DCDC Converter SIP Compact 1W 3KV Isolated Single/Dual Output

Features:

- Continuous short-circuit protection
- No-load input current as low as 10mA
- Continuous output power: 1W
- Operating ambient temperature range: -40 to+105°C
- High efficiency up to 89%
- I/O isolation test voltage: 3k VDC
- CTI Grade 1 (CTI >600)
- Industry standard pin-out
- Output voltage: 3.3V,5V,9V,12V,15V,24V / ±3.3V ±5V,±9V,±12V,±15V, ±24V

Meets

Description

VTX-313-001-#### are miniature, isolated 1W DC/DC converters in a SIP7 package. They offer the ideal solution in many space critical applications for board level power distribution. The Internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency and 3KVDC isolation, and there is no need for a heat sink.
These products are widely used in applications such as industrial control, instrumentation, test and measurement systems, pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

Selection Guide

Part Number	Input Voltage VDC (Range)	Output Voltage (VDC)	Output Current Max/Min (mA)	Full Load Efficiency (%) Typical	Capacitive Load (uF) Max
VTX-313-001-0303	3.3 (2.9 - 3.6)	3.3	303/30	82	2400
VTX-313-001-0305		5	200/20	83	2400
VTX-313-001-0309		9	111/11	84	1000
VTX-313-001-0312		12	84/8	85	560
VTX-313-001-0315		15	67/7	85	560
VTX-313-001-0324		24	42/4	85	220
VTX-313-001-0303D		±3.3	±152/15	82	1000
VTX-313-001-0305D		±5	±100/10	83	1000
VTX-313-001-0309D		±9	±56/6	84	470
VTX-313-001-0312D		±12	±42/4	84	220
VTX-313-001-0315D		±15	±34/4	84	220
VTX-313-001-0324D		±24	±21/3	84	100
VTX-313-001-0503	5 (4.4 - 5.6)	3.3	303/30	80	2400
VTX-313-001-0505		5	200/20	84	2400
VTX-313-001-0509		9	111/11	86	1000
VTX-313-001-0512		12	84/8	88	560
VTX-313-001-0515		15	67/7	88	560
VTX-313-001-0524		24	42/4	89	220
VTX-313-001-0503D		±3.3	±152/15	82	1000
VTX-313-001-0505D		±5	±100/10	86	1000
VTX-313-001-0509D		±9	±56/6	86	470
VTX-313-001-0512D		±12	±42/4	86	220
VTX-313-001-0515D		±15	±34/4	87	220
VTX-313-001-0524D		±24	±21/3	88	100

Continued

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Selection Guide Continued

Part Number	Input Voltage VDC (Range)	Output Voltage (VDC)	Output Current Max/Min (mA)	Full Load Efficiency (%) Typical	Capacitive Load (uF) Max
VTX-313-001-1203	12 (10.8 - 13.3)	3.3	303/30	84	2400
VTX-313-001-1205		5	200/20	86	2400
VTX-313-001-1209		9	111/11	87	1000
VTX-313-001-1212		12	84/8	87	560
VTX-313-001-1215		15	67/7	88	560
VTX-313-001-1224		24	42/4	89	220
VTX-313-001-1203D		±3.3	±152/15	83	1000
VTX-313-001-1205D		±5	±100/10	86	1000
VTX-313-001-1209D		±9	±56/6	89	470
VTX-313-001-1212D		±12	±42/4	89	220
VTX-313-001-1215D		±15	±34/4	89	220
VTX-313-001-1224D		±24	±21/3	89	100
VTX-313-001-1503	15 (13.4 - 16.4)	3.3	303/30	84	2400
VTX-313-001-1505		5	200/20	85	2400
VTX-313-001-1509		9	111/11	87	1000
VTX-313-001-1512		12	84/8	87	560
VTX-313-001-1515		15	67/7	88	560
VTX-313-001-1524		24	42/4	88	220
VTX-313-001-1503D		±3.3	±152/15	82	1000
VTX-313-001-1505D		±5	±100/10	85	1000
VTX-313-001-1509D		±9	±56/6	88	470
VTX-313-001-1512D		±12	±42/4	89	220
VTX-313-001-1515D		±15	±34/4	89	220
VTX-313-001-1524D		±24	±21/3	89	100
VTX-313-001-2403	24 (21.6 - 26.4)	3.3	303/30	84	2400
VTX-313-001-2405		5	200/20	87	2400
VTX-313-001-2409		9	111/11	88	1000
VTX-313-001-2412		12	84/8	88	560
VTX-313-001-2415		15	67/7	88	560
VTX-313-001-2424		24	42/4	89	220
VTX-313-001-2403D		±3.3	±152/15	84	1000
VTX-313-001-2405D		±5	±100/10	87	1000
VTX-313-001-2409D		±9	±56/6	89	470
VTX-313-001-2412D		±12	±42/4	88	220
VTX-313-001-2415D		±15	±34/4	89	220
VTX-313-001-2424D		±24	±21/3	89	100

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Input Specification						
Item	Conditions		Min	Typical	Max	Unit
Reflected Ripple Current			-	15	-	mA
Surge Voltage	3.3VDC input (1 sec max)		-0.7	-	5	VDC
	5VDC input (1 sec max)		-0.7	-	9	
	12VDC input (1 sec max)		-0.7	-	18	
	15VDC input (1 sec max)		-0.7	-	21	
	24VDC input (1 sec max)		-0.7	-	30	
Single Output **Input Current (Full load/No load)**	3.3VDC Nominal Input	3.3VDC Output	-	370/10	385/15	mA
		5VDC Output	-	358/12	365/15	
	5VDC Nominal Input	3.3VDC Output	-	250/18	256/25	
		5VDC Output	-	232/18	237/25	
		Other Output	-	226/10	233/15	
	12VDC Nominal Input	3.3VDC Output	-	99/8	101/15	
		5VDC Output	-	97/7	100/15	
		Other Output	-	94/8	99/15	
	15VDC Nominal Input	3.3VDC Output	-	79/7	85/15	
		5/12VDC Output	-	76/7	79/15	
		Other Output	-	76/7	79/15	
	24VDC Nominal Input	3.3VDC Output	-	49/5	51/15	
		5VDC Output	-	47/5	49/15	
		Other Output	-	47/5	49/15	
Dual Output **Input Current (Full load/No load)**	3.3VDC Nominal Input	3.3VDC Output	-	370/10	389/15	mA
		5VDC Output	-	365/12	384/15	
	5VDC Nominal Input	3.3VDC Output	-	250/8	264/15	
		5VDC Output	-	238/10	250/15	
		12/15VDC Output	-	233/10	244/15	
		24VDC Output	-	229/18	234/25	
	12VDC Nominal Input	3.3VDC Output	-	100/7	103/15	
		5VDC Output	-	97/7	100/15	
		Other Output	-	94/8	96/15	
	15VDC Nominal Input	3.3VDC Output	-	82/6	84/15	
		5/12VDC Output	-	78/6	80/15	
		Other Output	-	75/6	78/15	
	24VDC Nominal Input	3.3VDC Output	-	50/4	51/15	
		5VDC Output	-	48/4	50/15	
		Other Output	-	48/4	50/15	
Input Filter			Capacitance Filter			

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Output Specification						
Item	Conditions		Min	Typical	Max	Unit
Voltage Accuracy			See Graphs Fig 1			
Line Regulation	Input voltage change: ±1%	3.3V/5VDC Output	-	±1.5	-	%
		Other Outputs	-	±1.2	-	
Load Regulation	10%-100% load	3.3/5VDC Output	-	10	-	
		Other Outputs	-	5	-	
Ripple / Noise*	20MHz bandwidth		-	45	100	mVp-p
Temp. Coefficient	100% Load		-	+/-0.02	-	%/°C
Short Circuit Protection	Nominal Input Voltage		Continuous, Self-recovery			
The "parallel cable" method is used for Ripple and Noise test.						

General Specification					
Item	Conditions	Min	Typical	Max	Unit
Isolation	Input-output electric strength test for 1 minute with a leakage current of 1mA max	3000	-	-	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	-	-	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	-	20	-	pF
Operating Temperature		-40	-	+105	°C
Storage Temperature		-55	-	+125	
Soldering Pin Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	-	-	+300	
Storage Humidity	Non-condensing	5	-	+95	%RH
Switching Frequency	Full load, nominal input voltage	-	220	-	KHz
Vibration		10-150Hz, 5G, 0.75mm. alongX, YandZ			
MTBF	25°C (MIL-HDBK-217F)	>3500,000Hrs			
Dimensions		19.60 x 6.00 x 10.10mm			
Cooling Method		Free Air Convection			
Weight		2.1g (Typ.)			
Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)				

EMC Specification		
Emissions	CE /RE	CISPR32 / EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV

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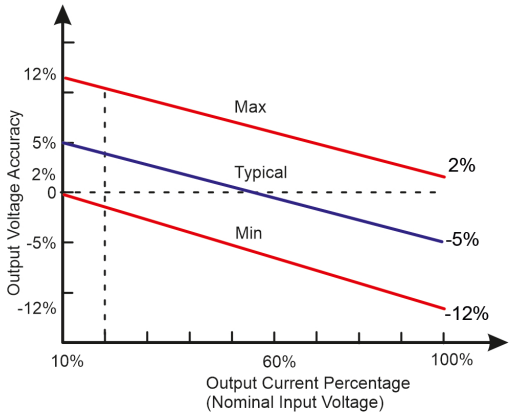
Performance Graphs

3.3VDC Output
Output Regulation Graph



5V / 9V / 12V / 15V / 24VDC Output
Output Regulation Graph

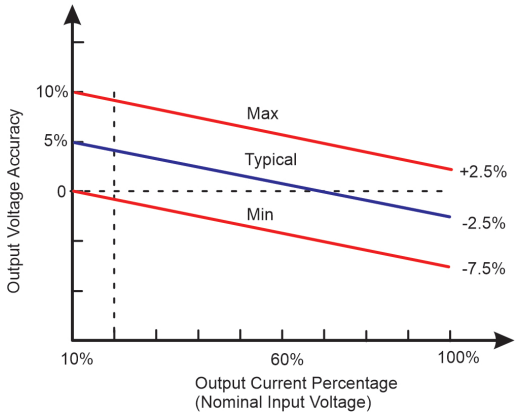


Fig 1

Temperature Derating Graph

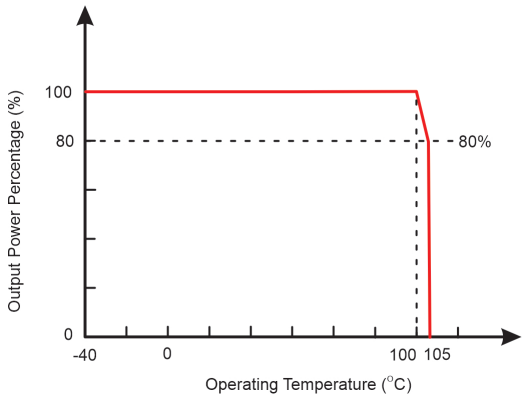
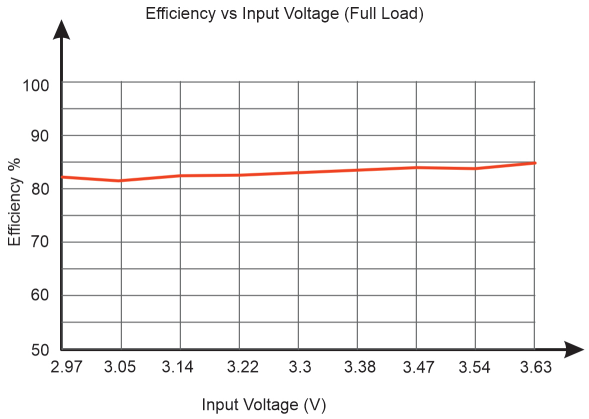
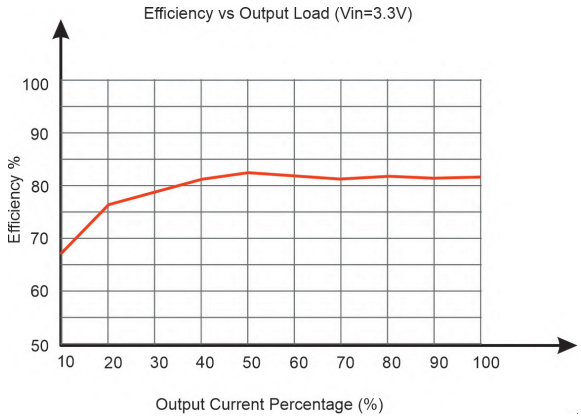


Fig 2





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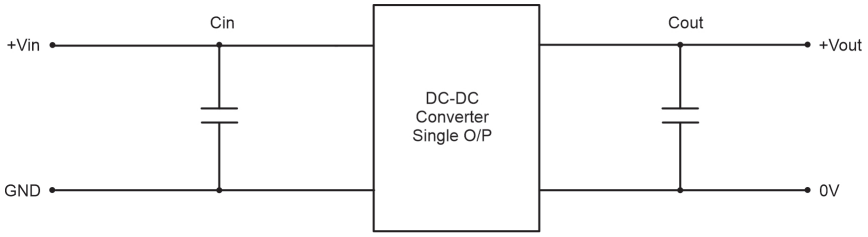
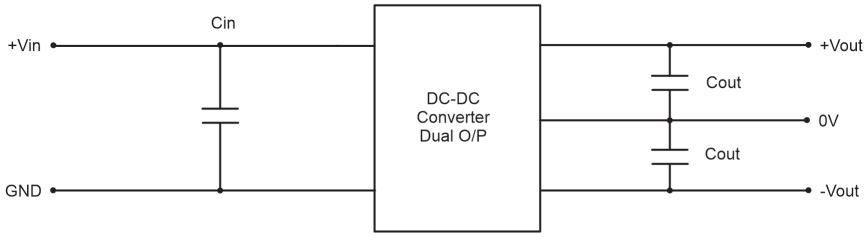
Application Schematic for EMC

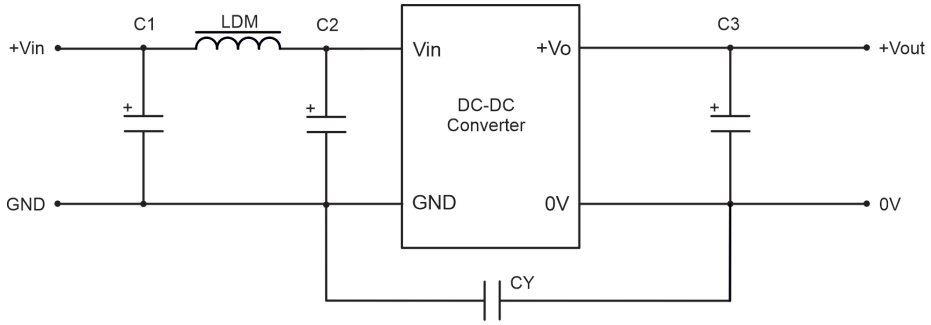
Typical Application Schematic





Voltage In	Cin	Single Out	Cout		Dual Out	Cout
3.3VDC	4.7uF/25V	3.3VDC	10uF/16V		±3.3VDC	10uF/16V
5VDC	4.7uF/25V	5VDC	10uF/16V		±5VDC	10uF/16V
12VDC	2.2uF/25V	9VDC	2.2uF/16V		±9VDC	2.2uF/25V
15VDC	2.2uF/25V	12VDC	2.2uF/25V		±12VDC	2.2uF/25V
24VDC	1.0uF/50V	15VDC	1.0uF/25V		±15VDC	1.0uF/25V
-	-	24VDC	0.47uF/50V		±24VDC	0.47uF/50V

EMC (CLASS B) Application Schematic



Component	Value		Voltage Out	C3
C1/C2	4.7uF/50V		3.3VDC	10uF/16V
CY	1000pF/3kVDC		5VDC	10uF/16V
LDM	6.8uH		9VDC	2.2uF/25V
-	-		12VDC	2.2uF/25V
-	-		15VDC	1.0uF/25V
-	-		24VDC	0.47uF/50V

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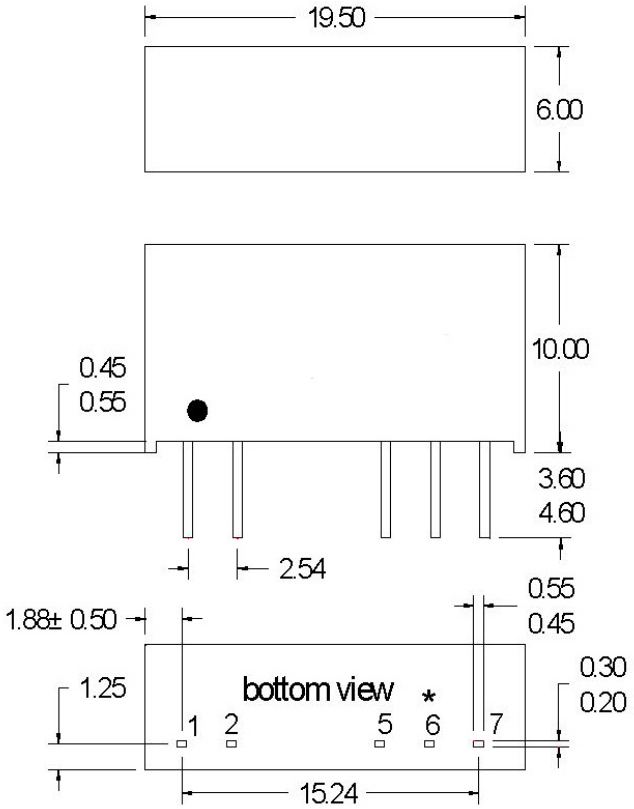
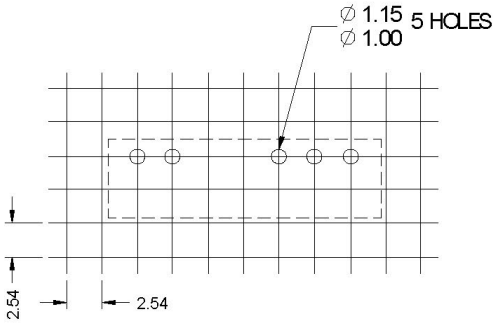
Dimensions



PIN Number	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	0V	-Vout
6	-	0V
7	+Vout	+Vout



Note:
Unit: mm [inch]
Pin section tolerances: ±0.10 [±0.004]
General tolerances: ±0.25 [±0.010]

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