

DESCRIPTIONS DC/DC Converter


RoHS


CE Report **UK** Report

EN62368-1 BS EN62368-1

FEATURES

- Continuous short-circuit protection
- I/O isolation test voltage 1.5k VDC
- Operating ambient temperature range: -40°C to +85°C
- High efficiency up to 86%
- No-load input current as low as 8mA
- Industry standard pin-out

APPLICATIONS

- Pure digital circuits
- Low frequency analog circuits
- Relay-driven circuits
- Data switching circuits

Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Voltage(VDC)	Current (mA) Max./Min.		
--	DFM2-B0505	5 (4.5-5.5)	5	400/40	77/81	2400
--	DFM2-B0509		9	222/22	80/84	1000
--	DFM2-B0512		12	167/17	77/81	560
--	DFM2-B0515		15	133/13	77/81	560
--	DFM2-B0524		24	83/8	80/84	220
--	DFM2-B1203	12 (10.8-13.2)	3.3	400/40	75/79	2400
EN/BS EN	DFM2-B1205		5	400/40	78/82	2400
--	DFM2-B1212		12	167/17	80/84	560
EN/BS EN	DFM2-B2405	24 (21.6-26.4)	5	400/40	74/80	2400
EN/BS EN	DFM2-B2415		15	133/13	78/84	560
EN/BS EN	DFM2-B2424		24	83/8	80/86	220

Specifications

Product characteristics	Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Input Specifications	Input Current (full load / no-load)	5VDC input	5VDC/12VDC/15VDC output	--	494/8	520/--	mA	
			9VDC/24VDC output	--	477/8	500/--		
		12VDC input	3.3VDC output	--	140/8	147/--		
			5VDC output	--	204/8	214/--		
			12VDC output	--	199/8	209/--		
		24VDC input	5VDC output	--	105/8	113/--		
			15VDC output	--	100/8	107/--		
			24VDC output	--	97/8	104/--		
	Reflected Ripple Current			--	15	--		
	Surge Voltage(1sec. max.)	5VDC input		-0.7	--	9	VDC	
		12VDC input		-0.7	--	18		
		24VDC input		-0.7	--	30		
Input Filter				Capacitance filter				
Hot Plug				Unavailable				
Output Specifications	Voltage Accuracy			See output regulation curves (Fig. 1)				
	Linear Regulation	Input voltage change: ± 1%		3.3VDC output	--	--	±1.5	--
				Other output	--	--	±1.2	
	Load Regulation	10%-100% load	5VDC input	5VDC output	--	11	20	%
				9VDC/12VDC/15V DC output	--	8	15	
				24VDC output	--	6	15	
			12/24VDC input	3.3VDC output	--	10	20	
				5VDC output	--	7	15	
				12VDC output	--	7	10	
				15VDC output	--	4	10	
				24VDC output	--	3	10	
	Ripple & Noise*	20MHz bandwidth	5VDC input		--	75	200	mVp-p
			12/24VDC input	Other output	--	75	180	
				24VDC output	--	200	300	
Temperature Coefficient	Full load			--	±0.02	--	%/°C	
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 resistance at 500VDC		1000	--	--	MΩ	
	Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		--	20	--	pF	
	Operating Temperature	Derating when operating temperature≥71°C (see Fig. 2)		-40	--	85	°C	
	Storage Temperature			-55	--	125		
	Case Temperature Rise	Ta=25°C		--	25	--		
	Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300		
	Storage Humidity	Non-condensing		5	--	95	%RH	

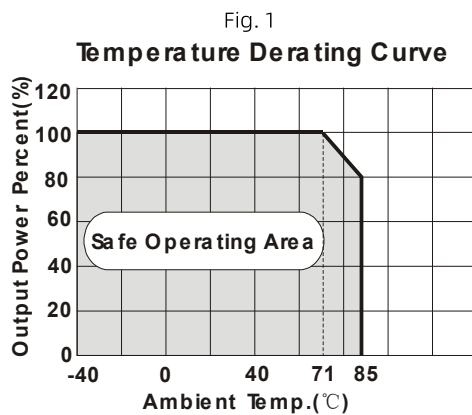
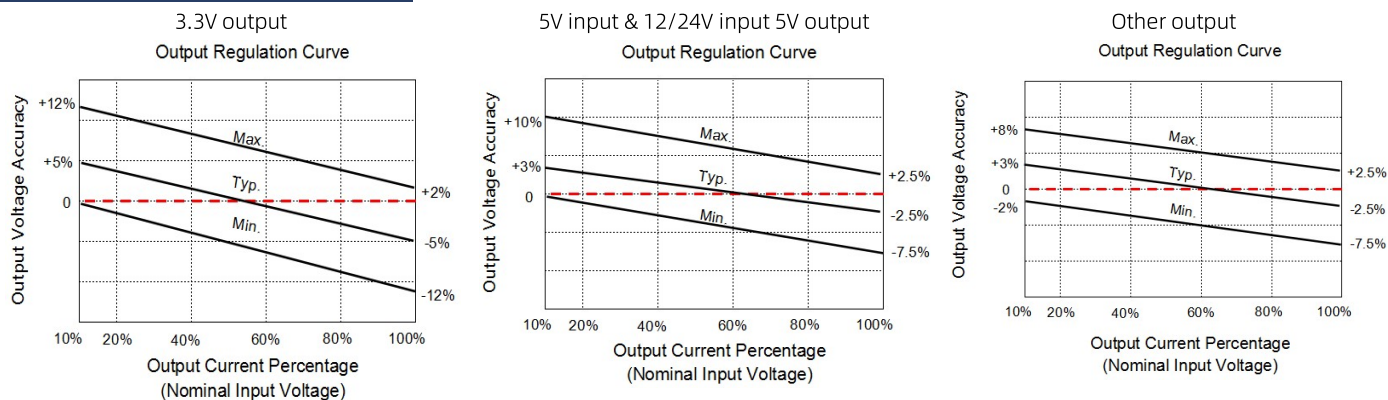
General Specifications	Vibration	10-150Hz, 5G, 0.75mm. along X, Y and Z					
	Switching Frequency	Full load, nominal input voltage	5VDC input	--	220	--	kHz
			12/24VDC input	--	260	--	
	MTBF	MIL-HDBK-217F@25°C		3500	--	--	k hours
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)					
	Dimensions	11.60 x 7.55 x 10.16 mm					
	Weight	1.6g(Typ.)					
	Cooling Method	Free air convection					

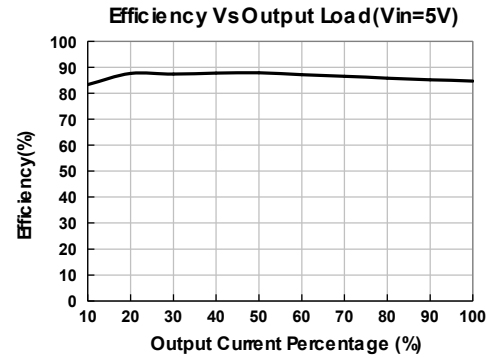
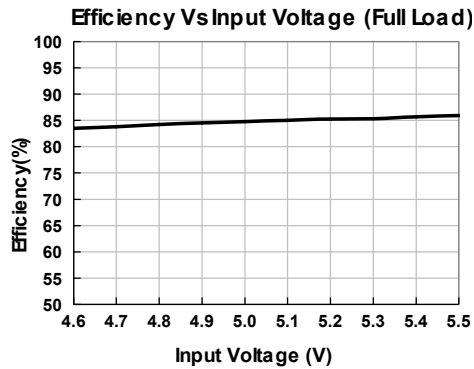
Note: * The "parallel cable" method is used for Ripple and Noise test.

Electromagnetic Compatibility (EMC)

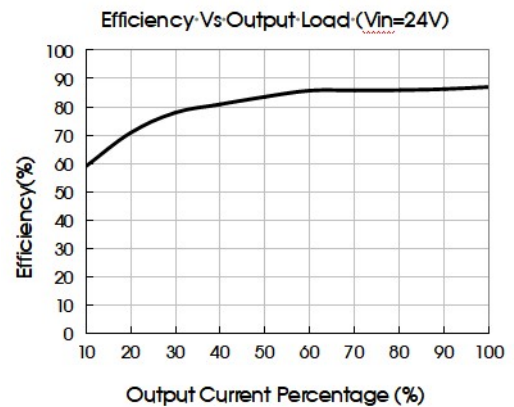
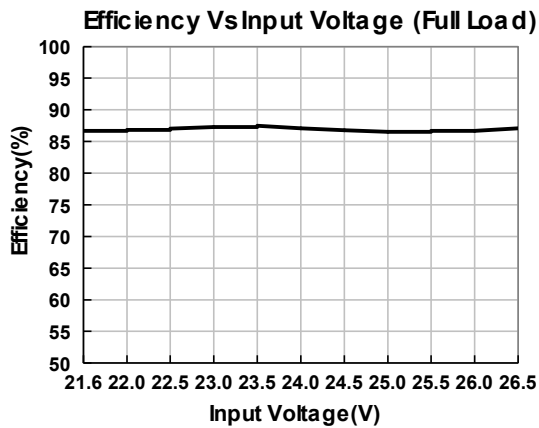
Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032	CLASS B
		RE	CISPR32/EN55032	CLASS B
	Immunity	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±6kV perf. Criteria B

Characteristic Curve





DFM2-B0505



DFM2-B2415

Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.3.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

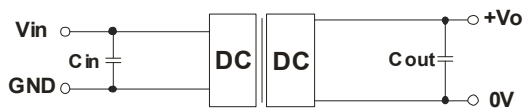


Fig.3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3VDC/5V	10μF/16V
12VDC	1μF/25V	9VDC	2.2μF/25V
24VDC	1μF/50V	12VDC/15V	1μF/25V
--	--	24VDC	1μF/50V

2. EMC compliance circuit

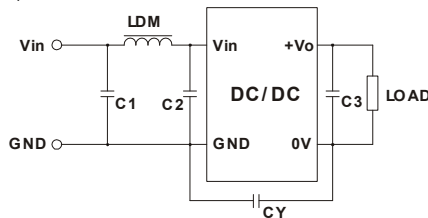
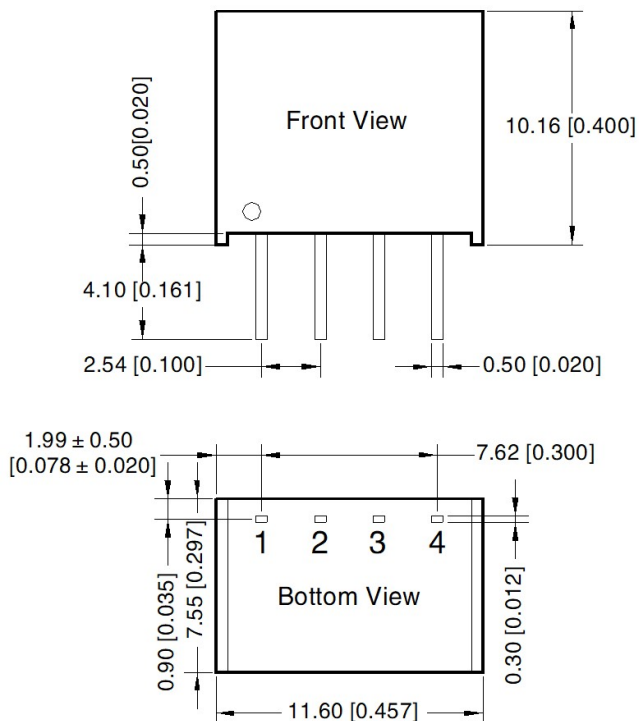


Fig. 4

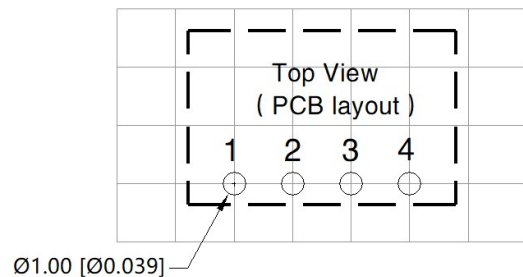
Table 2: Recommended EMC filter values

Input Voltage (VDC)		5V Input	12V/24V Input
Emissions	C1/C2	4.7μF / 50V	4.7μF / 50V
	CY	270pF / 2kV	270pF / 2kV
	C3	Refer to Cout in Fig. 3	
	LDM	6.8μH	6.8μH

Dimensions and Recommended



THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

Pin	Mark
1	GND
2	Vin
3	0V
4	+Vo

Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.10 [\pm 0.004]$

General tolerances: $\pm 0.25 [\pm 0.010]$

Notes:

- 1.If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 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 $T_a=25^\circ\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- 4.All index testing methods in this datasheet are based on our 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.