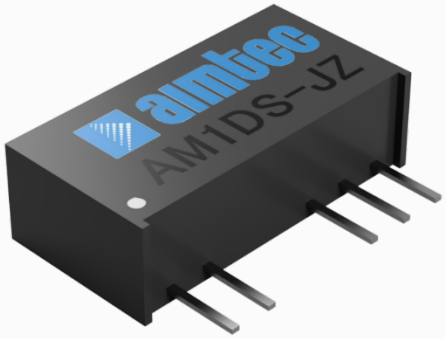
AM1DS-JZ

Click to ORDER samples



SIP7 Package

The AM1DS-JZ is a 1W SIP7 DC/DC converter that offers great cost savings thanks to an improved manufacturing process. It also features excellent reliability and performance while offering a standard input voltage range of 5-24VDC as well as an output voltage of 3.3-24V. This compact SIP7 design will surely benefit your new system design.

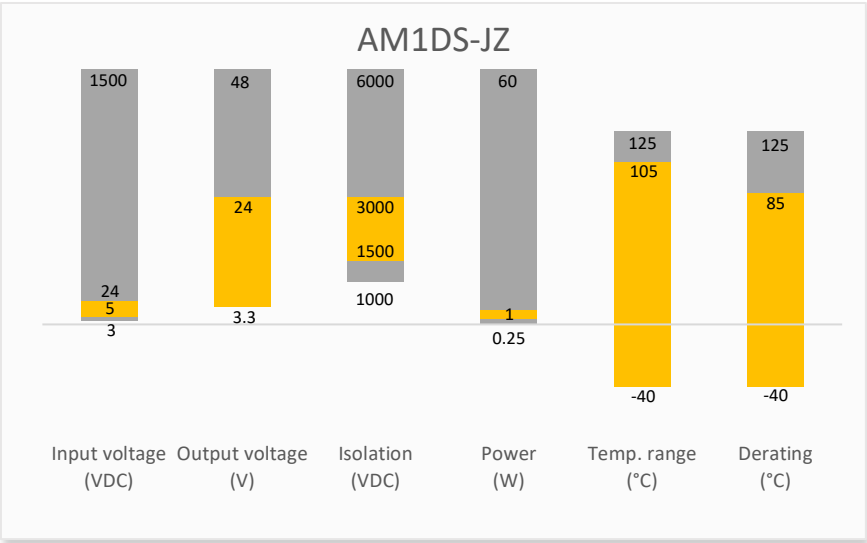
This new series offers great operating temperatures, from -40 to 105°C with full power up to 85°C. Also, an isolation of 1500 or 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

The AM1DS-JZ is suitable for instrumentation, industrial controls, communication and IoT applications.

Features

- High I/O Isolation of 1500/3000VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +105 °C
- Industry standard SIP7 pin-out
- Efficiency up to 85%
- Unregulated output

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications

IoT

Industrial

Telecom

Portable Equipment

Models & Specifications

Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Full | No load typ. (mA)	Output Current max | min (mA)*	Isolation (VDC)	Maximum capacitive Load (µF)	Efficiency Typ. (%)
AM1DS-0503SJZ	5 (4.5-5.5)	3.3	270 / 5	303 / 30	1500	2400	74
AM1DS-0505SJZ #	5 (4.5-5.5)	5	270 / 5	200 / 20	1500	2400	82
AM1DS-0509SJZ	5 (4.5-5.5)	9	241 / 12	111 / 12	1500	1000	83
AM1DS-0512SJZ	5 (4.5-5.5)	12	241 / 12	84 / 9	1500	560	83
AM1DS-0515SJZ	5 (4.5-5.5)	15	241 / 18	67 / 7	1500	560	83
AM1DS-0524SJZ	5 (4.5-5.5)	24	241 / 18	42 / 4	1500	220	85
AM1DS-1203SJZ #	12 (10.8-13.2)	3.3	105 / 8	303 / 30	1500	2400	75
AM1DS-1205SJZ #	12 (10.8-13.2)	5	105 / 8	200 / 20	1500	2400	80
AM1DS-1209SJZ #	12 (10.8-13.2)	9	105 / 8	111 / 12	1500	1000	80
AM1DS-1212SJZ #	12 (10.8-13.2)	12	105 / 8	83 / 9	1500	560	80
AM1DS-1215SJZ #	12 (10.8-13.2)	15	105 / 8	67 / 7	1500	560	81
AM1DS-1224SJZ #	12 (10.8-13.2)	24	105 / 8	42 / 4	1500	220	81
AM1DS-1505SJZ #	15 (13.5-16.5)	5	84 / 8	200 / 20	1500	2400	80
AM1DS-1509SJZ #	15 (13.5-16.5)	9	84 / 8	111 / 12	1500	1000	80
AM1DS-1512SJZ #	15 (13.5-16.5)	12	84 / 8	83 / 9	1500	560	80
AM1DS-1515SJZ #	15 (13.5-16.5)	15	84 / 8	67 / 7	1500	560	81
AM1DS-2403SJZ #	24 (21.6-26.4)	3.3	56 / 8	303 / 30	1500	2400	75
AM1DS-2405SJZ #	24 (21.6-26.4)	5	56 / 8	200 / 20	1500	2400	79
AM1DS-2409SJZ #	24 (21.6-26.4)	9	56 / 8	111 / 12	1500	1000	80
AM1DS-2412SJZ #	24 (21.6-26.4)	12	56 / 8	83 / 9	1500	560	81
AM1DS-2415SJZ #	24 (21.6-26.4)	15	56 / 8	67 / 7	1500	560	81
AM1DS-2424SJZ #	24 (21.6-26.4)	24	56 / 8	42 / 4	1500	220	81
AM1DS-0503SH30JZ	5 (4.5-5.5)	3.3	270 / 5	303 / 30	3000	2400	74
AM1DS-0505SH30JZ	5 (4.5-5.5)	5	270 / 5	200 / 20	3000	2400	82
AM1DS-0509SH30JZ	5 (4.5-5.5)	9	241 / 12	111 / 12	3000	1000	83
AM1DS-0512SH30JZ	5 (4.5-5.5)	12	241 / 12	84 / 9	3000	560	83
AM1DS-0515SH30JZ	5 (4.5-5.5)	15	241 / 18	67 / 7	3000	560	83
AM1DS-0524SH30JZ	5 (4.5-5.5)	24	241 / 18	42 / 4	3000	220	85
AM1DS-1203SH30JZ #	12 (10.8-13.2)	3.3	112 / 8	303 / 30	3000	2400	75
AM1DS-1205SH30JZ #	12 (10.8-13.2)	5	112 / 8	200 / 20	3000	2400	80
AM1DS-1209SH30JZ #	12 (10.8-13.2)	9	112 / 8	111 / 12	3000	1000	80
AM1DS-1212SH30JZ #	12 (10.8-13.2)	12	112 / 8	83 / 9	3000	560	80
AM1DS-1215SH30JZ #	12 (10.8-13.2)	15	112 / 8	67 / 7	3000	560	81
AM1DS-1224SH30JZ #	12 (10.8-13.2)	24	112 / 8	42 / 5	3000	220	81
AM1DS-1505SH30JZ #	15 (13.5-16.5)	5	84 / 8	200 / 20	3000	2400	80
AM1DS-1509SH30JZ #	15 (13.5-16.5)	9	84 / 8	111 / 12	3000	1000	80
AM1DS-1512SH30JZ #	15 (13.5-16.5)	12	84 / 8	83 / 9	3000	560	80
AM1DS-1515SH30JZ #	15 (13.5-16.5)	15	84 / 8	67 / 7	3000	560	81
AM1DS-2403SH30JZ #	24 (21.6-26.4)	3.3	56 / 8	303 / 30	3000	2400	75
AM1DS-2405SH30JZ #	24 (21.6-26.4)	5	56 / 8	200 / 20	3000	2400	79
AM1DS-2409SH30JZ #	24 (21.6-26.4)	9	56 / 8	111 / 12	3000	1000	80
AM1DS-2412SH30JZ #	24 (21.6-26.4)	12	56 / 8	83 / 9	3000	560	81
AM1DS-2415SH30JZ #	24 (21.6-26.4)	15	56 / 8	67 / 7	3000	560	81

AM1DS-2424SH30JZ #	24 (21.6-26.4)	24	56 / 8	42 / 5	3000	220	81
* Performance will be degraded if the load is not within the output current range.							

Dual Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Full | No load typ. (mA)	Output Current max | min (mA)*	Isolation (VDC)	Maximum capacitive Load (µF)	Efficiency Typ. (%)
AM1DS-0503DJZ	5 (4.5-5.5)	±3.3	270 / 5	±152 / ±15	1500	1200	74
AM1DS-0505DJZ #	5 (4.5-5.5)	±5	270 / 5	±100 / ±10	1500	1200	82
AM1DS-0509DJZ	5 (4.5-5.5)	±9	241 / 12	±56 / ±6	1500	470	83
AM1DS-0512DJZ	5 (4.5-5.5)	±12	241 / 12	±42 / ±5	1500	220	83
AM1DS-0515DJZ	5 (4.5-5.5)	±15	241 / 18	±34 / ±4	1500	220	83
AM1DS-0524DJZ	5 (4.5-5.5)	±24	241 / 18	±21 / ±3	1500	100	85
AM1DS-1203DJZ #	12 (10.8-13.2)	±3.3	105 / 8	±152 / ±15	1500	1200	75
AM1DS-1205DJZ #	12 (10.8-13.2)	±5	105 / 8	±100 / ±10	1500	1200	80
AM1DS-1212DJZ #	12 (10.8-13.2)	±12	105 / 8	±42 / ±5	1500	220	81
AM1DS-1215DJZ #	12 (10.8-13.2)	±15	105 / 8	±34 / ±4	1500	220	81
AM1DS-1224DJZ #	12 (10.8-13.2)	±24	105 / 8	±21 / ±3	1500	100	80
AM1DS-1505DJZ #	15 (13.5-16.5)	±5	84 / 8	±100 / ±10	1500	1200	80
AM1DS-1512DJZ #	15 (13.5-16.5)	±12	84 / 8	±42 / ±5	1500	220	80
AM1DS-1515DJZ #	15 (13.5-16.5)	±15	84 / 8	±34 / ±4	1500	220	81
AM1DS-2405DJZ #	24 (21.6-26.4)	±5	56 / 8	±100 / ±10	1500	1200	80
AM1DS-2412DJZ #	24 (21.6-26.4)	±12	56 / 8	±42 / ±5	1500	220	81
AM1DS-2415DJZ #	24 (21.6-26.4)	±15	56 / 8	±34 / ±4	1500	220	79
AM1DS-2424DJZ #	24 (21.6-26.4)	±24	56 / 8	±21 / ±3	1500	100	80
AM1DS-0503DH30JZ	5 (4.5-5.5)	±3.3	270 / 5	±152 / ±15	3000	1200	74
AM1DS-0505DH30JZ #	5 (4.5-5.5)	±5	270 / 5	±100 / ±10	3000	1200	82
AM1DS-0509DH30JZ #	5 (4.5-5.5)	±9	241 / 12	±56 / ±6	3000	470	83
AM1DS-0512DH30JZ #	5 (4.5-5.5)	±12	241 / 12	±42 / ±5	3000	220	83
AM1DS-0515DH30JZ #	5 (4.5-5.5)	±15	241 / 18	±34 / ±4	3000	220	83
AM1DS-0524DH30JZ #	5 (4.5-5.5)	±24	241 / 18	±21 / ±3	3000	100	85
AM1DS-1203DH30JZ #	12 (10.8-13.2)	±3.3	105 / 8	±152 / ±15	3000	1200	75
AM1DS-1205DH30JZ #	12 (10.8-13.2)	±5	105 / 8	±100 / ±10	3000	1200	80
AM1DS-1212DH30JZ #	12 (10.8-13.2)	±12	105 / 8	±42 / ±5	3000	220	81
AM1DS-1215DH30JZ #	12 (10.8-13.2)	±15	105 / 8	±34 / ±4	3000	220	81
AM1DS-1224DH30JZ #	12 (10.8-13.2)	±24	105 / 8	±21 / ±2	3000	100	80
AM1DS-1505DH30JZ #	15 (13.5-16.5)	±5	84 / 8	±100 / ±10	3000	1200	80
AM1DS-1512DH30JZ #	15 (13.5-16.5)	±12	84 / 8	±42 / ±5	3000	220	80
AM1DS-1515DH30JZ #	15 (13.5-16.5)	±15	84 / 8	±34 / ±4	3000	220	81
AM1DS-2405DH30JZ #	24 (21.6-26.4)	±5	56 / 8	±100 / ±10	3000	1200	80
AM1DS-2412DH30JZ #	24 (21.6-26.4)	±12	56 / 8	±42 / ±5	3000	220	81
AM1DS-2415DH30JZ #	24 (21.6-26.4)	±15	56 / 8	±34 / ±4	3000	220	79
AM1DS-2424DH30JZ #	24 (21.6-26.4)	±24	56 / 8	±21 / ±2	3000	100	80
* Performance will be degraded if the load is not within the output current range.							

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Filter	Capacitor			
Absolute maximum rating	Maximum duration 1s, 5Vin	>0.7	9	VDC
	Maximum duration 1s, 12Vin	>0.7	18	VDC
	Maximum duration 1s, 15Vin	>0.7	21	VDC
	Maximum duration 1s, 24Vin	>0.7	30	VDC
Input reflected ripple current	5Vin models	15		mA
	Other models	30		mA

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 1mA	>1500		VDC
	60 sec, leakage ≤ 1mA for H30 models	>3000		VDC
Resistance	500VDC	>1000		MΩ
Capacitance	100kHz/0.1V	20		pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	See output voltage tolerance	±5		%
Line regulation	Per 1% Vin change, 3.3Vout models		1.5	%
	Per 1% Vin change, other models		1.2	%
Load regulation	10-100% load, 3.3Vout models	15	20	%
	10-100% load, 5Vout models	10	15	%
	10-100% load, other models		10	%
Ripple & Noise*	24Vout models	50	100	mV pk-pk
	other models	30	75	mV pk-pk
Temperature coefficient		±0.02		%/°C

* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific details.

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input, 5Vin models	270		KHz
	Full load, nominal input, other models	260		KHz
Short circuit protection	Continuous, Auto recovery			
Operating temperature	With derating	-40 to +105		°C
Storage temperature		-55 to +125		°C
Case temperature rise	Ambient temperature at 25°C, 5Vin, 3.3Vout models	25		°C
	Ambient temperature at 25°C, 5Vin, other models	15		°C
	Ambient temperature at 25°C, other models	30		°C
Manual soldering temperature	1.5mm away from case, duration ≤ 10sec		300	°C
Cooling	Free air convection			
Humidity	Non-condensing	>5	95	% RH
Vibration	10-150Hz, 5G, 30Min, along all axis, 12/15/24Vin models only			
Case material	Black plastic (flammability to UL 94V-0)			
Weight		2.1		g
Dimensions (L x W x H)		0.77 x 0.24 x 0.40 inches (19.65 x 6.00 x 10.16 mm)		

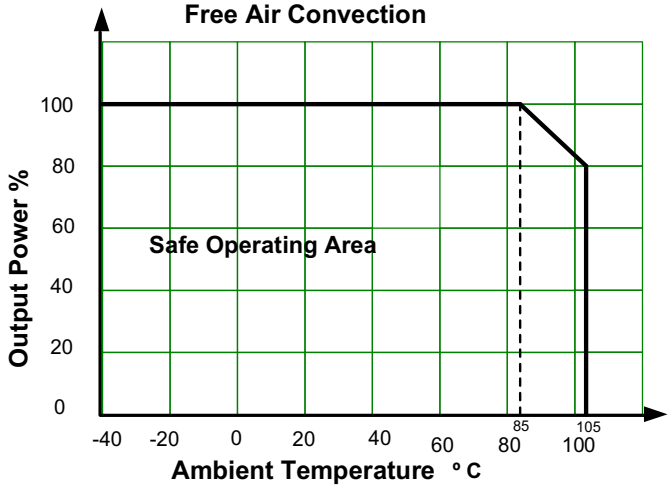
MTBF	3 500 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

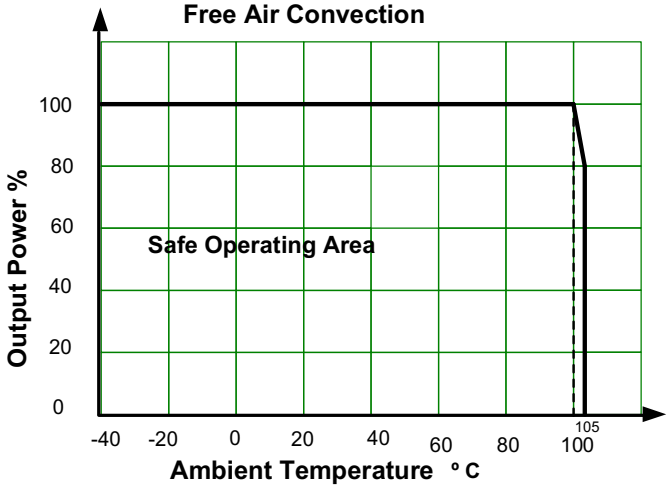
Safety Specifications		
Parameters		
Agency approvals	UL 62368-1 (For models marked with # only)	
Standards	Information technology Equipment	Design to meet IEC/EN/UL62368 (5Vin models only)
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B with the recommended EMI circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2 Air ±8KV, Contact ±4KV, Criteria B for 5Vin models IEC 61000-4-2 Contact ±6KV, Criteria B for 12/15/24Vin models

Derating

5Vin models

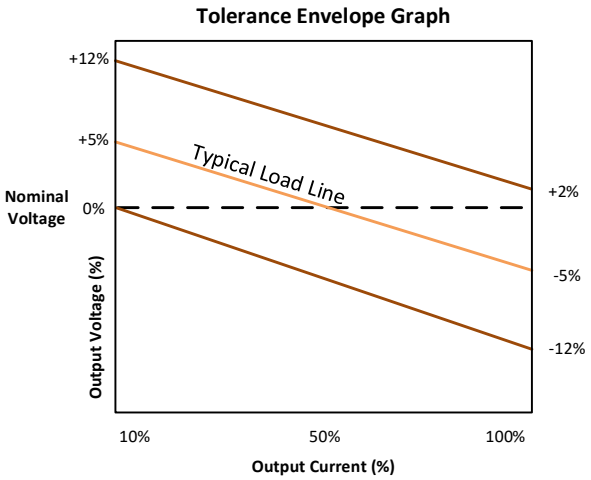


12/15/24Vin models

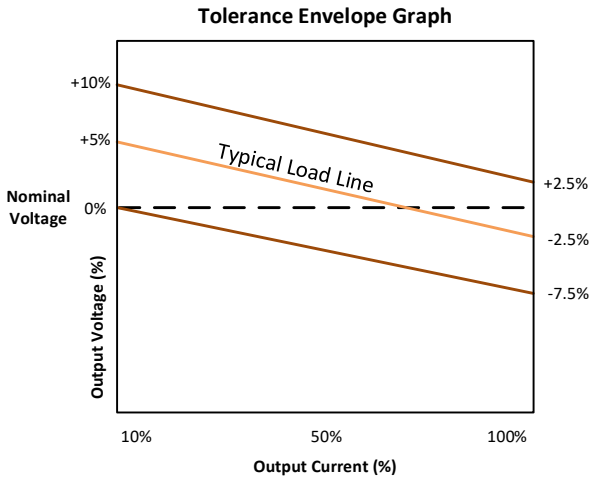


Output voltage tolerance

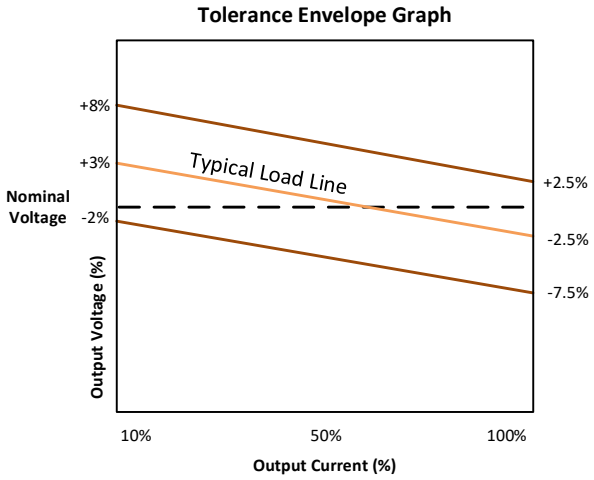
3.3Vout models



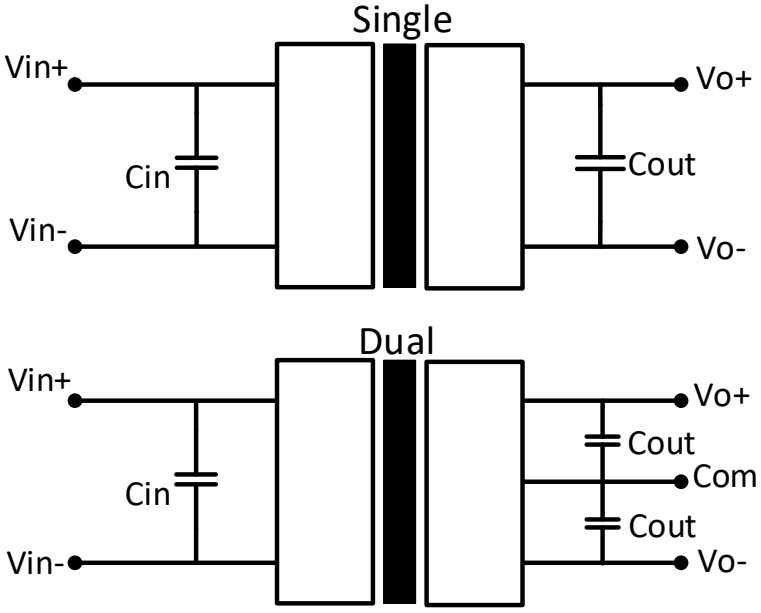
5Vin, 5/9/12/15/24Vout models



Other models



Typical application circuit

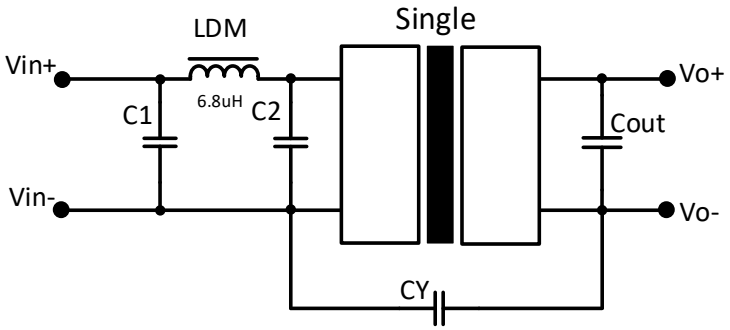


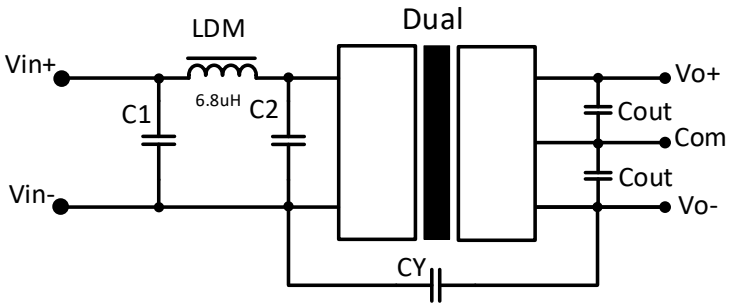
Vin	Cin
5V	4.7µF
12/15V	2.2µF/25V
24V	1µF/50V

Single output models		Dual output models	
Vout	Cout	Vout	Cout
3.3/5V	10µF/16V	±3.3/±5V	4.7µF/16V
9V	2.2µF/16V	±9V	1µF
12V	2.2µF/25V	±12V	1µF/25V
15V	1µF/25V	±15V	0.47µF/25V
24V	1µF/50V	±24V	0.47µF/50V

Recommended EMI circuit

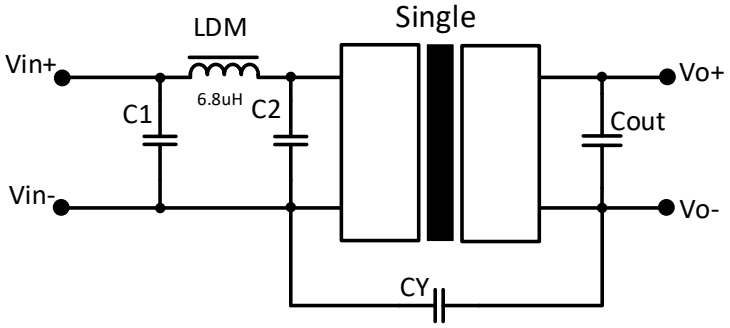
5Vin models

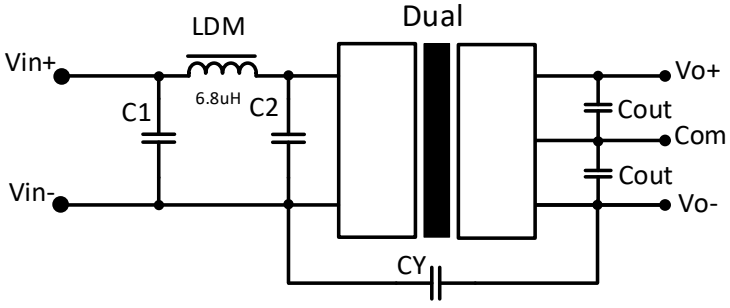




Vout	C1/C2	CY
3.3/5/9V	4.7µF/25V	-
12/15/24V	4.7µF/25V	1nF/4kVdc

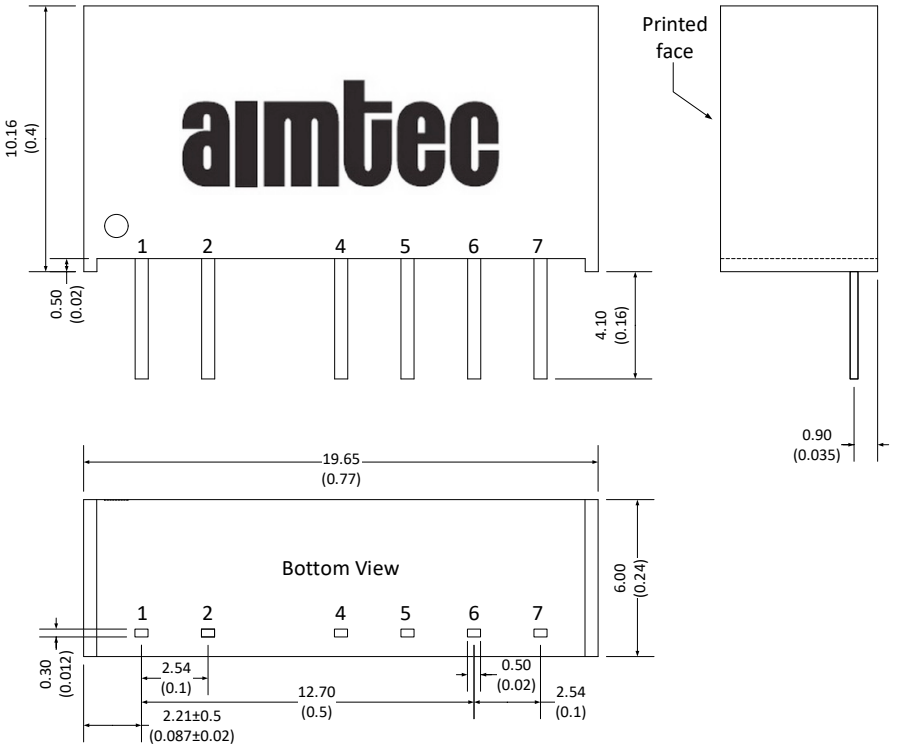
12/15/24Vin models

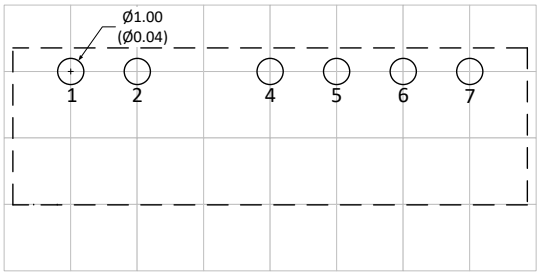




Isolation	C1/C2	CY
1.5KV	4.7µF/50V	270pF/2kVdc
3KV	4.7µF/50V	270pF/3kVdc

Dimensions





Grid size: 2.54*2.54mm

Note:
Unit: mm(inch)
General tolerance: ±0.25 (0.01)
Pin tolerance: ±0.1 (0.004)

Pin Out Specifications				
Pin	1.5KV isolation Single output	1.5KV isolation Dual output	3KV isolation Single output	3KV isolation Dual output
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
4	-V Output	-V Output	No pin	No pin
5	No pin	Com	-V Output	-V Output
6	+V Output	+V Output	No pin	Com
7	No pin	No pin	+V Output	+V Output

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