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AM1DR-JZ



SIP7 Package

The AM1DR-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.

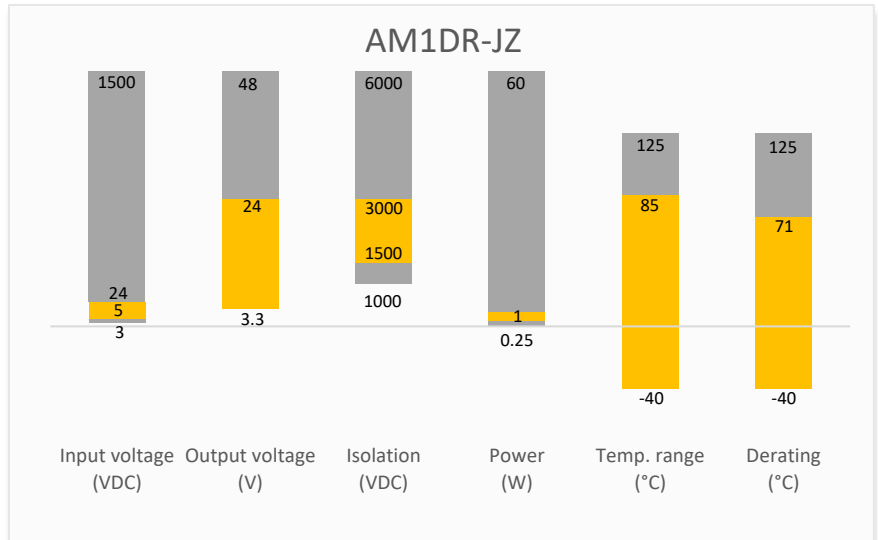
This new series offers great operating temperatures, from -40 to 85°C with full power up to 71°C. Also, an isolation of 1500 or 3000VDC improves reliability and system safety and a 3,500,000h MTBF comes standard.

The AM1DR-JZ is suitable for instrumentation, industrial controls, communication and IoT applications.

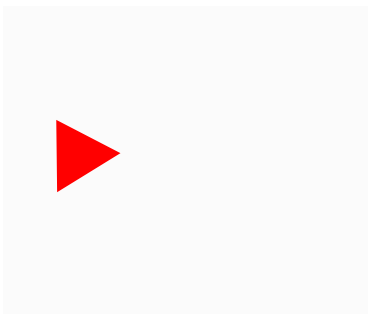
Features

- High I/O Isolation of 1500/3000VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +85 °C
- Industry standard SIP7 pin-out
- Efficiency up to 75%
- Regulated output

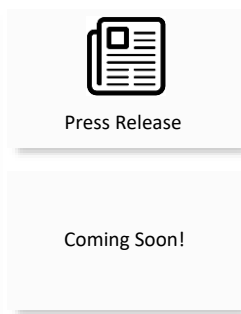
Summary



Training



Product Training Video
(click to open)



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. (%)
AM1DR-0503SJZ	5 (4.75-5.25)	3.3	286 / 5	250 / 25	1500	2400	67
AM1DR-0505SJZ	5 (4.75-5.25)	5	286 / 5	200 / 20	1500	2400	70
AM1DR-0509SJZ	5 (4.75-5.25)	9	282 / 12	111 / 12	1500	1000	71
AM1DR-0512SJZ	5 (4.75-5.25)	12	282 / 12	84 / 9	1500	560	72
AM1DR-0515SJZ	5 (4.75-5.25)	15	274 / 18	67 / 7	1500	560	73
AM1DR-0524SJZ	5 (4.75-5.25)	24	274 / 18	41 / 4	1500	100	73
AM1DR-1205SJZ	12 (11.4-12.6)	5	115 / 8	200 / 20	1500	2400	73
AM1DR-1209SJZ	12 (11.4-12.6)	9	115 / 8	111 / 12	1500	1000	73
AM1DR-1212SJZ	12 (11.4-12.6)	12	115 / 8	83 / 9	1500	560	73
AM1DR-1215SJZ	12 (11.4-12.6)	15	112 / 8	67 / 7	1500	560	75
AM1DR-1505SJZ	15 (14.25-15.75)	5	92 / 8	200 / 20	1500	2400	73
AM1DR-1515SJZ	15 (14.25-15.75)	15	89 / 8	67 / 7	1500	560	75
AM1DR-2403SJZ	24 (22.8-25.2)	3.3	59 / 8	250 / 25	1500	2400	71
AM1DR-2405SJZ	24 (22.8-25.2)	5	58 / 8	200 / 20	1500	2400	73
AM1DR-2409SJZ	24 (22.8-25.2)	9	58 / 8	111 / 12	1500	1000	73
AM1DR-2412SJZ	24 (22.8-25.2)	12	58 / 8	83 / 9	1500	560	73
AM1DR-2415SJZ	24 (22.8-25.2)	15	58 / 8	67 / 7	1500	560	73
AM1DR-0503SH30JZ	5 (4.75-5.25)	3.3	286 / 5	250 / 25	3000	2400	67
AM1DR-0505SH30JZ	5 (4.75-5.25)	5	286 / 5	200 / 20	3000	2400	70
AM1DR-0509SH30JZ	5 (4.75-5.25)	9	282 / 12	111 / 12	3000	1000	71
AM1DR-0512SH30JZ	5 (4.75-5.25)	12	282 / 12	84 / 9	3000	560	72
AM1DR-0515SH30JZ	5 (4.75-5.25)	15	274 / 18	67 / 7	3000	560	73
AM1DR-0524SH30JZ	5 (4.75-5.25)	24	274 / 18	41 / 4	3000	100	73
AM1DR-1205SH30JZ	12 (11.4-12.6)	5	115 / 8	200 / 20	3000	2400	73
AM1DR-1209SH30JZ	12 (11.4-12.6)	9	115 / 8	111 / 12	3000	1000	73
AM1DR-1212SH30JZ	12 (11.4-12.6)	12	115 / 8	83 / 9	3000	560	73
AM1DR-1215SH30JZ	12 (11.4-12.6)	15	112 / 8	67 / 7	3000	560	75
AM1DR-1505SH30JZ	15 (14.25-15.75)	5	92 / 8	200 / 20	3000	2400	73
AM1DR-1515SH30JZ	15 (14.25-15.75)	15	89 / 8	67 / 7	3000	560	75
AM1DR-2403SH30JZ	24 (22.8-25.2)	3.3	59 / 8	250 / 25	3000	2400	71
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AM1DR-2412SH30JZ	24 (22.8-25.2)	12	58 / 8	83 / 9	3000	560	73
AM1DR-2415SH30JZ	24 (22.8-25.2)	15	58 / 8	67 / 7	3000	560	73

* Converters must be operated within the required output range.

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Filter	Capacitor			
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 \leq 1mA	>1500		VDC
	60 sec, leakage \leq 1mA for H30 models	>3000		VDC
Resistance	500VDC	>1000		M Ω
Capacitance	100kHz/0.1V	20		pF

Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			\pm 3	%
Line regulation	Per 1% Vin change		\pm 0.25	%
Load regulation	10-100% load, 3.3Vout		\pm 3	%
	10-100% load, others		\pm 2	%
Ripple & Noise*	5Vin, 24Vout models	50	100	mV pk-pk
	5Vin, other models	30	75	mV pk-pk
	12/15/24Vin, 15Vout models	80	150	mV pk-pk
	12/15/24Vin, other models	30	100	mV pk-pk
Temperature coefficient		\pm 0.02		%/ $^{\circ}$ C

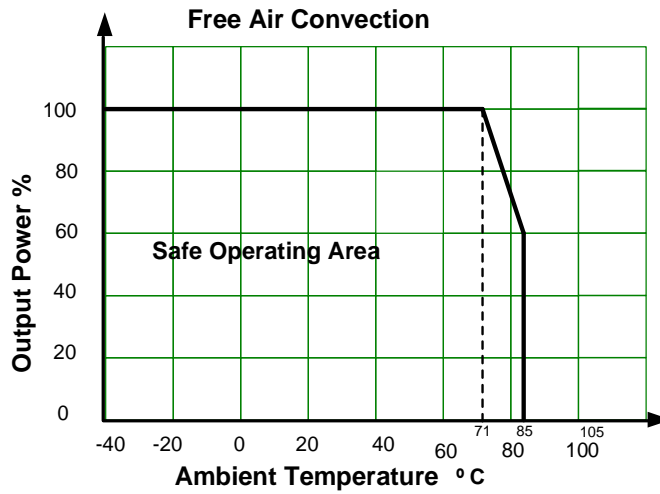
* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific details.

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 at 71 $^{\circ}$ C	-40 to +85		$^{\circ}$ C
Storage temperature		-55 to +125		$^{\circ}$ C
Case temperature rise	Ambient temperature at 25 $^{\circ}$ C, 5Vin, 5/9/12/15/24 models	25		$^{\circ}$ C
	Ambient temperature at 25 $^{\circ}$ C, other models	30		$^{\circ}$ C
Manual soldering temperature	1.5mm away from case, duration \leq 10sec		300	$^{\circ}$ C
Cooling	Free air convection			
Humidity	Non-condensing	>5	95	% RH
Vibration	10-150Hz, 5G, 30Min, along all axis			
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 $^{\circ}$ C) / Full Load			

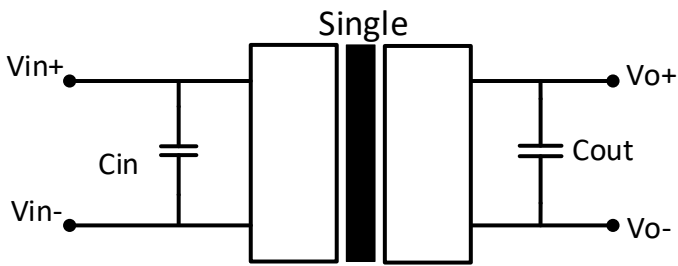
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25 $^{\circ}$ C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications		
Parameters		
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 \pm 8KV, Contact \pm 4KV, Criteria B for 5Vin models IEC 61000-4-2 Contact \pm 6KV, Criteria B for 12/15/24Vin models

Derating



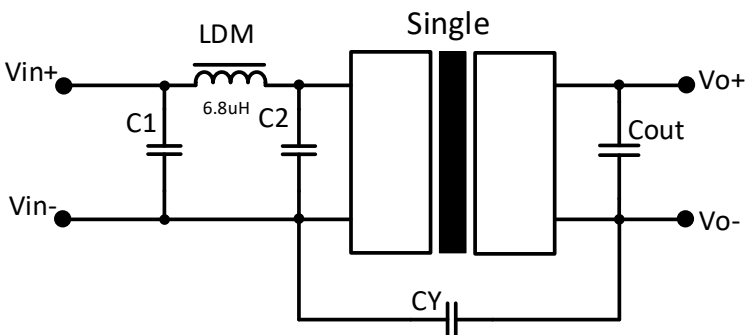
Typical application circuit



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

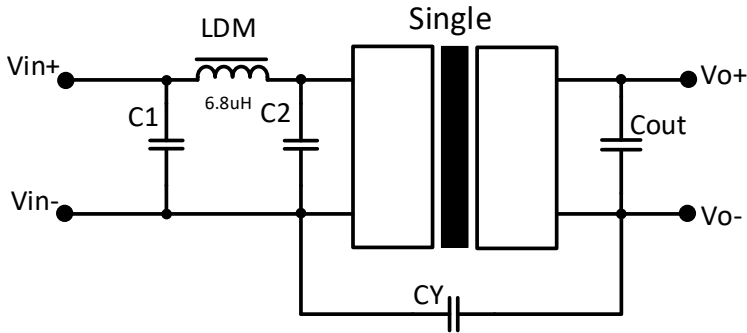
Recommended EMI circuit

5Vin models



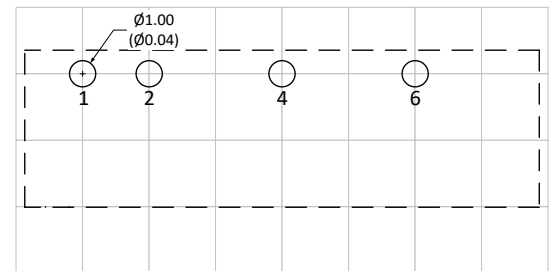
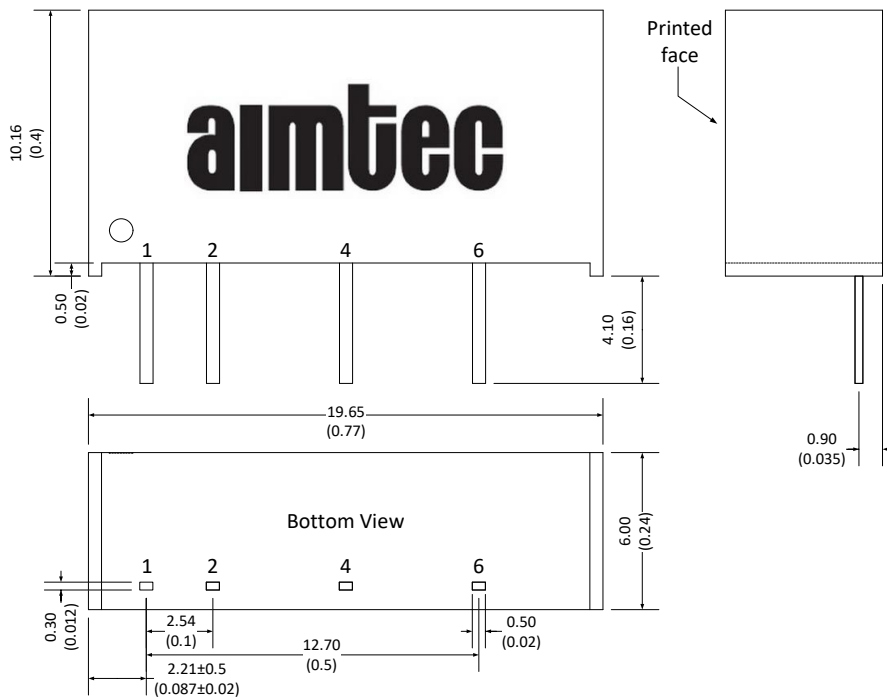
Vout	C1/C2	CY
3.3/5/9V	4.7μF/25V	-
12/15/24V	4.7μF/25V	1nF/4kVdc

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	Single
1	+V Input
2	-V Input
4	-V Output
6	+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 than the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.