Descriptions

3W isolated，DC/DC Converter





RoHS

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Ultra compact DIP/SMD package
- Wide 2:1 input voltage range
- High efficiency up to 82%
- Operating ambient temperature range: -40℃ to +85℃
- I/O isolation test voltage: 1.5K VDC
- Continuous short-circuit protection
- Industry standard pin-out

Applications

- Communication
- Instrumentation
- Industrial electronics

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Ripple & Noise② (mVp-p) Typ./Max.	Full Load Efficiency (%) Min./Typ.	Capacitive Load③ (μF)Max.
		Nominal (Range)	Max.①	Voltage (VDC)	Current (mA) Max./Min.			
EN/BS EN	DEST/DESD3-A1205	12 (9-18)	20	±5	±300/±15	50/100	76/78	1000
	DEST/DESD3-A1209			±9	±167/±9		76/78	680
	DEST/DESD3-A1212			±12	±125/±7		77/79	470
	DEST/DESD3-A1215			±15	±100/±5		77/79	330
	DEST/DESD3-A2405	24 (18-36)	40	±5	±300/±15		76/78	1000
	DEST/DESD3-A2409			±9	±167/±9		78/80	680
	DEST/DESD3-A2412			±12	±125/±7		80/82	470
	DEST/DESD3-A2415			±15	±100/±5		79/81	330

Notes:
①Exceeding the maximum input voltage may cause permanent damage;
②Ripple & noise testing condition at nominal input voltage and 5%-100% load, the "tip and barrel" method is used for ripple and noise test;
③The specified maximum capacitive load for positive and negative output is identical;
④Product images are for reference only; the actual product shall prevail.

Specifications

Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load/no-load)	12VDC input voltage		--	321/30	329/50	mA
		24VDC input voltage		--	156/20	165/40	
	Reflected Ripple Current	12VDC input voltage		--	40	--	
		24VDC input voltage		--	55	--	
	Surge Voltage (1sec. max.)	12VDC input voltage		-0.7	--	25	VDC
		24VDC input voltage		-0.7	--	50	
	Start-up Voltage	12VDC input voltage		--	--	9	
		24VDC input voltage		--	--	18	
	Input Filter			Capacitance filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy	5%-100% load, input voltage range	Vo1	--	±1	±3	%
			Vo2	--	±3	±5	
	No-load Output Voltage Accuracy	Input voltage range	Vo1	--	±2	±5	
			Vo2	--	±5	±8	
	Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
			Vo2	--	±0.5	±1	
	Load Regulation	5%-100% load	Vo1	--	±0.5	±1	
			Vo2	--	--	±3	
	Transient Recovery Time	25% load step change		--	1	3	ms
	Transient Response Deviation			--	±3	±5	%
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Short-circuit Protection			Continuous, self-recovery			
General Specifications	Isolation	Input-output Electric Strength test for 1 minute with a leakage current of 1mA max.		1500	--	--	VDC
	Insulation Resistance	Input-output insulation at 500VDC		1000	--	--	MΩ
	Isolation Capacitance	Input-output capacitance at 100KHz/0.1V		--	100	--	pF
	Operating Temperature	See Fig. 1		-40	--	+85	℃
	Storage Temperature			-55	--	+125	
	Pin Soldering Resistance Temperature*	Soldering spot is 1.5mm away from the case, 10 seconds max.		--	--	+300	
		Wave soldering, maximum 10 seconds		255	260	265	
	Reflow Soldering Temperature			Peak temperature ≤245℃, duration ≤60s max. over 217℃. see also IPC/JEDEC J-STD-020D.1.			
	Storage Humidity	Non-condensing		5	--	95	%RH
	Switching Frequency (PFM Mode)	Full load, nominal input voltage		--	300	--	KHz
	MTBF	MIL-HDBK-217F@25℃		1000	--	--	K hours

Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94-V0)	
	Dimension	DESD3-Axxxx	14.00 × 14.00 × 9.00 mm
		DEST3-Axxxx	15.00 × 14.00 × 9.10 mm
	Weight	2.2g(Typ.)	
	Cooling Method	Free air convection	

Note: *The pin soldering temperature tolerance is not the actual temperature set by the soldering iron but the temperature required for proper solder joints. The actual temperature set by the customer should be determined comprehensively based on factors such as PCB thickness, copper coverage, soldering iron power, and soldering iron tip selection.

Electromagnetic Compatibility (EMC)

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B (see Fig. 4-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig. 4-② for recommended circuit)	
Immunity (EMS)	ESD	IEC/EN61000-4-2	Contact ±6KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV (see Fig. 4-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV (see Fig. 4-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A

Characteristic Curve

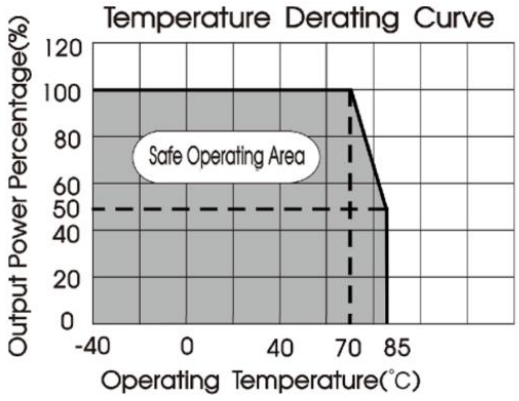
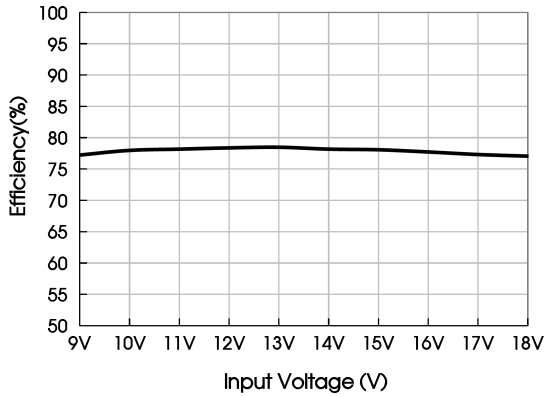
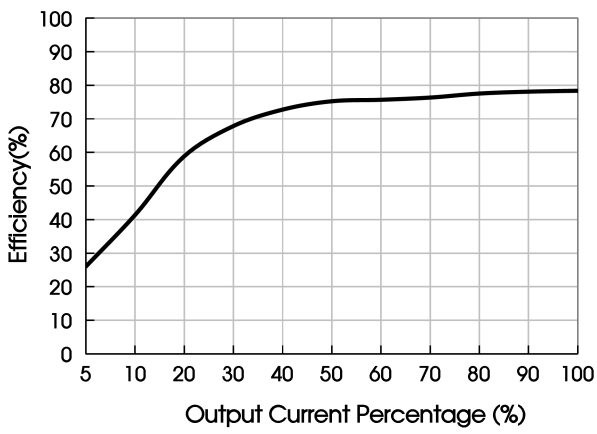


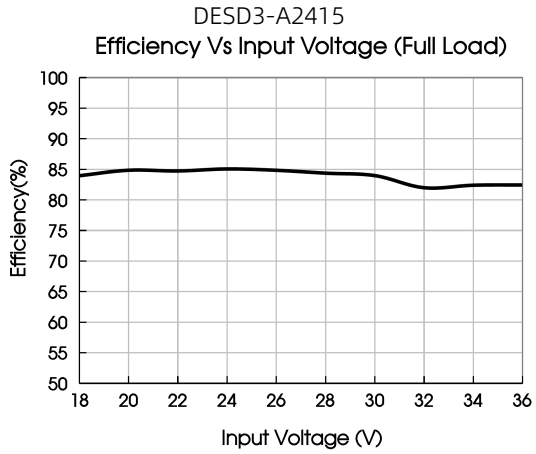
Fig. 1

DESD3-A1205
Efficiency Vs Input Voltage (Full Load)



DESD3-A1205
Efficiency Vs Output Load(Vin=12V)





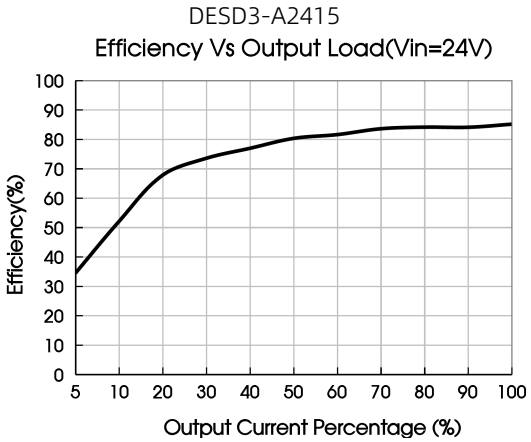


Fig. 2

Design Reference

1.Recommended circuit

①All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.
②Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout, connecting a "Y" capacitor between input "GND" and output "0V", and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the max. capacitive load value of the product.

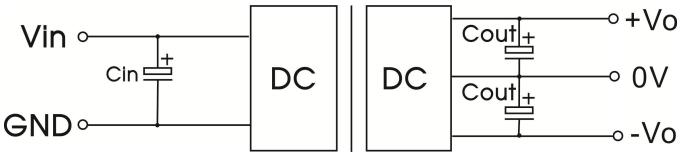


Fig. 3

Parameter description:

Vin(VDC)	12V	24V
Cin	47μF/50V	

Vo(VDC)	±5V、±9V	±12V、±15V
Cout	47μF/16V	10μF/25V

2.EMC compliance circuit

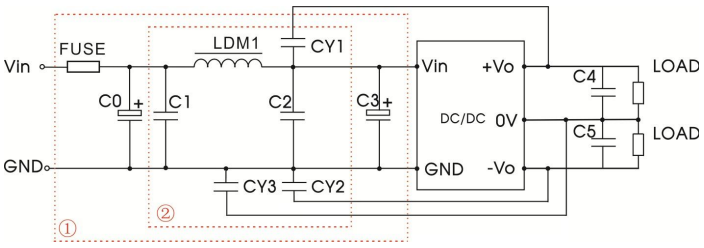


Fig. 4

Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

Parameter description:

Vin	Vin:12VDC		Vin:24VDC
Vout	±5V、±9V、±12V	±15V	±5V、±9V、±12V、±15V
FUSE	slow blow, choose according to actual input current		
C0	1000μF/25V		680μF/50V
C1	4.7μF/50V		
LDM1	10μH		
C2	10μF/50V		
C3	330μF/50V		
CY1	1nF/2000V	470pF/2000V	1nF/2000V
CY2	1nF/2000V	470pF/2000V	1nF/2000V
CY3	1nF/2000V	470pF/2000V	/
C4、C5	Refer to the Cout Fig.3		

3.Input current

When the electricity is provided by the unstable power supply, please make sure that the range of the output voltage fluctuation and the ripple voltage of the power supply do not exceed the indicators of the modules. Input current of power supply should afford the flash startup current of this kind of DC/DC module(see Fig. 5).

Generally: Vin=12V series lave =600mA

Vin=24V series lave =300mA

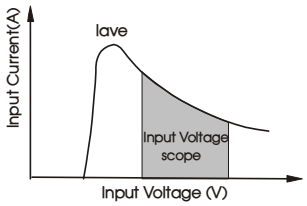


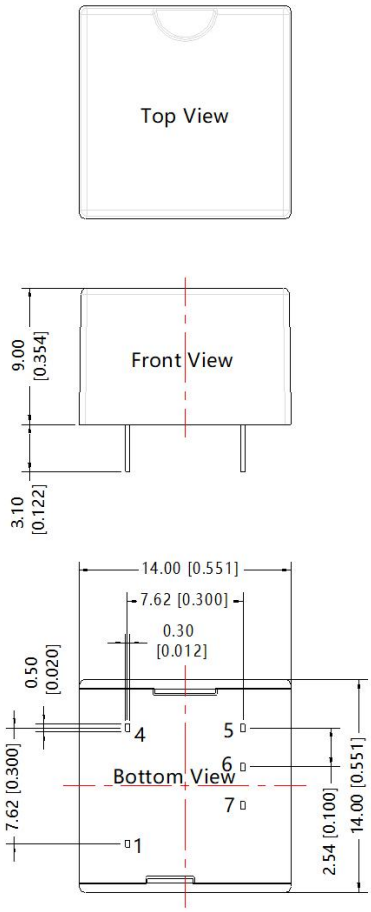
Fig. 5

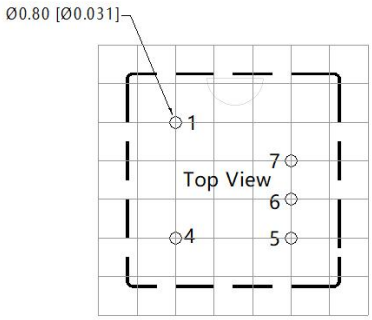
4.Output load requirements

When using, the minimum load of the module output should not be less than 5% of the nominal load. In order to meet the performance parameters of this datasheet, please connect a 5% dummy load in parallel at the output end, the dummy load is generally a resistor, please note that the resistor needs to be used in derating.

DESD3-Axxxx Dimensions and Recommended

THIRD ANGLE PROJECTION



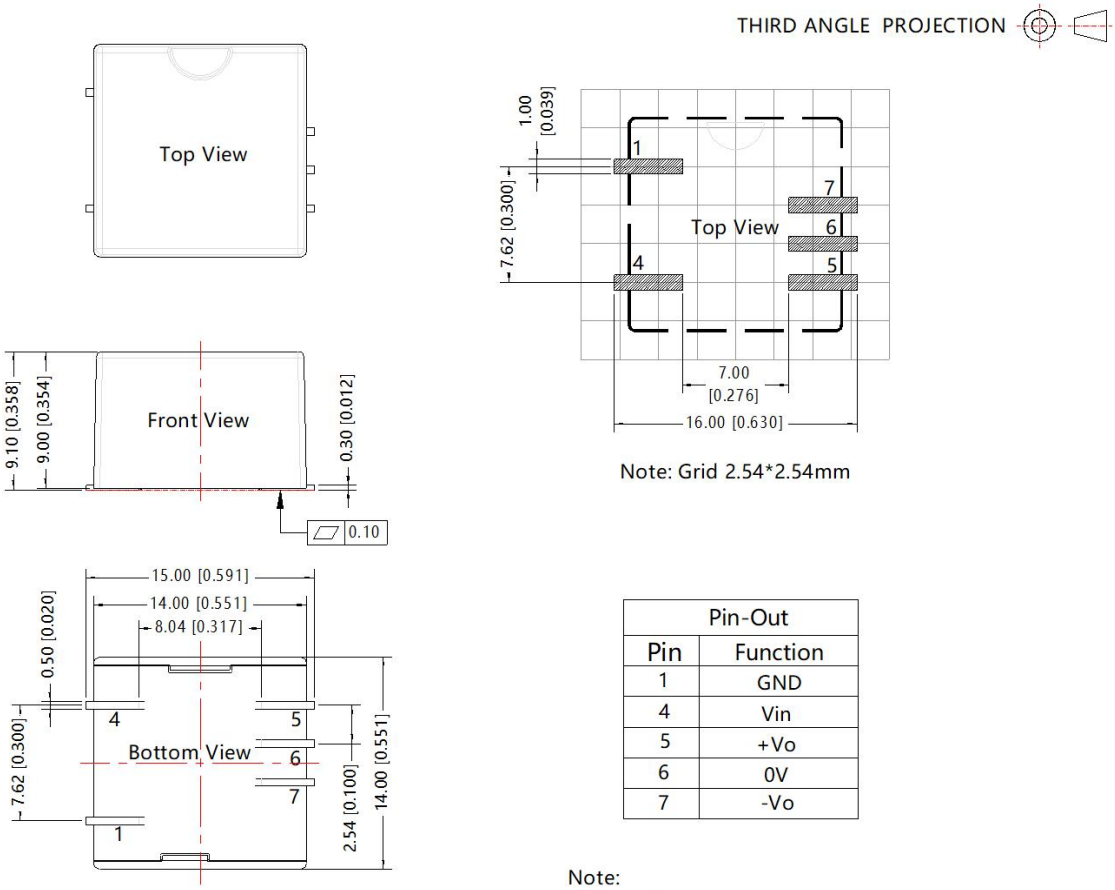


Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
4	Vin
5	+Vo
6	0V
7	-Vo

Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

DEST3-Axxxx Dimensions and Recommended



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Pin	Function
1	GND
4	Vin
5	+Vo
6	0V
7	-Vo

Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

Notes:

1. Recommend to use module with more than 5% load, if not, the ripple of the product may exceeds the specification, but does not affect the reliability of the product;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on company corporate standards;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
7. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.