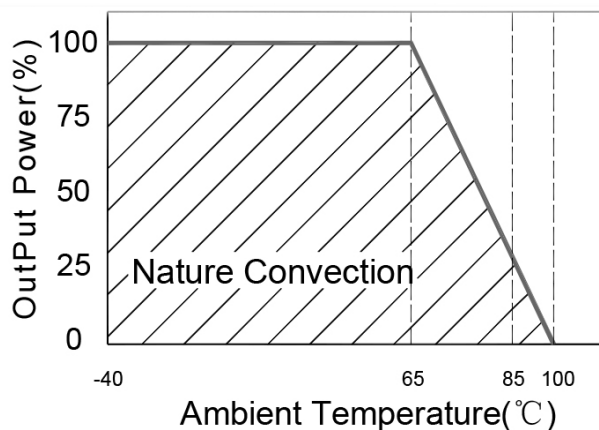
Output specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage tolerance				±2	%
Line regulation	Vmin - Vmax			±0.5	%
Load regulation	25% load to full load - Balanced load (dual)			±0.5 ±1	% %
Output voltage adjustment range	only for single output models			±10	%
Temperature drift (Vout)				±0.05	%/°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		250		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 VDC VDC VDC

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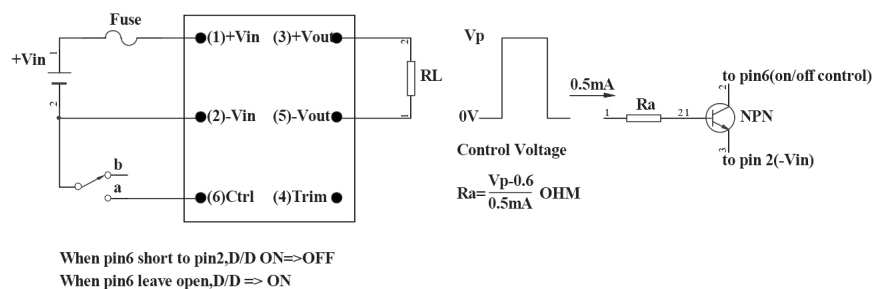
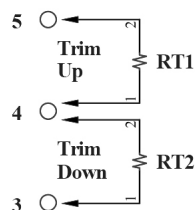
Part Number	Input Voltage [VDC]		Output Voltage [VDC]	Output Current [mA] Full load	Input Current [mA]		Efficiency [%, Typ.]	Capacitive load [μF, Max.]
	Nominal	Range			No load	Full load		
15DMW_1203S1.5	12	9-18	3.3	4000	60	1294	85	1000
15DMW_1205S1.5	12	9-18	5	3000	40	1453	86	1000
15DMW_1212S1.5	12	9-18	12	1250	30	1420	88	330
15DMW_1215S1.5	12	9-18	15	1000	30	1420	88	220
15DMW_2403S1.5	24	18-36	3.3	4000	40	647	85	1000
15DMW_2405S1.5	24	18-36	5	3000	50	718	87	1000
15DMW_2412S1.5	24	18-36	12	1250	20	702	89	330
15DMW_2415S1.5	24	18-36	15	1000	20	702	89	220
15DMW_4803S1.5	48	36-75	3.3	4000	30	323	85	1000
15DMW_4805S1.5	48	36-75	5	3000	40	363	86	1000
15DMW_4812S1.5	48	36-75	12	1250	10	359	87	330
15DMW_4815S1.5	48	36-75	15	1000	10	351	89	220
15DMW_1212D1.5	12	9-18	±12	±625	30	1420	88	±150
15DMW_1215D1.5	12	9-18	±15	±500	30	1420	88	±100
15DMW_2412D1.5	24	18-36	±12	±625	20	710	88	±150
15DMW_2415D1.5	24	18-36	±15	±500	20	710	88	±100
15DMW_4812D1.5	48	36-75	±12	±625	10	355	88	±150
15DMW_4815D1.5	48	36-75	±15	±500	10	355	88	±100

Typical characteristics



Output voltage adjustment

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

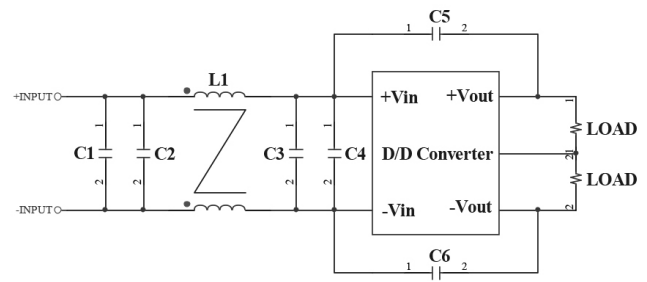
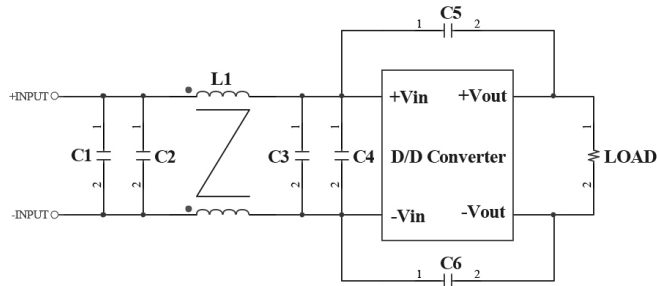


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EMC considerations

Suggested Schematic to comply with EN55022 Conducted Noise emission Class B



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

15DMW_12xxS1.5

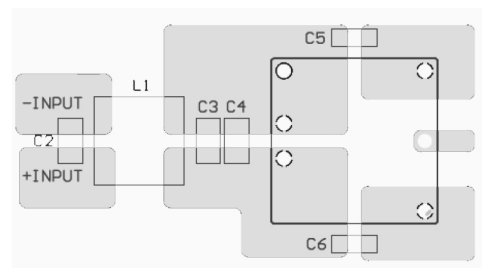
Component	Value	Voltage	Reference
C2, C3	10 μ F	25V	1812 MLCC
C5, C6	1000pF	25KV	1206 MLCC
L1	325 μ H		Common Mode Choke

15DMW_24xxS1.5

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

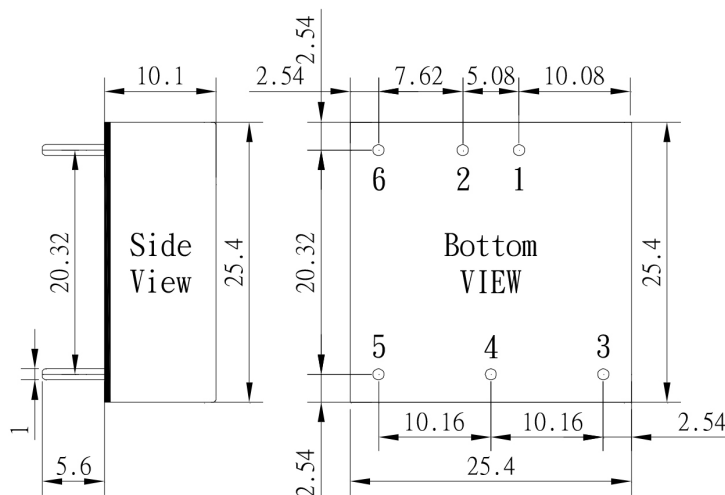
15DMW_48xxS1.5

Component	Value	Voltage	Reference
C2, C3	2.2 μ F	1000V	1812 MLCC
C5, C6	1000pF	2KV	1206 MLCC
L1	325 μ H	2KV	Common Mode Choke



Recommended Layout with input Filter

Mechanical dimensions



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

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