



## 30DMW4\_1.6 Series

30W - Single/Dual Output - Wide Input - Isolated & Regulated  
DIP DC-DC Converter

### DC-DC Converter

30 Watt

- ⊕ High efficiency up to 92%
- ⊕ 4:1 wide input voltage range
- ⊕ I/O Isolation 1600VDC
- ⊕ Five-sided metal shield
- ⊕ Short circuit protection (SCP) (automatic recovery)
- ⊕ MTBF >370,000 hours
- ⊕ Operating temperature range: -40°C to +100°C
- ⊕ Remote On/Off control
- ⊕ Over-voltage protection
- ⊕ Over-current protection
- ⊕ Over temperature protection
- ⊕ Meet CISPR22/EN55032 CLASS A
- ⊕ Soft start

The 30DMW4\_1.6 series offer 30W of output, wide input voltage of 9-36VDC, 18-75VDC, and features 1600VDC isolation, six-sided metal shield, over current and short circuit protection.

All models are particularly suited to tele-communications, industrial, test equipments power etc.



Common specifications	
Cooling:	Nature convection
Short circuit protection:	Continuous, hiccup, automatic recovery
Operation temperature range:	-40°C~+100°C
Storage temperature range:	-55°C~+125°C
Lead temperature range:	260°C MAX, 1.5mm from case for 10 sec
Over temperature protection:	115°C TYP
Switching frequency* (PWM mode):	<ul style="list-style-type: none"> <li>• 3.3/5V: 270kHz TYP</li> <li>• Others: 330kHz TYP</li> </ul>
Storage humidity range:	5% MIN, 95% MAX
Safety standard:	IEC/EN 60950-1
Case material:	Copper
Base material:	Non-conductive Black Plastic (UL94V-0)
MTBF (MIL-HDBK-217F @25°C):	>370,000 hours
Weight:	without heatsink 19g

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Tested for 1 minute and 1mA max	1600			VDC	
Isolation resistance	Test at 500VDC	1000			MΩ	
Isolation capacitance	Input/Output, 100KHz/0.1V			2000	pF	

EMC specifications			
EMI	CE	CISPR22/EN55032	CLASS A
EMI	RE	CISPR22/EN55032	CLASS A
EMS	ESD	IEC/EN61000-4-2	perf. Criteria A
EMS	RS	IEC/EN61000-4-3	perf. Criteria A
EMS	EFT	IEC/EN61000-4-4	perf. Criteria A
EMS	Surge	IEC/EN61000-4-5	perf. Criteria A
EMS	CS	IEC/EN61000-4-6	perf. Criteria A
PFMF		IEC/EN61000-4-8	perf. Criteria A

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input current (full load/no load)	see table					
Reflected ripple current*			30		mA	
Under voltage lockout (Module ON/OFF)	<ul style="list-style-type: none"> <li>• 24VDC input</li> <li>• 48VDC input</li> </ul>		8.6/7.6	17.5/16.6	VDC	
Input impulse voltage (100msec. max)	<ul style="list-style-type: none"> <li>• 24VDC input</li> <li>• 48VDC input</li> </ul>			50	VDC	
Input filter			PI			
Start-up time	Nominal input & constant resistance load		30		ms	
Remote ON/OFF**	<ul style="list-style-type: none"> <li>• Models ON</li> <li>• Models OFF</li> <li>• OFF idle current</li> </ul>	3.0 ...	12Vdc or open circuit	0 ...	1.2Vdc or Short circuit pin2 and pin 3	
			2		mA	

\* Measured Input reflected ripple current with a simulated source inductance of 12uH and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz).

\*\* The remote on/off control pin is referenced to -Vin(pin2).

#### 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:

**30DMW4\_2415S1.6**  
**30=** 30Watt; **D=** DIP; **M=** series; **W4=** wide input (4:1) 9-36Vin;  
**15Vout**; **S=** single output; **1.6=**1600VDC

#### 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.
3. Only typical models listed, other models may be different, please contact our technical person for more details.
4. Specifications subject to change without notice.

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Output specifications					
Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy				±1	%
Trim				±10	%Vo
Line regulation	Full load, low to high			±0.5	%
Load regulation	5% to 100% load • Single output • Dual output			±0.5 ±1	% %
Cross regulation	Dual output			±5	%
Temperature drift	100% full load			±0.02	%/°C
Ripple and noise	20MHz Bandwidth • Single output • Dual output			75 60	mV mV

Output specifications			
Transient recovery time*	25% load step change	250	us
Transient response deviation*	25% load step change • Single 3.3V output • Others	±5 ±3	% %
Over current protection	Input voltage range	170	%Io
Short circuit protection	Input voltage range	Hiccup, continuous, auto-recovery	
Over voltage protection	Zener diode clamp • 3.3V output • 5V output • 12V output • 15V output • ±12V output • ±15V output	3.9 6.2 15 18 ±15 ±18	V V V V V V

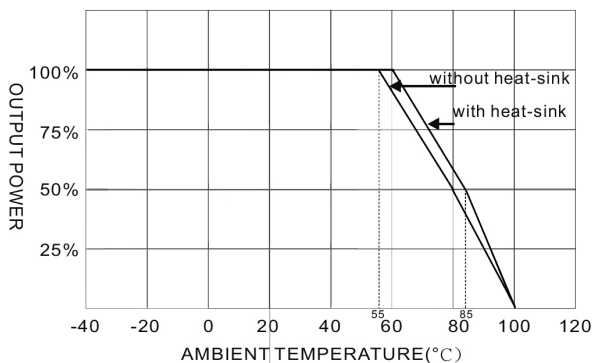
\* Tested by normal Vin and 25% load step change ( 75%-50%-25% of Io)

Part Number	Input Voltage [VDC]		Input Current [mA]		Output Voltage [VDC]	Output Current [mA]		Efficiency [%, Typ.]	Capacitor load [μF, Max]
	Nominal	Range	Max	Min		Max	Min		
30DMW4_2403S1.6	24	9-36	1093.75	10	3.3	7000	0	88	10000
30DMW4_2405S1.6	24	9-36	1404.49	10	5	6000	0	89	7200
30DMW4_2412S1.6	24	9-36	1404.49	10	12	2500	0	89	1200
30DMW4_2415S1.6	24	9-36	1373.62	10	15	2000	0	91	1000
30DMW4_4803S1.6	48	18-75	540.73	8	3.3	7000	0	89	10000
30DMW4_4805S1.6	48	18-75	694.44	8	5	6000	0	90	7200
30DMW4_4812S1.6	48	18-75	694.44	8	12	2500	0	90	1200
30DMW4_4815S1.6	48	18-75	679.34	8	15	2000	0	92	1000
30DMW4_2412D1.6	24	9-36	1404.49	10	±12	±1250	0	89	±750
30DMW4_2415D1.6	24	9-36	1373.62	10	±15	±1000	0	91	±500
30DMW4_4812D1.6	48	18-75	694.44	8	±12	±1250	0	90	±750
30DMW4_4815D1.6	48	18-75	686.81	8	±15	±1000	0	91	±500

Add suffix "H" for heatsink mounted, for example 30DMW4\_2405S1.6H

## Typical characteristics

Derating Curve



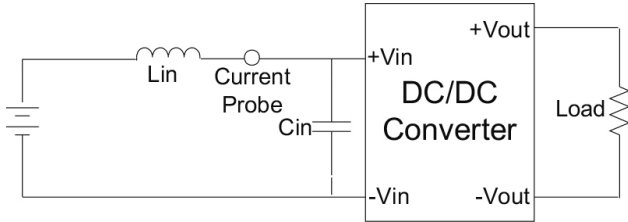
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### Test configurations

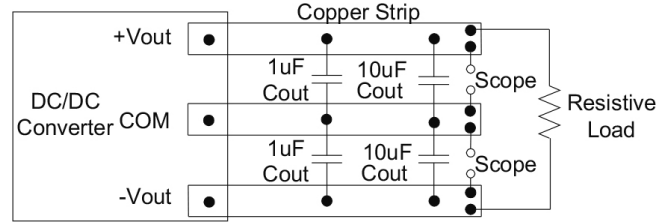
#### Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor  $L_{in}$  and a source capacitor  $C_{in}$  (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



#### Output Ripple & Noise Measurement Test

To reduce ripple and noise, it is recommended to use a 1uF ceramic disk capacitor and a 10uF ceramic disk capacitor to at the output.



### Design & feature configurations

#### Over voltage protection

The module includes an internal output over voltage protection circuit, which monitors the voltage on the output terminals. If this voltage exceeds the over voltage set point, the module will activate the control loop of internal circuit to clamp the output voltage.

#### Over temperature protection

The over temperature protection consists of circuitry that provides protection from thermal damage. If the temperature exceeds the over temperature threshold the module will shut down.

The module will try to restart after shut down, If the over temperature condition still exists during restart, the module will shut down again. This restart trial will continue until the temperature is within specification.

#### EMI filter

Input filter components (C1,L) are used to help meet conducted emissions.

These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

#### Over current protection

The module includes an internal over current protection circuit, which will endure current limiting for an unlimited duration during output over load condition. If the output current exceeds the OCP set point, the module will shut down automatically (hiccup).

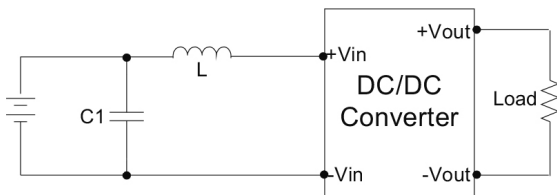
The module will try to restart after shut down. If the over load condition still exists, the module will shut down again.

#### CTRL module ON/OFF

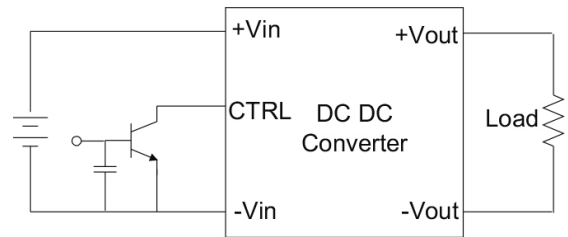
Positive logic turns on the module during high logic and off during low logic.

Ctrl module on/off can be controlled by an external switch between the ctrl terminal and -Vin terminal.

The switch can be an open collector or open drain For positive logic if the ctrl feature is not used, please leave the ctrl pin floating.



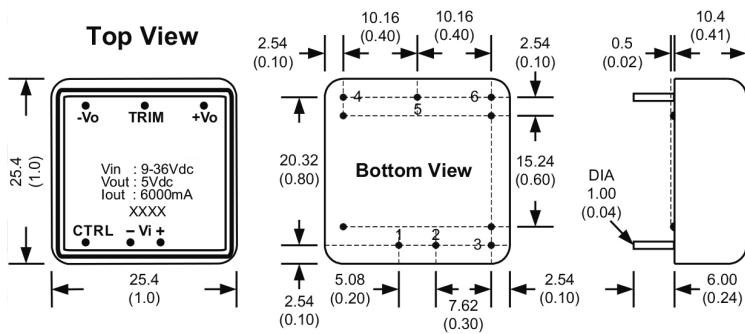
	C1	L
30DMW4_24XXX1.6	1206, 3.3uF/100V	0.82uH
30DMW4_48XXX1.6	1206, 1uF/100V	2.2uH



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### Mechanical dimensions (no heatsink)



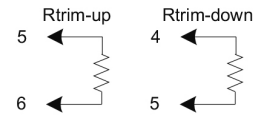
PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

All dimensions are typical in millimeters ( inches ).

1. Pin diameter:  $1.0 \pm 0.05$  (  $0.04 \pm 0.002$  )
2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )
4. Stand-off tolerance:  $\pm 0.1$  (  $\pm 0.004$  )

#### EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method as below. (single output models only)



### Mechanical dimensions (with heatsink)

