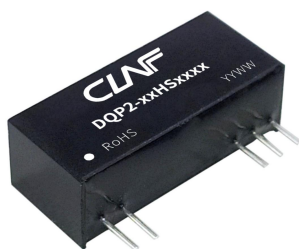


Descriptions

2W isolated, DC/DC Converter



UL62368-1



EN62368-1



BS EN62368-1

Features

- High efficiency up to 87%
- SIP package
- I/O isolation test voltage: 5000VAC(reinforced insulation)
- Long-term insulation voltage 1700V
- Max. Capacitive Load: 2200 μ F
- Ultra-low isolation capacitance
- Operating ambient temperature range: -40°C to +105°C
- Continuous short-circuit protection
- Industry standard pin-out

Applications

- Universal converter
- AC servo drive system
- Electric welding machine
- Uninterruptible power supply (UPS)

Selection Guide

Certification	Part No.	Input		Output		Full Load Efficiency (%) Min./Typ.	Max. Capacitive Load(μ F)
		Voltage(VDC) (Range)	Current(mA, Typ.) Full Load/No Load	Voltage (VDC) +Vo1/+Vo2	Current (mA) +Io1/+Io2		
EN/BS EN	DQP2-12HS1509	12 (10.8-13.2)	242/8	+15.0/-9.0	+100/-100	82/87	2200
UL/EN/BS EN	DQP2-15HS1509	15 (13.5-16.5)	195/8				
EN/BS EN	DQP2-24HS1509	24 (21.6-26.4)	135/9			77/82	

Specifications

Product Specifications	Item			Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage (1sec. max.)	Vin=12VDC				-0.7	--	18	VDC
		Vin=15VDC				-0.7	--	21	
		Vin=24VDC				-0.7	--	30	
	Input Filter					Capacitance Filter			
	Hot Plug					Unavailable			
Output Specifications	Output Voltage	DQP2-12H S1509	+Vo	Vin=12VDC, Pin10 & Pin9 +Io= +100mA	14.25	15.00	15.75	VDC	
			-Vo	Vin=12VDC, Pin9 & Pin8 -Io= -100mA	-8.64	-9.09	-9.54		
		DQP2-15H S1509	+Vo	Vin=15VDC, Pin10 & Pin9 +Io= +100mA	14.10	14.85	15.60		
			-Vo	Vin=15VDC, Pin9 & Pin8 -Io= -100mA	-8.10	-8.55	-9.00		
		DQP2-24H S1509	+Vo	Vin=24VDC, Pin10 & Pin9 +Io= +100mA	14.55	15.30	16.05		
			-Vo	Vin=24VDC, Pin9 & Pin8 -Io= -100mA	-8.37	-8.82	-9.27		
	Voltage Accuracy			10% - 100% load		See output regulation curve (Fig. 2)			%
	Linear Regulation			Full voltage input range	+Vo Output	--	±1.1	±1.5	--
					-Vo Output	--	±1.1	±1.5	
	Load Regulation	DQP2-12HS1509	10% - 100% load		+Vo Output	--	8	18	%
					-Vo Output	--	8	18	
		DQP2-15HS1509/ DQP2-24HS1509	10% - 100% load		+Vo Output	--	8	15	
					-Vo Output	--	8	15	
	Temperature Coefficient			Full load		--	±0.04	±0.1	%/°C
	Ripple & Noise*			20MHz bandwidth		--	50	100	mVp-p
	Short-circuit Protection					Continuous, self-recovery			
General Specifications	Isolation			Input-output, Test for 1 minute with a leakage current of 1mA max(reinforced insulation)		5000	--	--	VAC
	Continuous insulation voltage (IEC61800-5-1)			Input- output		1700	--	--	V
	Insulation Resistance			Input- output resistance at 500VDC		1000	--	--	MΩ
	Isolation capacitor			Input- output capacitor at 100kHz/0.1V		--	3.5	5	pF
	Electrical clearance			Input- output		14.14	14.74	--	mm
	Creepage distance			Input- output		14.14	14.74	--	mm
	CMTI			Input- output		±200	--	--	kV/us
	Operating Temperature			Derating when operating temperature ≥85°C (see Fig. 1)		-40	--	105	°C
	Storage Temperature					-55	--	125	
	Pin Soldering Resistance Temperature			Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
	Case Temperature Rise			Ta=25°C, nominal input voltage, full load		--	--	40	
	Storage Humidity			Non-condensing		5	--	95	
	Switching Frequency			Full load, nominal input voltage		--	200	--	kHz
	Safety Class					CLASS III			

	MTBF	MIL-HDBK-217F@25°C	3500	--	--	k hours
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant				
	Dimensions	27.40 x 9.50 x 12.00mm				
	Weight	5.3 g (Typ.)				
	Cooling Method	Free air convection				
Note:* The “parallel cable method is used for Ripple and Noise test.						

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A (see Fig.7 for recommended circuit)			
	RE	CISPR32/EN55032	CLASS A (see Fig.7 for recommended circuit)			
Immunity	ESD	IEC/EN61000-4-2	Contact	±8kV	perf. Criteria B	

Characteristic Curve

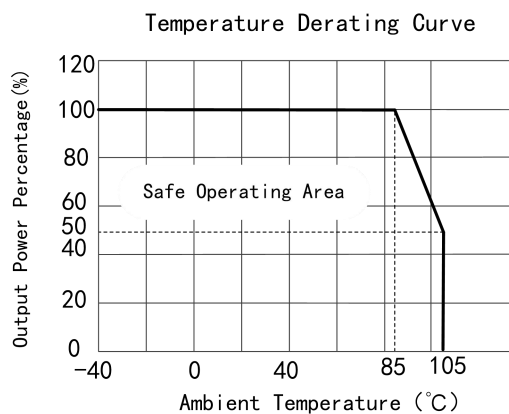
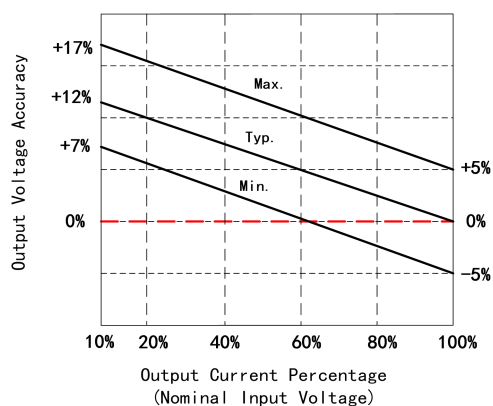
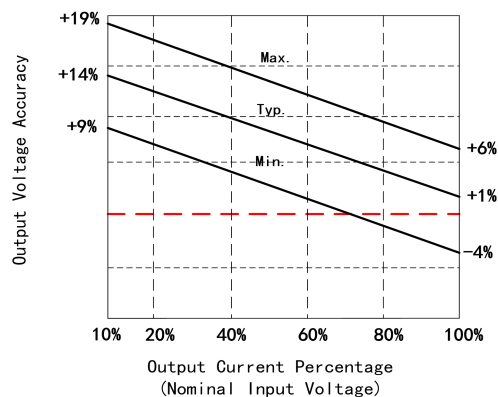


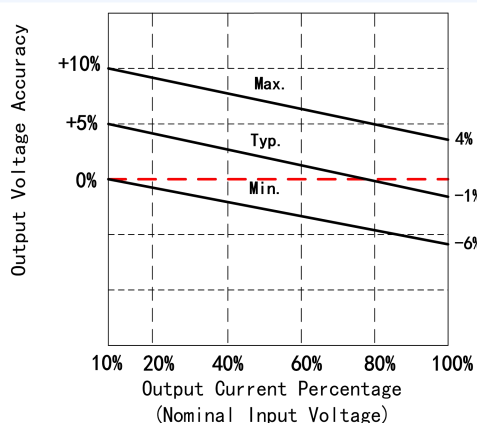
Fig. 1



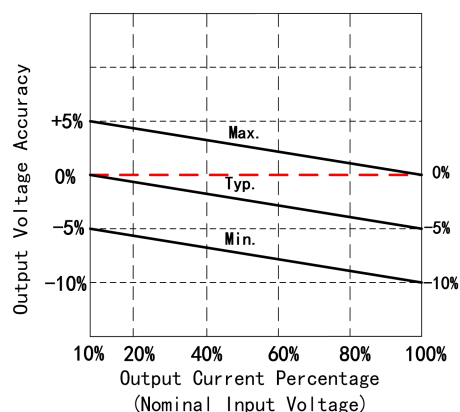
DQP2-12HS1509 +Vo Output Regulation Curve



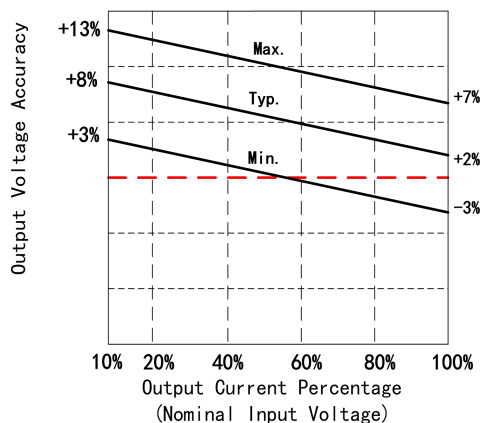
DQP2-12HS1509 -Vo Output Regulation Curve



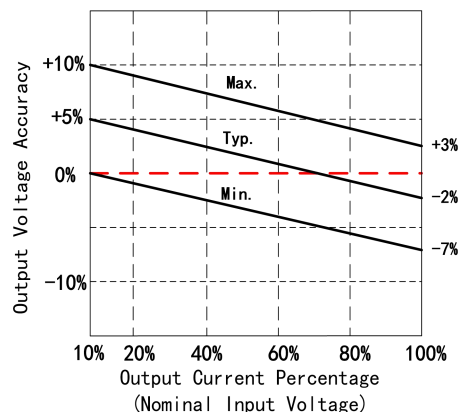
DQP2-15HS1509 +Vo Output Regulation Curve



DQP2-15HS1509 -Vo Output Regulation Curve



DQP2-24HS1509 +Vo Output Regulation Curve



DQP2-24HS1509 -Vo Output Regulation Curve

Fig. 2

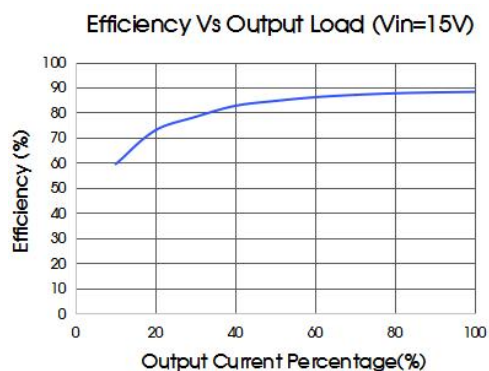
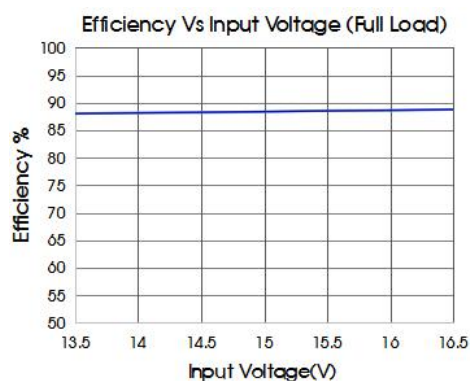


Fig. 3

Note: Take DQP2-15HS1509 as an example, other models can be corresponding reference.

Design Reference

1. Over-load Protection

There is no over-load protection under normal operating conditions, we suggest to add an circuit breaker outside in the circuit.

2. Test configurations

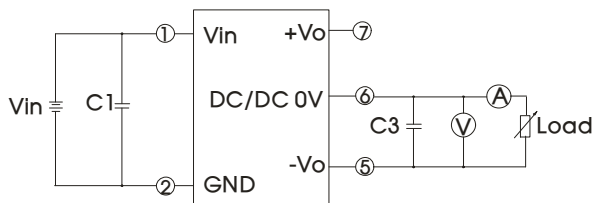


Fig. 3

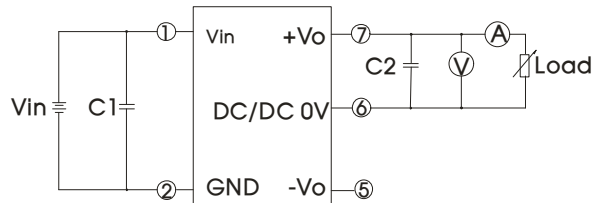


Fig. 4

Note: C1, C2, C3: 100uF/35V

3. Typical application

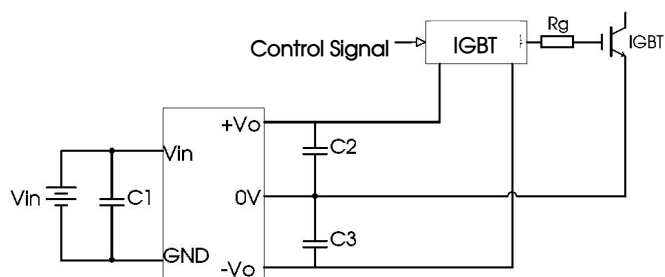


Fig. 5

C1/C2/C3
100μF/35V

4. EMC typical recommended circuit

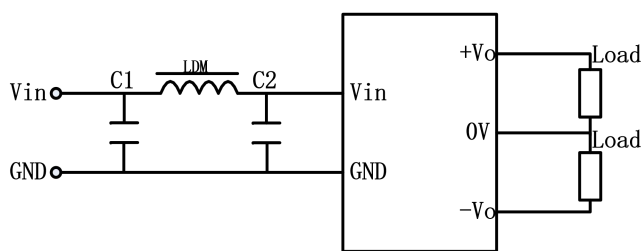


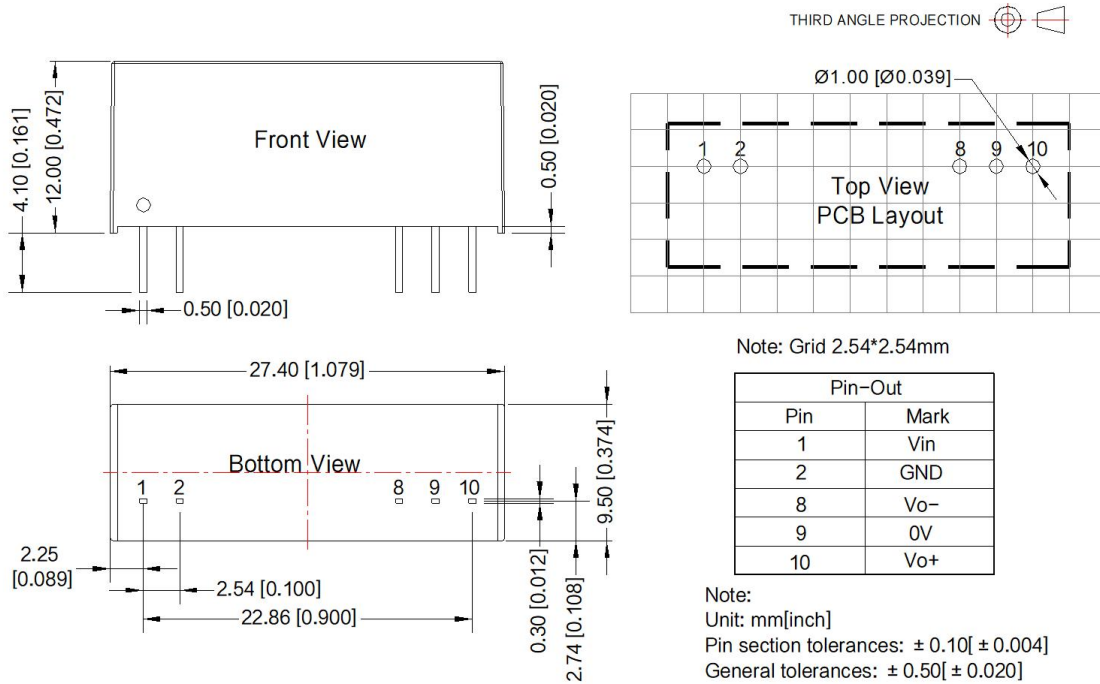
Fig. 6

LDM	33uH
C1 / C2	1.0μF/35V(Low internal resistance capacitance)

5. Electrolytic capacitors are recommended for external capacitors at the input or output of the product. Tantalum capacitors are not, otherwise there is a risk of failure.

6. The products do not support parallel connection of their output for power expansion purpose or hot-plug.

Dimensions and Recommended Layout



Note:

- 1.The lead wire connecting the power module and IGBT driver should be as short as possible when in use;
- 2.The output filter capacitor is as close as possible to the power module and IGBT driver;
- 3.IGBT driver gate drive current has a high peak value.
- 4.It is recommended that the output filter capacitor of the power module use a low internal resistance electrolytic capacitor;
- 5.The average output power of the driver must be lower than that of the power supply module;
- 6.Consider fixing with glue near the module if being used in vibration occasion;
- 7.The maximum capacitive load offered were tested at nominal input voltage and full load;
- 8.Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- 9.All index testing methods in this datasheet are based on company corporate standards;
- 10.Products are related to laws and regulations: see "Features" and "EMC";
- 11.Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.