

FEATURES

- Wide input voltage range (2:1)
- Efficiency up to 87%
- Metal case
- Compact 1x1 in. size
- Built-in soft-start circuit
- Short circuit resistance, automatic recovery
- Switching frequency 400 kHz

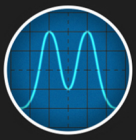
A05W-05D12 is isolated & regulated dual output 5W DC-DC converter which comes in compact 1x1 inch metal package. The converter offers a wide 2:1 input voltage range and featured a high efficiency of up to 87%. The device has a soft-start circuit, short circuit resistant and designed especially for audio applications.

INPUT SPECIFICATIONS

Parameter	Operating conditions	Min.	Typ.	Max.	Units
Input voltage		4.5		9.0	V
Surge Voltage	1s max.	-0.7		12.0	V
Start-up Voltage		4.3			V
Input current	Input voltage 5V, full load		1160		mA
	Input voltage 9V, full load		670		
Start-up peak current	Input voltage 5V, full load			1300	mA
Reflected ripple current	Full load			30	mAp-p
Start-up time	Input voltage 5V, full load		400		ms

OUTPUT SPECIFICATIONS

Parameter	Operating conditions	Min.	Typ.	Max.	Units
Output power		1.0		5.0	W
Positive output voltage			+12.0		V
Negative output voltage			-12.0		V
Voltage accuracy	Input voltage < 7V, 20%-100% load Input voltage ≥ 7V, 30%-100% load		+0.5	+1.0	%
Voltage balance				±0.1	%
Load regulation			±0.1		%
Line regulation	Full load			+0.2	%
Cross regulation	Input voltage < 7V, 25%/100% asym. load		±3.0	±5.0	%
	Input voltage ≥ 7V, 35%/100% asym. load				
Transient recovery time	25% load step change, input voltage 5V		500	600	µs
Output ripple & noise	20 MHz bandwidth, input voltage 5V		10	20	mVp-p
	20 MHz bandwidth, input voltage 9V		30	50	
Short-circuit protection				5	s



TYPICAL CHARACTERISTICS CURVES

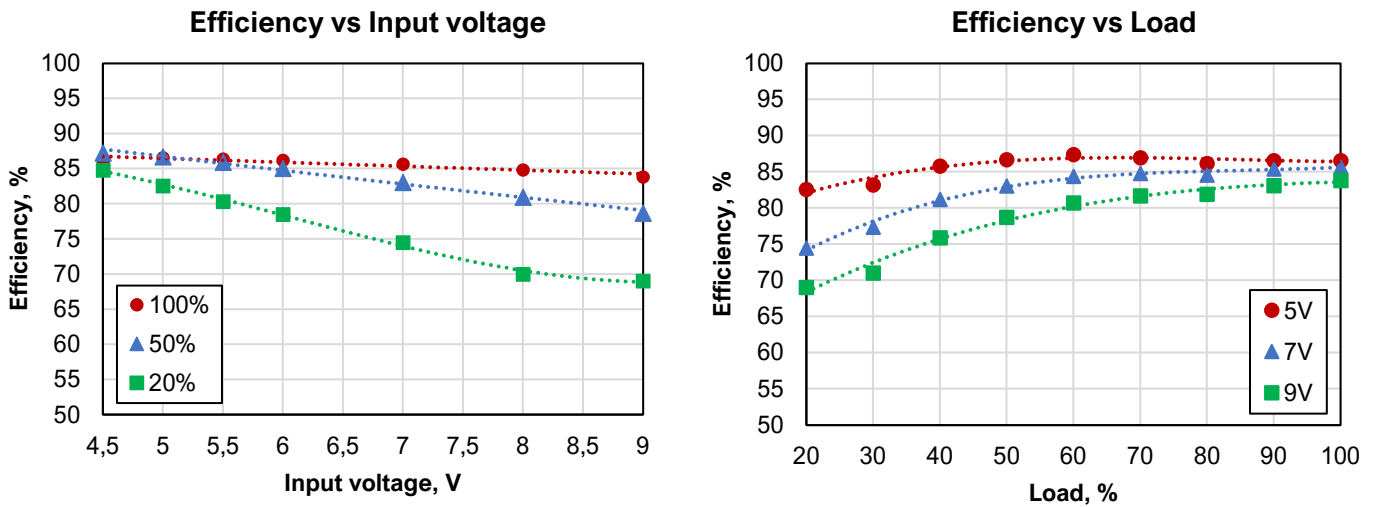


Fig. 1 – Typical efficiency curves

MECHANICAL SPECIFICATIONS

Parameter	Value
Dimensions	24.5 × 24.5 × 11.3 mm
Weight	13.0±1.0 g
Case material	Nickel silver 0.3 mm
Pins material	Brass gold plated

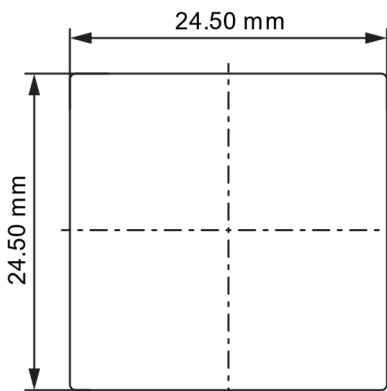
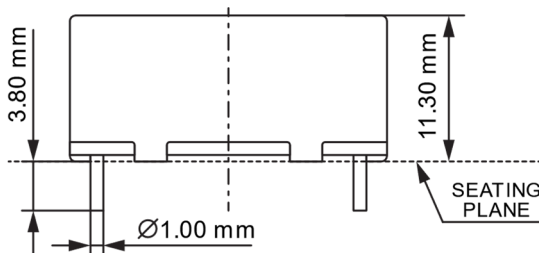


Fig. 2 – Device dimensions

Pin	Name	Description
1	+V _{IN}	Voltage input
2	GND	Ground input
3	+V _O	Positive voltage output
4	COM	Common output
5	-V _O	Negative voltage output

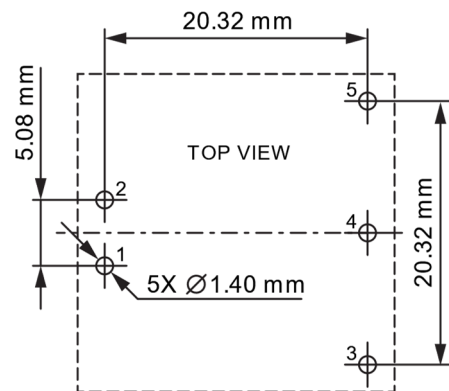
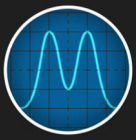
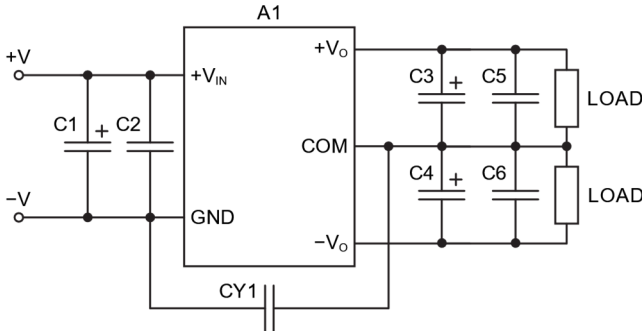


Fig. 3 – Recommended PCB layout



DESIGN REFERENCE

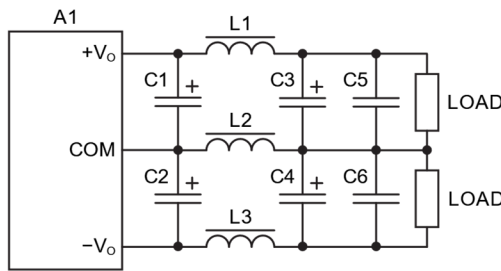
The DC-DC converter is tested before delivery using the circuit shown in Fig. 4.



A1	A05W-05D12 module
C1, C3, C4	10µF/35V tantalum capacitor
C2, C5, C6	1µF/25V ceramic capacitor
CY1	1nF/2kV safety Y2 capacitor

Fig. 4 – Test circuit

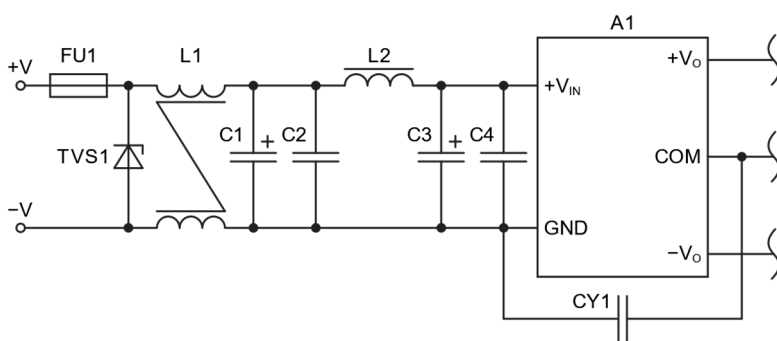
Output ripple & noise can be further reduced by using CLC pi-filter circuit on both outputs as shown in Fig. 5. The filter circuit can use C3-C6 only if do not have strict requirement for ripple & noise, otherwise the full circuit is recommended. If the actual load is less than the specified minimum load, the output ripple or voltage may increase. In which case add an appropriate resistor as extra loading.



A1	A05W-05D12 module
C1-C4	100µF/16V electrolytic capacitor
C5, C6	1µF/50V ceramic capacitor
L1-L3	2.2µH inductor

Fig. 5 – Recommended output filter circuit

When the module is used in unregulated power supply, be sure that the fluctuating range of the power supply and the ripple voltage do not exceed the module standard voltage. To protect the module from overvoltage, connect unidirectional TVS diode and fuse to the module input as shown in Fig. 6. Connect a common mode inductor with CLC pi-filter to the module input as shown in Fig. 6 to improve the EMC compliance.



A1	A05W-05D12 module
C1	1000µF/16V electrolytic capacitor
C2, C4	1µF/25V ceramic capacitor
C3	470µF/16V electrolytic capacitor
CY1	1nF/2kV safety Y2 capacitor
FU1	2A fuse
L1	4.7mH common mode inductor
L2	10µH inductor
TVS1	9V TVS diode

Fig. 6 – Recommended input protect and filter circuit

Above are typical parameters, actual value please adjust according to operating environment.