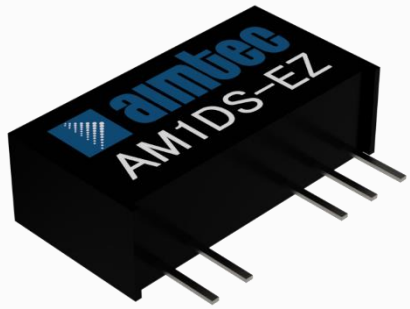
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AM1DS-EZ



SIP7 Package

The AM1DS-EZ 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 3.3-24VDC as well as an output voltage of -24 to 24V. This compact SIP7 design will surely benefit your new system design.

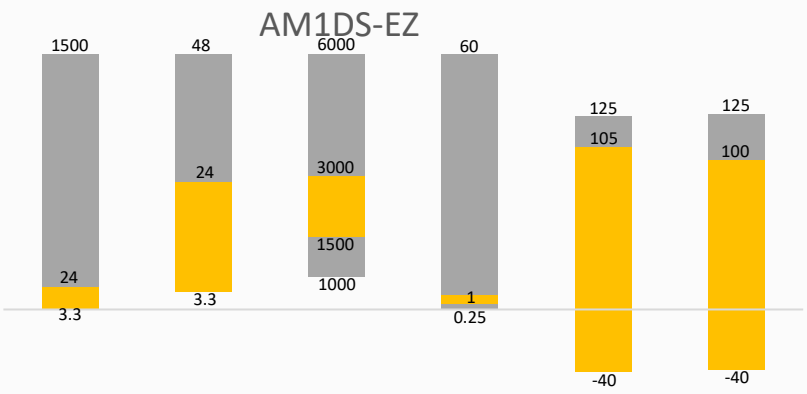
This new series offers great operating temperatures, from -40 to 105°C with full power up to 100°C. Also, an isolation of 1500VDC or 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

The AM1DS-EZ is suitable for many applications such as for instrumentation, industrial control, industrial applications, communication and IoT applications.

Features

- Continuous Short circuit protection
- Operating Temp: -40 °C to +105 °C
- Industry standard SIP7 pin-out
- Efficiency up to 87%
- Unregulated output
- Certified: UL/cUL 62368-1
- Designed to Meet IEC/EN 62368-1
- Made in Taiwan

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)	Output Current max (mA)	Isolation VDC)	Maximum capacitive Load (µF)	Efficiency Typ. (%)
AM1DS-0303SEZ	3.3 (2.97-3.63)	3.3	303	1500	2400	76
AM1DS-0305SEZ	3.3 (2.97-3.63)	5	200	1500	2400	82
AM1DS-0309SEZ	3.3 (2.97-3.63)	9	112	1500	1000	83
AM1DS-0312SEZ	3.3 (2.97-3.63)	12	84	1500	470	84
AM1DS-0315SEZ	3.3 (2.97-3.63)	15	67	1500	330	84
AM1DS-0324SEZ	3.3 (2.97-3.63)	24	42	1500	100	85
AM1DS-0503SEZ	5 (4.5-5.5)	3.3	303	1500	2400	76
AM1DS-0505SEZ	5 (4.5-5.5)	5	200	1500	2400	82
AM1DS-0509SEZ	5 (4.5-5.5)	9	112	1500	1000	83
AM1DS-0512SEZ	5 (4.5-5.5)	12	84	1500	470	84
AM1DS-0515SEZ	5 (4.5-5.5)	15	67	1500	330	84
AM1DS-0524SEZ	5 (4.5-5.5)	24	42	1500	100	85
AM1DS-0903SEZ	9 (8.1-9.9)	3.3	303	1500	2400	76
AM1DS-0905SEZ	9 (8.1-9.9)	5	200	1500	2400	82
AM1DS-0909SEZ	9 (8.1-9.9)	9	112	1500	1000	83
AM1DS-0912SEZ	9 (8.1-9.9)	12	84	1500	470	84
AM1DS-0915SEZ	9 (8.1-9.9)	15	67	1500	330	84
AM1DS-0924SEZ	9 (8.1-9.9)	24	42	1500	100	85
AM1DS-1203SEZ	12 (9.6-14.4)	3.3	303	1500	2400	78
AM1DS-1205SEZ	12 (9.6-14.4)	5	200	1500	2400	82
AM1DS-1209SEZ	12 (9.6-14.4)	9	112	1500	1000	85
AM1DS-1212SEZ	12 (9.6-14.4)	12	84	1500	680	85
AM1DS-1215SEZ	12 (9.6-14.4)	15	67	1500	330	87
AM1DS-1224SEZ	12 (9.6-14.4)	24	42	1500	220	85
AM1DS-1503SEZ	15 (12-18)	3.3	303	1500	2400	78
AM1DS-1505SEZ	15 (12-18)	5	200	1500	2400	82
AM1DS-1509SEZ	15 (12-18)	9	112	1500	1000	85
AM1DS-1512SEZ	15 (12-18)	12	84	1500	680	85
AM1DS-1515SEZ	15 (12-18)	15	67	1500	330	87
AM1DS-1524SEZ	15 (12-18)	24	42	1500	220	85
AM1DS-2403SEZ	24 (19.2-28.8)	3.3	303	1500	2400	78
AM1DS-2405SEZ	24 (19.2-28.8)	5	200	1500	2400	82
AM1DS-2409SEZ	24 (19.2-28.8)	9	112	1500	1000	85
AM1DS-2412SEZ	24 (19.2-28.8)	12	84	1500	680	85
AM1DS-2415SEZ	24 (19.2-28.8)	15	67	1500	330	87
AM1DS-2424SEZ	24 (19.2-28.8)	24	42	1500	220	85
AM1DS-0303SH30EZ	3.3 (2.97-3.63)	3.3	303	3000	2400	76
AM1DS-0305SH30EZ	3.3 (2.97-3.63)	5	200	3000	2400	82
AM1DS-0309SH30EZ	3.3 (2.97-3.63)	9	112	3000	1000	83
AM1DS-0312SH30EZ	3.3 (2.97-3.63)	12	84	3000	470	84
AM1DS-0315SH30EZ	3.3 (2.97-3.63)	15	67	3000	330	84
AM1DS-0324SH30EZ	3.3 (2.97-3.63)	24	42	3000	100	85
AM1DS-0503SH30EZ	5 (4.5-5.5)	3.3	303	3000	2400	76
AM1DS-0505SH30EZ	5 (4.5-5.5)	5	200	3000	2400	82

AM1DS-0509SH30EZ	5 (4.5-5.5)	9	112	3000	1000	83
AM1DS-0512SH30EZ	5 (4.5-5.5)	12	84	3000	470	84
AM1DS-0515SH30EZ	5 (4.5-5.5)	15	67	3000	330	84
AM1DS-0524SH30EZ	5 (4.5-5.5)	24	42	3000	100	85
AM1DS-0903SH30EZ	9 (8.1-9.9)	3.3	303	3000	2400	76
AM1DS-0905SH30EZ	9 (8.1-9.9)	5	200	3000	2400	82
AM1DS-0909SH30EZ	9 (8.1-9.9)	9	112	3000	1000	83
AM1DS-0912SH30EZ	9 (8.1-9.9)	12	84	3000	470	84
AM1DS-0915SH30EZ	9 (8.1-9.9)	15	67	3000	330	84
AM1DS-0924SH30EZ	9 (8.1-9.9)	24	42	3000	100	85
AM1DS-1203SH30EZ	12 (9.6-14.4)	3.3	303	3000	2400	78
AM1DS-1205SH30EZ	12 (9.6-14.4)	5	200	3000	2400	82
AM1DS-1209SH30EZ	12 (9.6-14.4)	9	112	3000	1000	85
AM1DS-1212SH30EZ	12 (9.6-14.4)	12	84	3000	680	85
AM1DS-1215SH30EZ	12 (9.6-14.4)	15	67	3000	330	87
AM1DS-1224SH30EZ	12 (9.6-14.4)	24	42	3000	220	85
AM1DS-1503SH30EZ	15 (12-18)	3.3	303	3000	2400	78
AM1DS-1505SH30EZ	15 (12-18)	5	200	3000	2400	82
AM1DS-1509SH30EZ	15 (12-18)	9	112	3000	1000	85
AM1DS-1512SH30EZ	15 (12-18)	12	84	3000	680	85
AM1DS-1515SH30EZ	15 (12-18)	15	67	3000	330	87
AM1DS-1524SH30EZ	15 (12-18)	24	42	3000	220	85
AM1DS-2403SH30EZ	24 (19.2-28.8)	3.3	303	3000	2400	78
AM1DS-2405SH30EZ	24 (19.2-28.8)	5	200	3000	2400	82
AM1DS-2409SH30EZ	24 (19.2-28.8)	9	112	3000	1000	85
AM1DS-2412SH30EZ	24 (19.2-28.8)	12	84	3000	680	85
AM1DS-2415SH30EZ	24 (19.2-28.8)	15	67	3000	330	87
AM1DS-2424SH30EZ	24 (19.2-28.8)	24	42	3000	220	85

Dual Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (mA)	Isolation VDC)	Maximum capacitive Load (µF)	Efficiency Typ. (%)
AM1DS-0303DEZ	3.3 (2.97-3.63)	±3.3	±151	1500	±1200	76
AM1DS-0305DEZ	3.3 (2.97-3.63)	±5	±100	1500	±1200	82
AM1DS-0309DEZ	3.3 (2.97-3.63)	±9	±56	1500	±470	83
AM1DS-0312DEZ	3.3 (2.97-3.63)	±12	±42	1500	±220	84
AM1DS-0315DEZ	3.3 (2.97-3.63)	±15	±34	1500	±220	84
AM1DS-0324DEZ	3.3 (2.97-3.63)	±24	±21	1500	±47	85
AM1DS-0503DEZ	5 (4.5-5.5)	±3.3	±151	1500	±1200	76
AM1DS-0505DEZ	5 (4.5-5.5)	±5	±100	1500	±1200	82
AM1DS-0509DEZ	5 (4.5-5.5)	±9	±56	1500	±470	83
AM1DS-0512DEZ	5 (4.5-5.5)	±12	±42	1500	±220	84
AM1DS-0515DEZ	5 (4.5-5.5)	±15	±34	1500	±220	84
AM1DS-0524DEZ	5 (4.5-5.5)	±24	±21	1500	±47	85
AM1DS-0903DEZ	9 (8.1-9.9)	±3.3	±151	1500	±1200	76
AM1DS-0905DEZ	9 (8.1-9.9)	±5	±100	1500	±1200	82
AM1DS-0909DEZ	9 (8.1-9.9)	±9	±56	1500	±470	83
AM1DS-0912DEZ	9 (8.1-9.9)	±12	±42	1500	±220	84
AM1DS-0915DEZ	9 (8.1-9.9)	±15	±34	1500	±220	84

AM1DS-0924DEZ	9 (8.1-9.9)	±24	±21	1500	±47	85
AM1DS-1203DEZ	12 (9.6-14.4)	±3.3	±151	1500	±1200	78
AM1DS-1205DEZ	12 (9.6-14.4)	±5	±100	1500	±1200	82
AM1DS-1209DEZ	12 (9.6-14.4)	±9	±56	1500	±680	85
AM1DS-1212DEZ	12 (9.6-14.4)	±12	±42	1500	±330	85
AM1DS-1215DEZ	12 (9.6-14.4)	±15	±34	1500	±220	87
AM1DS-1224DEZ	12 (9.6-14.4)	±24	±21	1500	±100	85
AM1DS-1503DEZ	15 (12-18)	±3.3	±151	1500	±1200	78
AM1DS-1505DEZ	15 (12-18)	±5	±100	1500	±1200	82
AM1DS-1509DEZ	15 (12-18)	±9	±56	1500	±680	85
AM1DS-1512DEZ	15 (12-18)	±12	±42	1500	±330	85
AM1DS-1515DEZ	15 (12-18)	±15	±34	1500	±220	87
AM1DS-1524DEZ	15 (12-18)	±24	±21	1500	±100	85
AM1DS-2403DEZ	24 (19.2-28.8)	±3.3	±151	1500	±1200	78
AM1DS-2405DEZ	24 (19.2-28.8)	±5	±100	1500	±1200	82
AM1DS-2409DEZ	24 (19.2-28.8)	±9	±56	1500	±680	85
AM1DS-2412DEZ	24 (19.2-28.8)	±12	±42	1500	±330	85
AM1DS-2415DEZ	24 (19.2-28.8)	±15	±34	1500	±220	87
AM1DS-2424DEZ	24 (19.2-28.8)	±24	±21	1500	±100	85
AM1DS-0303DH30EZ	3.3 (2.97-3.63)	±3.3	±151	3000	±1200	76
AM1DS-0305DH30EZ	3.3 (2.97-3.63)	±5	±100	3000	±1200	82
AM1DS-0309DH30EZ	3.3 (2.97-3.63)	±9	±56	3000	±470	83
AM1DS-0312DH30EZ	3.3 (2.97-3.63)	±12	±42	3000	±220	84
AM1DS-0315DH30EZ	3.3 (2.97-3.63)	±15	±34	3000	±220	84
AM1DS-0324DH30EZ	3.3 (2.97-3.63)	±24	±21	3000	±47	85
AM1DS-0503DH30EZ	5 (4.5-5.5)	±3.3	±151	3000	±1200	76
AM1DS-0505DH30EZ	5 (4.5-5.5)	±5	±100	3000	±1200	82
AM1DS-0509DH30EZ	5 (4.5-5.5)	±9	±56	3000	±470	83
AM1DS-0512DH30EZ	5 (4.5-5.5)	±12	±42	3000	±220	84
AM1DS-0515DH30EZ	5 (4.5-5.5)	±15	±34	3000	±220	84
AM1DS-0524DH30EZ	5 (4.5-5.5)	±24	±21	3000	±47	85
AM1DS-0903DH30EZ	9 (8.1-9.9)	±3.3	±151	3000	±1200	76
AM1DS-0905DH30EZ	9 (8.1-9.9)	±5	±100	3000	±1200	82
AM1DS-0909DH30EZ	9 (8.1-9.9)	±9	±56	3000	±470	83
AM1DS-0912DH30EZ	9 (8.1-9.9)	±12	±42	3000	±220	84
AM1DS-0915DH30EZ	9 (8.1-9.9)	±15	±34	3000	±220	84
AM1DS-0924DH30EZ	9 (8.1-9.9)	±24	±21	3000	±47	85
AM1DS-1203DH30EZ	12 (9.6-14.4)	±3.3	±151	3000	±1200	78
AM1DS-1205DH30EZ	12 (9.6-14.4)	±5	±100	3000	±1200	82
AM1DS-1209DH30EZ	12 (9.6-14.4)	±9	±56	3000	±680	85
AM1DS-1212DH30EZ	12 (9.6-14.4)	±12	±42	3000	±330	85
AM1DS-1215DH30EZ	12 (9.6-14.4)	±15	±34	3000	±220	87
AM1DS-1224DH30EZ	12 (9.6-14.4)	±24	±21	3000	±100	85
AM1DS-1503DH30EZ	15 (12-18)	±3.3	±151	3000	±1200	78
AM1DS-1505DH30EZ	15 (12-18)	±5	±100	3000	±1200	82
AM1DS-1509DH30EZ	15 (12-18)	±9	±56	3000	±680	85
AM1DS-1512DH30EZ	15 (12-18)	±12	±42	3000	±330	85
AM1DS-1515DH30EZ	15 (12-18)	±15	±34	3000	±220	87
AM1DS-1524DH30EZ	15 (12-18)	±24	±21	3000	±100	85

AM1DS-2403DH30EZ	24 (19.2-28.8)	±3.3	±151	3000	±1200	78
AM1DS-2405DH30EZ	24 (19.2-28.8)	±5	±100	3000	±1200	82
AM1DS-2409DH30EZ	24 (19.2-28.8)	±9	±56	3000	±680	85
AM1DS-2412DH30EZ	24 (19.2-28.8)	±12	±42	3000	±330	85
AM1DS-2415DH30EZ	24 (19.2-28.8)	±15	±34	3000	±220	87
AM1DS-2424DH30EZ	24 (19.2-28.8)	±24	±21	3000	±100	85

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Filter	Capacitor			
Voltage rating	Vo, Io Nom @Vin: 3.3V,5V,9V	±10		VDC
	Vo, Io Nom @ Vin:12V,15V,24V	±20		VDC

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec / 0.5mA, SEZ and DEZ models	1500		VDC
	60 sec / 0.5mA, SH30EZ and DH30EZ models	3000		VDC
Resistance	500VDC	>1000		MΩ
Capacitance	100kHz/0.1V	20		pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	100% full load		±5	%
Line regulation	Per 1% Vin change	1.2		%
Load regulation	10-100% load, 3.3Vout model	15	20	%
	10-100% load, 5Vout model	10	15	%
	10-100% load, 9Vout model	8	10	%
	10-100% load, 12Vout model	7	10	%
	10-100% load, 15Vout model	6	10	%
	10-100% load, 24Vout model	5	10	%
Ripple & Noise*	3.3V, 5V, 9V, 12V, 15Vout models	30	75	mV pk-pk
	24Vout model	50	100	mV pk-pk

* Ripple and Noise are measured at 20MHz bandwidth. Please refer to Typical test circuit.

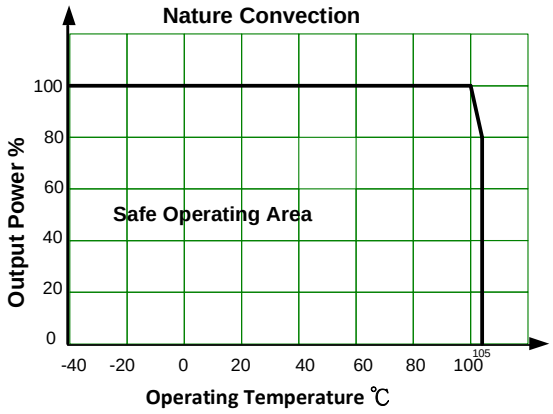
General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input, @3.3V 5V Vin models	215/370		KHz
	Full load, nominal input, other Vin models	250		KHz
Short circuit protection	Continuous			
Operating temperature	With derating	-40 to +105		°C
Storage temperature		-55 to +125		°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	DAP			
Weight		2.1		g
Dimensions (L x W x H)	0.77 x 0.24 x 0.39 inches (19.50 x 6.00 x 10.00 mm)			
MTBF	3 500 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			

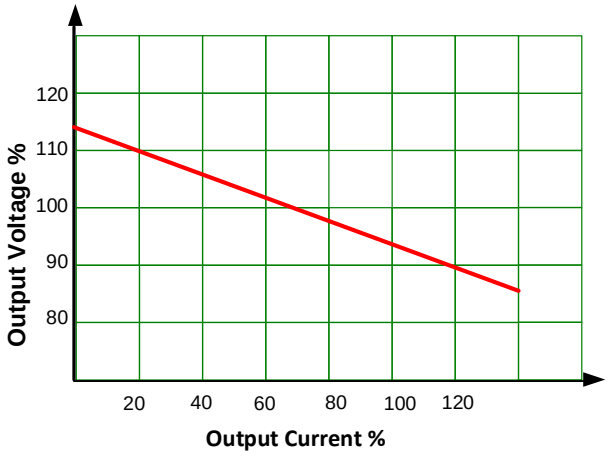
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications		
Parameters		
Agency Approvals	UL/cUL 62368-1	
Standards	Information technology Equipment	Design to meet IEC/EN 62368-1
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B. See Recommended EMC circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2 Air ±8KV, Contact ±6KV, Criteria B

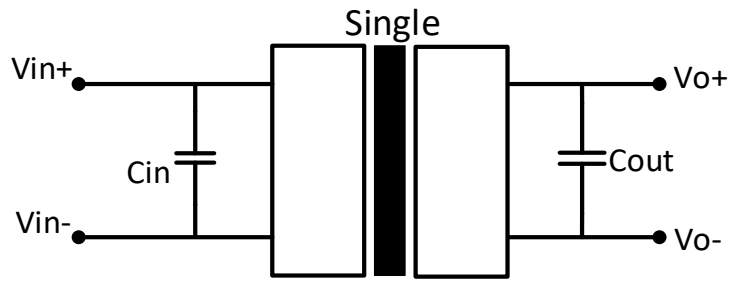
Derating

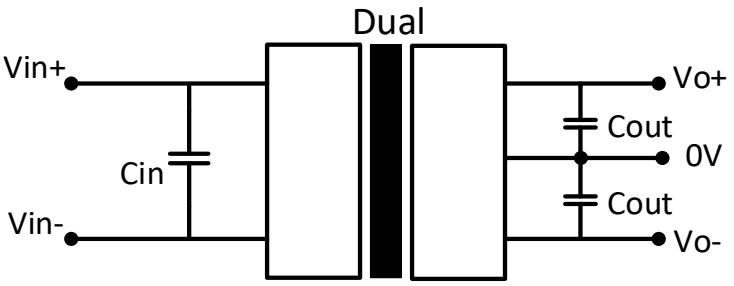


Tolerance Envelop Graph



Typical test circuit



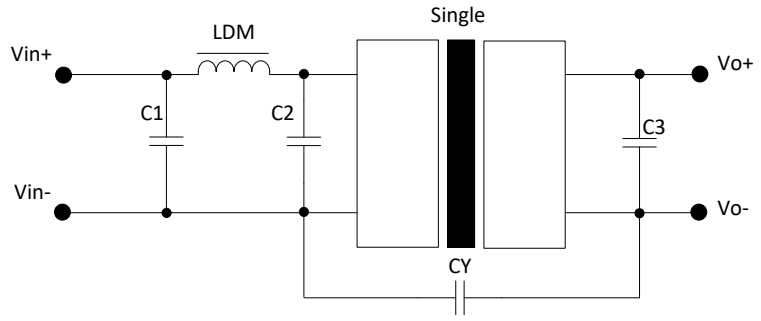


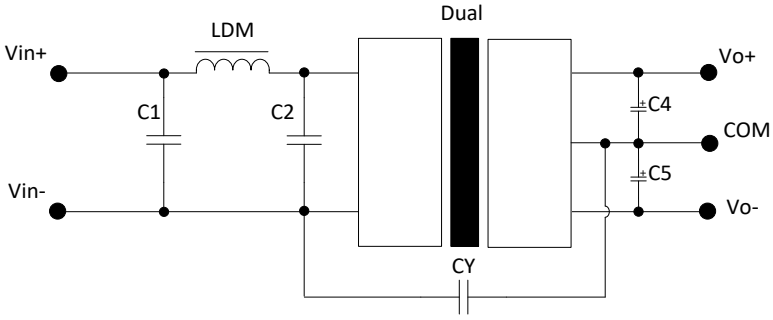
Vin	Cin
3.3VDC	4.7μF/25V
5VDC	4.7μF/25V
9VDC	4.7μF/25V
12VDC	2.2μF/25V
15VDC	2.2μF/25V
24VDC	1μF/50V

Single Vout	Cout
3.3VDC	10μF/16V
5VDC	10μF/16V
9VDC	2.2μF/16V
12VDC	2.2μF/25V
15VDC	1μF/25V
24VDC	1μF/50V

Dual Vout	Cout
±3.3VDC	±4.7μF/16V
±5VDC	±4.7μF/16V
±9VDC	±1μF/16V
±12VDC	±1μF/25V
±15VDC	±1μF/25V
±24VDC	±1μF/50V

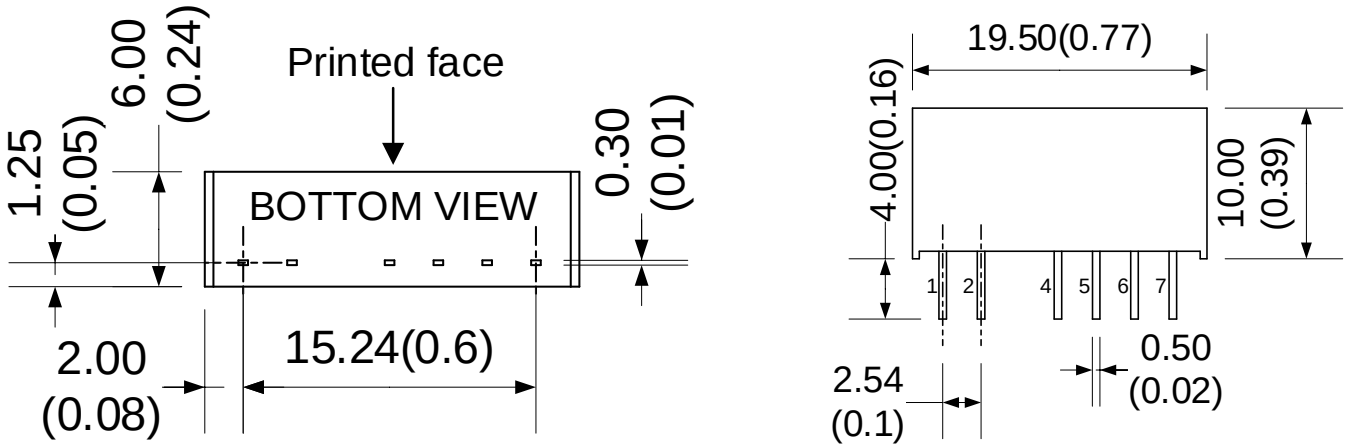
Recommended EMC circuit





EMC recommended circuit value table	
C1	4.7μF/50V
C2	4.7μF/50V
C3,C4,C5	Refer Typical test circuit
LDM	6.8μH
CY	1nF/4kV

Dimensions



Note:
Unit: mm(inch)
General tolerances: ±0.25(±0.010)

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

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.