



2D14B1_1.5UP

2W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter

2 Watt

- ⊕ Continuous short-circuit protection
- ⊕ No-load input current as low as 8mA
- ⊕ Operating ambient temp. range: -40°C to +105°C
- ⊕ High efficiency up to 88%
- ⊕ High power density
- ⊕ I/O isolation test voltage: 1.5kVDC
- ⊕ Industry standard pin-out

The 2D14B1_1.5UP series are specially designed for applications where an (two) isolated voltage is required in a distributed power supply system. They are suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.



Common specifications	
Short circuit protection:	Continuous, self-recovery
Operation temperature range:	-40°C~+105°C
Storage temperature range:	-55°C ~+125°C
Storage humidity range:	5 ~ 95% (Non-condensing)
Case temperature rise:	25°C TYP (Ta = 25°C)
Lead temperature:	300°C MAX, 1.5mm from case for 10 sec
Switching frequency	Full load, nominal input 100KHz TYP, 300KHz MAX
MTBF:	>1500 Khours (MIL-HDBK-217F@25°C)
Package material:	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Cooling:	Free air convection
Dimensions:	20.32 x 10.16 x 8.20 mm
Weight:	2.4g Typ.

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Voltage accuracy	See output regulation curve (Fig. 1)					
Line regulation	For Vin change of ±1%				±1.2	%
Load regulation	10% to 100% load					
	• 5V input		7	15		%
	• 9V input		5	10		%
	• 12V input		5	10		%
	• 15V input		4	10		%
Ripple & Noise*	20MHz Bandwidth					
	• 5/9/12/15VDC output		75			mVp-p
	• 24VDC output		75			
Temperature drift	Full load			±0.02		%/°C
Switching frequency	100% full load			3500		kHz

*The "parallel cable" method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information.

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input Current (full load / no-load)	• 12V input		209/8	220/-		mA
	• 15V input		169/8	178/-		mA
	• 24V input		105/8	113/-		mA
Reflected Ripple Current				15		mA
Surge voltage (1S max)	• 12V input	-0.7		18		VDC
	• 15V input	-0.7		21		VDC
	• 24V input	-0.7		30		VDC
Input Filter	Capacitance Filter					
Hot Plug	Unavailable					

EMC specifications			
Emission	CE	CISPR32/EN55032 CLASS B	
Emission	RE	CISPR32/EN55032 CLASS B	
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B	

Example:

2D14B1_1205S1.5UP

2 = 2Watt; D14 = DIP14; B1 = Pinning; 12Vin; 5Vout; S = Single Output; 1.5 = 1.5kVDC; U = Unregulated Output; P = Short Circuit Protection (SCP)

Note:

- Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
- All specifications measured at Ta = 25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.
- In this datasheet, all the test methods of indications are based on corporate standards.
- Only typical models listed, other models may be different, please contact our technical person for more details.

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	Input-output electric strength test for 1 minute with a leakage current of 1mA max.	1500				VDC
Isolation resistance	Input-output resistance at 500VDC	1000				MΩ
Isolation capacitance	Input-output capacitance at 100kHz/0.1V		20			pF

2D14B1_1.5UP Series

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Product Selection Guide

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA, max/min]	Capacitive load [μ F, max]	Efficiency [%, typ @max load]
2D14B1_1205S1.5UP	12 (10.8-13.2)	5	400/40	2400	78/82
2D14B1_1209S1.5UP	12 (10.8-13.2)	9	222/23	1000	78/82
2D14B1_1212S1.5U	12 (10.8-13.2)	12	167/17	560	80/84
2D14B1_1215S1.5U	12 (10.8-13.2)	15	133/13	560	81/85
2D14B1_1224S1.5U	12 (10.8-13.2)	24	83/8	220	82/86
2D14B1_1505S1.5U	15 (13.5-16.5)	5	400/40	2400	75/79
2D14B1_1509S1.5UP	15 (13.5-16.5)	9	222/23	1000	78/82
2D14B1_1515S1.5UP	15 (13.5-16.5)	15	133/13	560	75/79
2D14B1_2405S1.5UP	24 (21.6-26.4)	5	400/40	2400	76/82
2D14B1_2409S1.5UP	24 (21.6-26.4)	9	222/23	1000	76/82
2D14B1_2412S1.5UP	24 (21.6-26.4)	12	167/17	560	80/86
2D14B1_2415S1.5U	24 (21.6-26.4)	15	133/13	560	82/88
2D14B1_2424S1.5U	24 (21.6-26.4)	24	83/8	220	82/88

Part Number	Input Voltage [V]	Output Voltage [VDC]	Output Current [mA, max/min]	Capacitive load [μ F, max]	Efficiency [%, typ @max load]
2D14B1_1205D1.5UP	12 (10.8-13.2)	\pm 5	\pm 200/ \pm 20	1200	76/80
2D14B1_1209D1.5UP	12 (10.8-13.2)	\pm 9	\pm 111/ \pm 11	500	78/82
2D14B1_1212D1.5UP	12 (10.8-13.2)	\pm 12	\pm 83/ \pm 8	280	79/83
2D14B1_1215D1.5UP	12 (10.8-13.2)	\pm 15	\pm 67/ \pm 7	280	79/83
2D14B1_1224D1.5UP	12 (10.8-13.2)	\pm 24	\pm 42/ \pm 4	110	81/85
2D14B1_1515D1.5UP	15 (13.5-16.5)	\pm 15	\pm 67/ \pm 7	280	77/81
2D14B1_2405D1.5UP	24 (21.6-26.4)	\pm 5	\pm 200/ \pm 20	1200	74/80
2D14B1_2409D1.5UP	24 (21.6-26.4)	\pm 9	\pm 111/ \pm 11	500	75/81
2D14B1_2412D1.5UP	24 (21.6-26.4)	\pm 12	\pm 83/ \pm 8	280	77/83
2D14B1_2415D1.5UP	24 (21.6-26.4)	\pm 15	\pm 67/ \pm 7	280	77/83
2D14B1_2424D1.5UP	24 (21.6-26.4)	\pm 24	\pm 42/ \pm 4	110	77/83

Typical characteristics

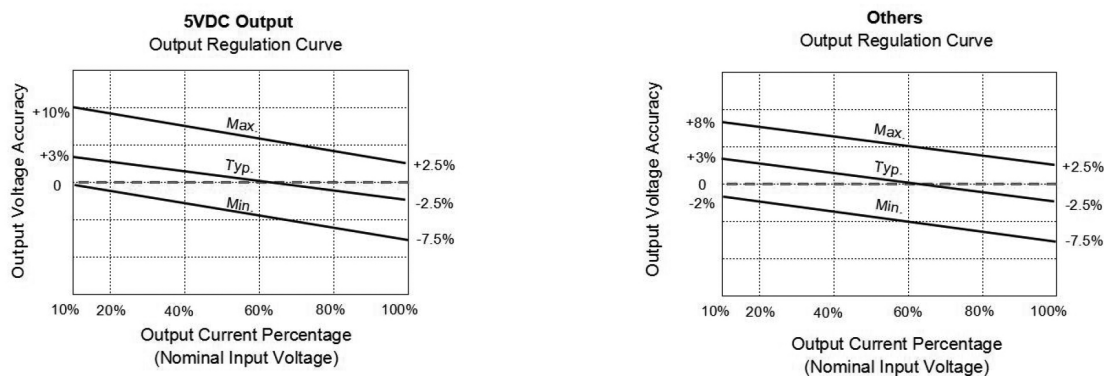


Fig. 1

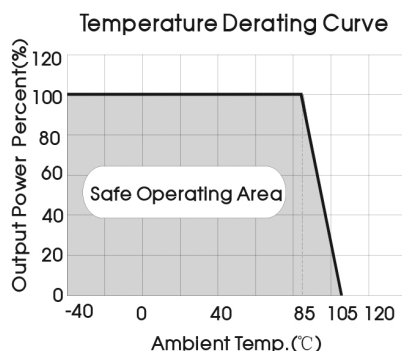
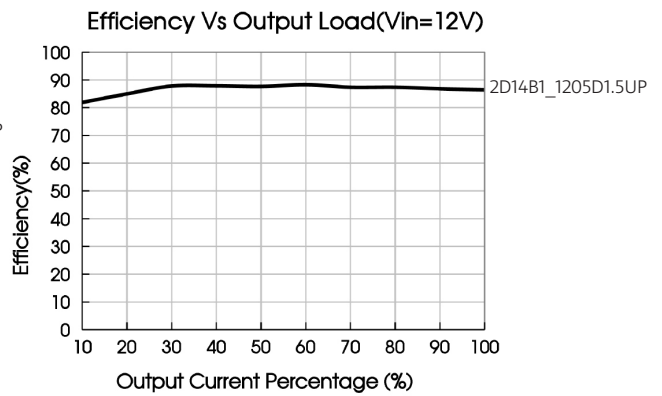
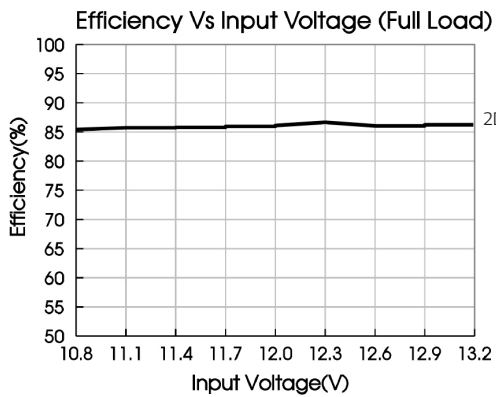
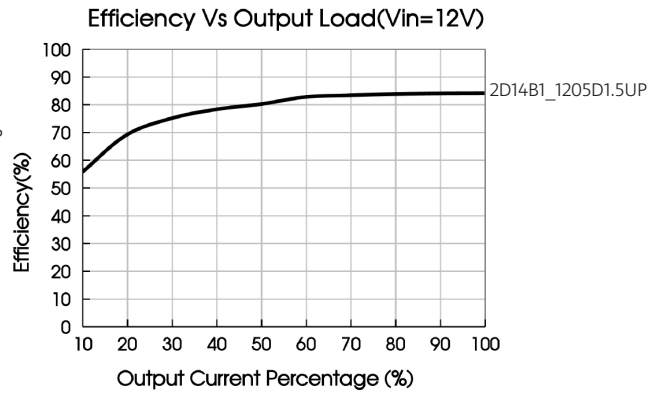
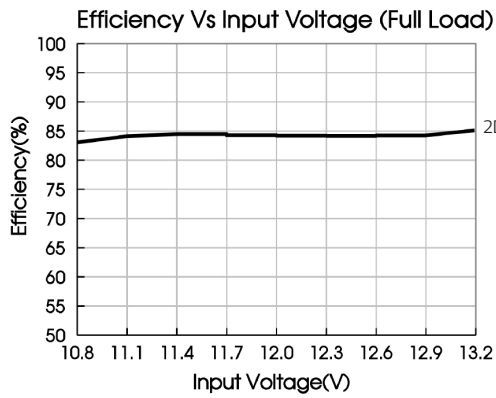


Fig. 2

2D14B1_1.5UP Series

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Efficiency



Typical application

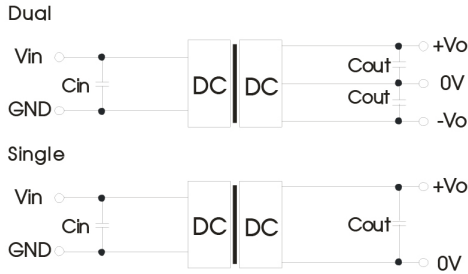


Fig.3

Vin	Cin	Dual Vout	Cout*	Single Vout	Cout
12VDC	2.2μF/25V	±5VDC	4.7μF/16V	5VDC	10μF/16V
15VDC	2.2μF/25V	±9VDC	4.7μF/16V	9VDC	2.2μF/25V
24VDC	1μF/50V	±15VDC	1μF/25V	12VDC	2.2μF/25V
		±12VDC	1μF/25V	15VDC	2.2μF/25V
		±24VDC	0.47μF/50V	24VDC	1μF/50V

*The capacitor value of the positive and the negative output is identical.

EMC compliance circuit

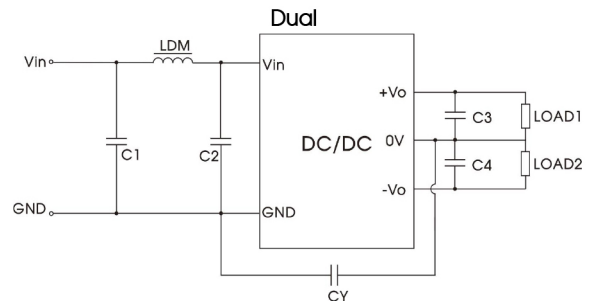
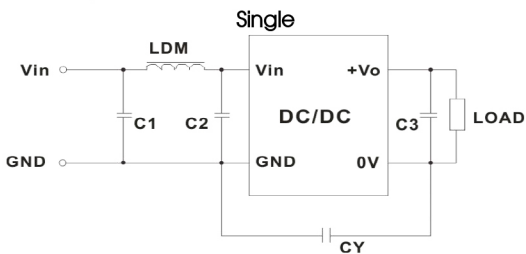


Fig.4

EMC recommended circuit value table		
Emissions	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	270pF/2kV
	C3,C4	Recommended Test Circuit
	LDM	6.8μH

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Mechanical dimensions

