GAPTEC®
GREEN TECHNOLOGY

60DDW4_3 Series

60W - Single/Dual Output - Wide Input - Isolated & Regulated
DIP DC-DC Converter



DC-DC Converter 60 Watt

- **High efficiency up to 88%**
- **4:1 wide input voltage range**
- **Isolation voltage 3000VDC**
- **Six-sided metal shield**
- **Short circuit protection (SCP) (automatic recovery)**
- **Operating temperature: -40°C to +85°C**
- **Over temperature protection**
- **Industry standard pinout**
- **Under voltage lockout**

The 60DDW series offers 60W of output, wide input voltage of 9-36VDC, 18-72VDC and features 3000VDC 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:	Free air convection
Short circuit protection:	Continuous, auto-recovery
Operation temperature range:	-40°C~+85°C
Storage temperature range:	-55°C~+100°C
Case temperature:	90°C MAX
Lead temperature range:	265°C MAX, 1.5mm from case for 10 sec
Switching frequency (PWM mode):	50kHz TYP
Humidity:	non-condensing, 95% MAX
Case material:	Six-Side Shielded Case
Potting material:	Epoxy (UL94V-0 rated)
Radiated Emissions:	EN55022, Class A
Conducted Emissions:	EN55022, Class A
MTBF (MIL-HDBK-217F @25°C)*:	>299,424 hours
Weight:	227.5g

Input specifications					
Item	Test condition	Min	Typ	Max	Units
Filter	Pi network				
Protection	Fuse recommended				

Isolation specifications					
Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Input/Output, tested for 1 minute			3000	VDC
Isolation resistance	500VDC	1000			MΩ
Isolation capacitance	Input/Output			2500	pF

Output specifications					
Item	Test condition	Min	Typ	Max	Units
Voltage tolerance	Single/dual			±2	%
Over load protection	Input voltage range	120	150	180	%
Line regulation	Single & Dual (H/L to L/L)			±0.5	%
Load regulation	Single & Dual (F.L-50%F.L)			±0.5	%
Minimum load	30% of full load				
Ripple and noise*	20MHz Bandwidth		100	150	mVp-p
Transient response setting time	50% load step change			400	μs
Capacitive load				1500	μF
External Trim Adj. Range	±10% of Output Voltage				

* Test ripple and noise by “parallel cable” method. Typical value at nominal input voltage and no load.

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:
60DDW_2415S3
60= 60Watt; D= DIP; D= series; W4= wide input (4:1) 9-36Vin; 15Vout; S= single output; 3= 3000VDC

Note:
1. Input voltage can’t exceed this value, or will cause the permanent damage.
2. The load shouldn‘t be less than 5%, otherwise ripple will increase dramatically.
3. Max. Capacitive Load is tested on Vin-nominal and full load.
4. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
5. In this datasheet, all the test methods of indications are based on corporate standards.
6. Only typical models listed, other models may be different, please contact our technical person for more details.
7. Specifications subject to change without notice.

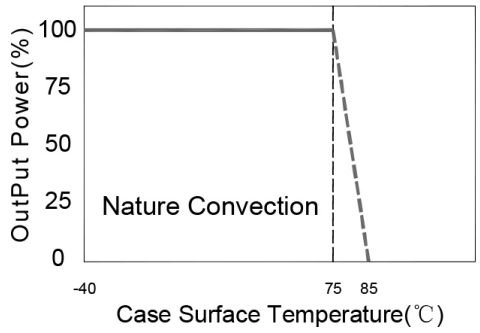
60DDW4_3 Series

60W - Single/Dual Output - Wide Input - Isolated & Regulated
DIP DC-DC Converter

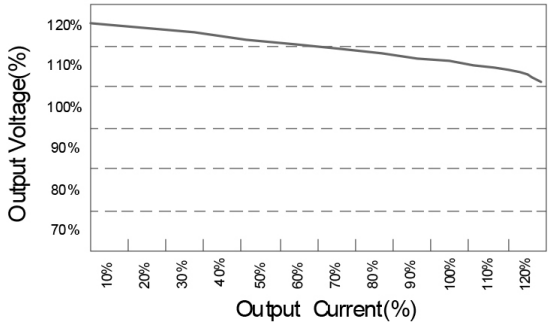
Part Number	Input Voltage Range [VDC]	Input current [mA, typ] no load	Input current [mA, typ] full load	Output Voltage [VDC]	Output Current [mA]	Efficiency [%, Typ.]
60DDW_2405S3	9-36	30	2604	5	10000	80
60DDW_2412S3	9-36	30	2874	12	5000	87
60DDW_2415S3	9-36	30	2874	15	4000	87
60DDW_4805S3	18-75	30	1240	5	10000	84
60DDW_4812S3	18-75	30	1420	12	5000	88
60DDW_4815S3	18-75	30	1420	15	4000	88
60DDW_2405D3	9-36	20	2572	±5	±5000	81
60DDW_2412D3	9-36	20	2907	±12	±2500	86
60DDW_2415D3	9-36	20	2907	±15	±2000	86
60DDW_4805D3	18-75	20	1240	±5	±5000	84
60DDW_4812D3	18-75	20	1420	±12	±2500	88
60DDW_4815D3	18-75	20	1420	±15	±2000	88

Typical characteristics

Temperature derating graph

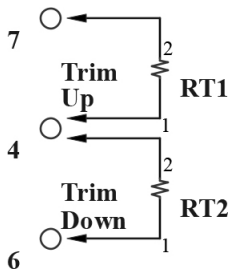


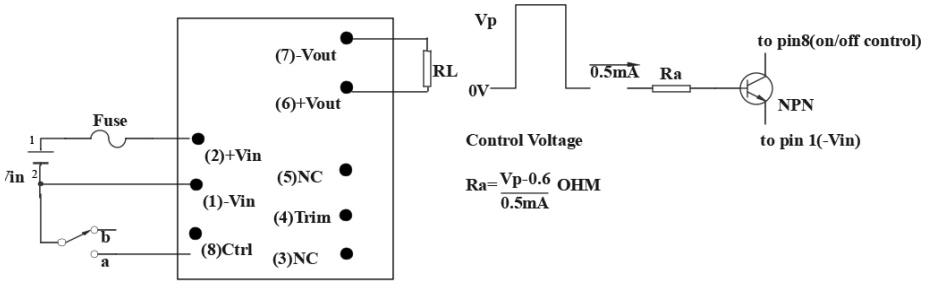
Tolerance envelope graph



Output voltage adjustment, Control PIN suggest circuit

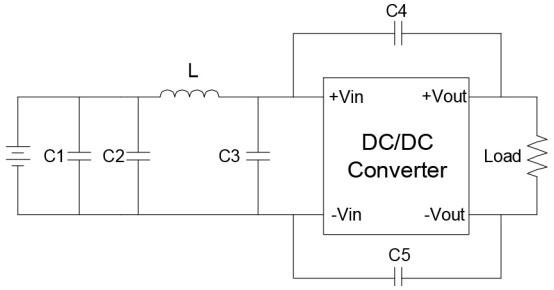
Output can be externally trimmed by using the method shown below.





When pin8 short to pin1,D/D ON=>OFF
When pin8 leave open,D/D => ON

Input external filter

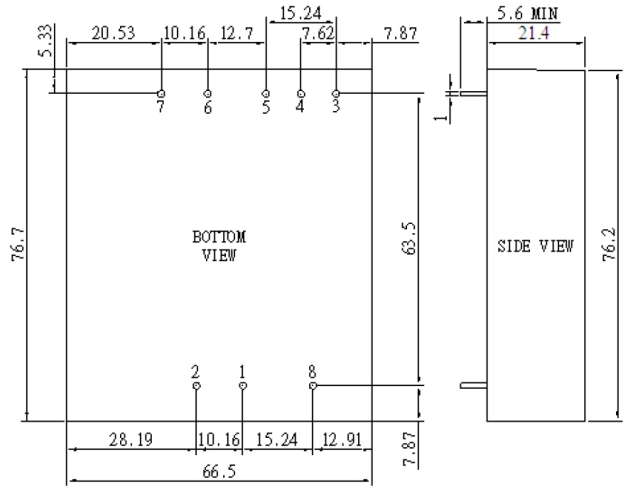


12V. 24V: C1 C2 C3=4.7uF/50V
L=450uH
C4 C5=1000P/2KV

48V: C1 C2 C3=2.2uF/100V
L=480uH
C4 C5=1000P/2KV

Suggest adding input external filter (C1, C2, C3, C4, C5, L) to meet conducted emissions (EN55022 class A) requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Mechanical dimensions



Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.05mm [±0.002inch]
General tolerances: ±0.25mm [±0.010inch]

PIN connection								
PIN	1	2	3	4	5	6	7	8
Single	+Vin	-Vin	No pin	Trim	No pin	+Vout	-Vout	Remote On/Off
Dual	+Vin	-Vin	+Vout	Com	-Vout	No pin	No pin	Remote On/Off