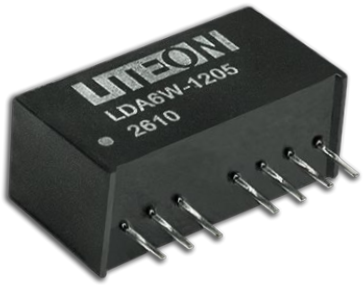
6W SIP8 DC/DC Converter

LDA6W Series



Learn More

Description

The LDA6W series is a compact 6W isolated DC-DC converter housed in a SIP-8 package, supporting wide nominal input voltages of 5V, 12V, 24V and 48V DC. It provides stable single outputs from 3.3V to 15V with efficiencies up to 88%, high isolation up to 1.6kVDC, and reliable operation from −40°C to +100°C. Designed to meet EN62368-1 standards, it is ideal for industrial control, Telecom/ Datacom and semiconductor euuipment applications.

Features

- Smallest footprint 6W converter
- 1.6KVDC Isolated Voltage
- Efficiency up to 88%
- -40°C to +100°C operating temperature with derating
- Continuous short circuit protection
- UVLO, remote ON/OFF, OLP and trim function

Applications

- Wireless Network
- Small Space For DC Power Application
- Industry Control System
- Semiconductor Equipment
- Telecom / Datacom
- Distributed Power Archnitechures

Model Numbering

LDA 6W – 05 12 D

- 12 → Output Voltage: (±) output voltage
- 05 → Output Voltage: 3.3V/5V/12V/15V/±5/±12V/±15V
- 05 → Input Voltage: 5V/12V/24V/48V
- 6W → Wattage: 6W
- LDA → Series Name

No. 90, Jian 1st Rd., Zhonghe Dist., New Taipei City 23545, Taiwan

Model Selection Guide

Part No.	Input Voltage	Output Voltage	Output Current @ Full Load	Efficiency (1) (Typ)	Capacitor Load (2) (Max.)
LDA6W-053.3	4.5-9 VDC (5 VDC nominal)	3.3 VDC	1300mA	83%	6600µF
LDA6W-0505		5 VDC	1200mA	86%	3300µF
LDA6W-0512		12 VDC	500mA	87%	1600µF
LDA6W-0515		15 VDC	400mA	86%	1400µF
LDA6W-0505D		±5VDC	±600mA	84%	±2000µF
LDA6W-0512D		±12VDC	±250mA	87%	±900µF
LDA6W-0515D		±15VDC	±200mA	86.5%	±660µF
LDA6W-123.3	9-18 VDC (12 VDC nominal)	3.3 VDC	1300mA	81%	6600µF
LDA6W-1205		5 VDC	1200mA	86%	3300µF
LDA6W-1212		12 VDC	500mA	87%	1600µF
LDA6W-1215		15 VDC	400mA	87.5%	1400µF
LDA6W-1205D		±5VDC	±600mA	85%	±2000µF
LDA6W-1212D		±12VDC	±250mA	87%	±900µF
LDA6W-1215D		±15VDC	±200mA	87.5%	±660µF
LDA6W-243.3	18-36 VDC (24 VDC nominal)	3.3 VDC	1300mA	84.5%	6600µF
LDA6W-2405		5 VDC	1200mA	87.5%	3300µF
LDA6W-2412		12 VDC	500mA	87%	1600µF
LDA6W-2415		15 VDC	400mA	87%	1400µF
LDA6W-2405D		±5VDC	±600mA	85%	±2000µF
LDA6W-2412D		±12VDC	±250mA	87.5%	±900µF
LDA6W-2415D		±15VDC	±200mA	87.5%	±660µF
LDA6W-483.3	36-75 VDC (48 VDC nominal)	3.3 VDC	1300mA	81%	6600µF
LDA6W-4805		5 VDC	1200mA	87.5%	3300µF
LDA6W-4812		12 VDC	500mA	87.5%	1600µF
LDA6W-4815		15 VDC	400mA	88%	1400µF
LDA6W-4805D		±5VDC	±600mA	85%	±2000µF
LDA6W-4812D		±12VDC	±250mA	87%	±900µF
LDA6W-4815D		±15VDC	±200mA	88%	±660µF

Notes

#1: The efficiency is test by nominal input and max. full load @ 25℃

#2: The capacitive load is test by minimum input and constant resistive load.

#3: All specifications valid at nominal input voltage, full load and 25℃ unless otherwise stated.

Electrical Specification

Model Number		LDA6W-☐☐
Input		
Input Filter		Capacitor type
Input Voltage Range		2:1
Input Current At No Load	5Vin	105mA
	12Vin	55mA
	24Vin	28mA
	48Vin	14mA
Start-Up Times		2ms (100% load at nominal Vin)
Under Voltage Lockout	5Vin	DC/DC ON 4.5VDC; DC/DC OFF 2.7VDC
	12Vin	DC/DC ON 9VDC; DC/DC OFF 7VDC
	24Vin	DC/DC ON 18VDC; DC/DC OFF 15VDC
	48Vin	DC/DC ON 36VDC; DC/DC OFF 30VDC
Remote ON/OFF		DC-DC ON Open DC-DC OFF 5V ≦ Vr < 10V
Output		
Voltage Accuracy		± 1% (100% load at nominal Vin)
Voltage Adjustability		-8%-+10% (For Single Output)
Minimum Load		0%
Line Regulation (LL to HL at 100% load)		± 1%
Load Regulation (10% to 100% load)		± 1%
Cross Regulation (25% to 100% load)		± 5%
Ripple & Noise		50-75 mVp-p @20MHz BW (at Nominal Vin)
Environment		
Operating Temperature		-40-+100 ˚C with derating
Storage Temperature		-55-+125 ˚C
Max. Case Temperature		105˚C

Relative Humidity	5%-95% RH
Function	
Isolation Voltage	1.6 KVDC 1min. Input to Output 2KVDC 1sec. Input to Output
Isolation Resistance	1 GΩ
Isolation Capacitance (0% to 100% load)	110 pF
Operation Frequency	200KHz
Short Circuit Protection	Continuous, automatic recovery
Over Load Protection	150%
Transient Response	500uS @ 25% load step chnage
Temperature coefficient	± 0.02%/ ˚C
MTBF (MIL-HDBK-217F)	$1.776x10^6$ Hours (25˚C)
Vibration	MIL-STD-202G
Safety Approvals	UL/IEC62368-1 3rd
Physical	
Case Material	Non-conductive plastic (UL94-V0)
Dimension	21.8 x 11.1 x 9.2 mm
Weight	4.8 g
Electromagnetic Compatibility	
Electromagnetic Interference	EN 55032 (Class A/B) with external filter
Radiated Immunity(2)	IEC 61000-4-3, 10 V/m
Electrostatic Discharge(2)	IEC 61000-4-2, Air±8kV; Contact±6kV (Criteria A)
Electrical Fast Transient(2)	IEC 61000-4-4, ±2kV (Criteria A)
Surge Immunity(2)	IEC 61000-4-5, ±1kV (Criteria A)
Conducted Immunity(2)	IEC 61000-4-6, 10V/rms (Criteria A)

Notes

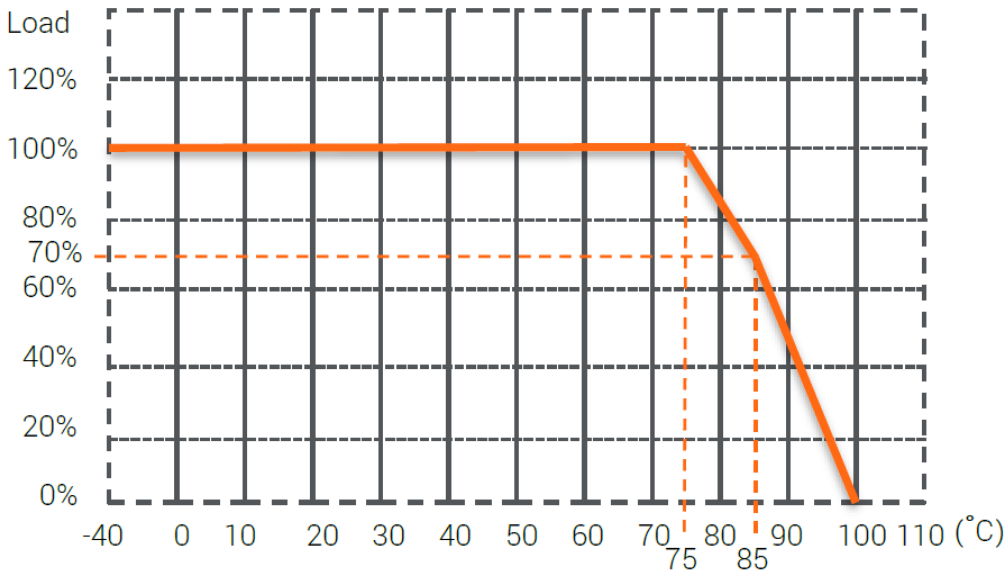
#1: All specifications valid at nominal input voltage, full load and 25˚C unless otherwise stated.

#2: The product information and specifications are subject to change without prior notice.

Mechanical Specification

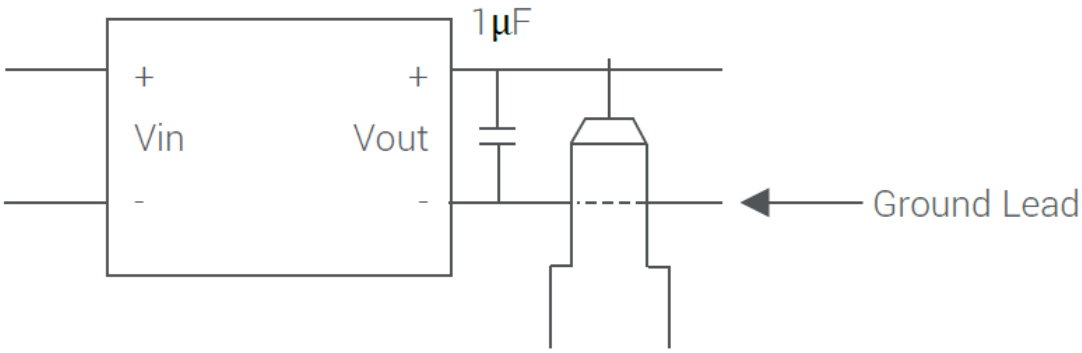
Derating Curve

LDA6W-0505 with natural convection

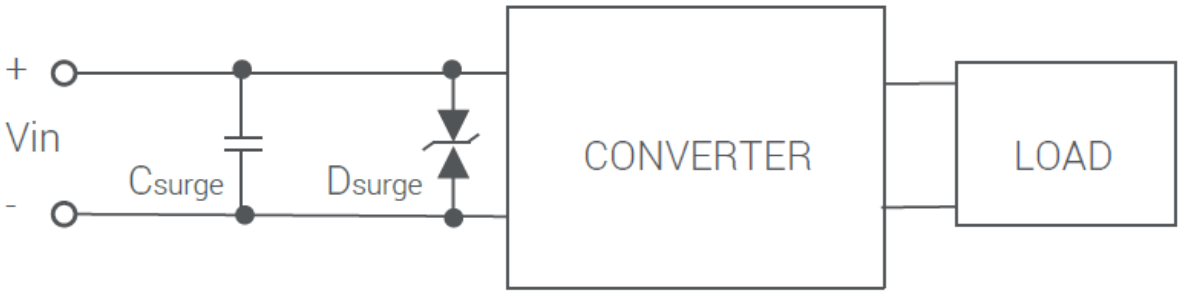


*Special operating temperature application, please contact our sales.

Ripple & Noise Measure Method

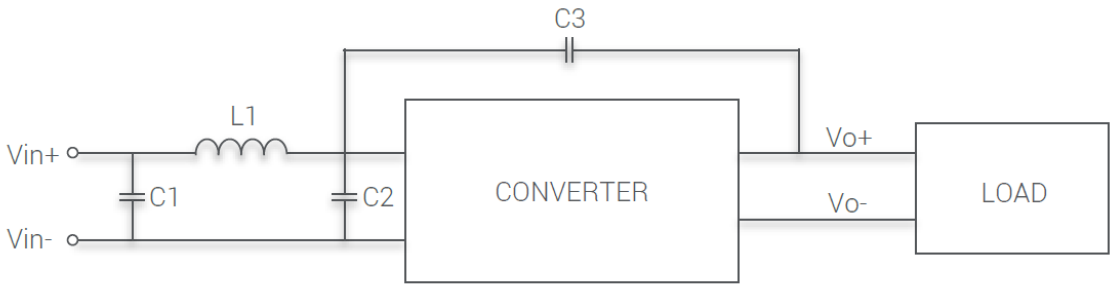


Surge Suggestion Circuit



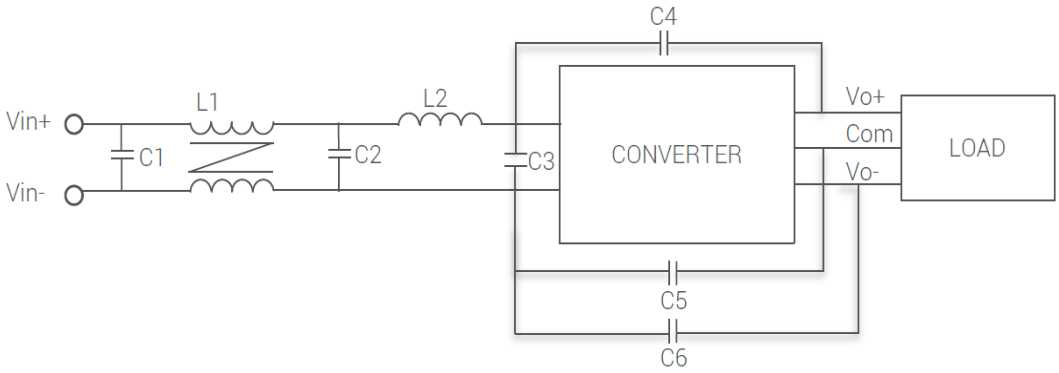
	Csurge	Dsurge
LDA6W-05XX	E-Cap (100V, 220μF)	TVS (P4SMAJ15CA)
LDA6W-12XX	E-Cap (100V, 220μF)	–
LDA6W-24XX	E-Cap (100V, 220μF)	–
LDA6W-48XX	E-Cap (100V, 220μF)	–

EMI Filtering-Suggestion for Class A/B



EN55032 Class A

Model	C1	C2	C3	L1
LDA6W-05XX	22μF	22μF	220pF	1.0μH
LDA6W-12XX	4.7μF	4.7μF	470pF	2.2μH
LDA6W-24XX	4.7μF	4.7μF	470pF	6.8μH
LDA6W-48XX	4.4μF	4.4μF	680pF	22μH



EN55032 Class B – Single Output

Model	C1	C2	C3	C4	C5	C6	L1	L2
LDA6W-05XX	22μF	10μF	10μF	680pF	100pF	NA	300μH	1μH
LDA6W-12XX	10μF	10μF	10μF	680pF	680pF	NA	300μH	6.8μH
LDA6W-24XX	4.7μF	4.7μF	4.7μF	680pF	680pF	NA	300μH	10μH
LDA6W-48XX	4.7μF	4.7μF	1μF	680pF	680pF	NA	600μH	22μH

EN55032 Class B – Dual Output

Model	C1	C2	C3	C4	C5	C6	L1	L2
LDA6W-05XX	22μF	10μF	10μF	100pF	100pF	100pF	300μH	1μH
LDA6W-12XX	10μF	10μF	10μF	680pF	680pF	220pF	300μH	6.8μH
LDA6W-24XX	4.7μF	4.7μF	4.7μF	680pF	680pF	220pF	300μH	10μH
LDA6W-48XX	4.7μF	4.7μF	1μF	680pF	680pF	330pF	600μH	22μH

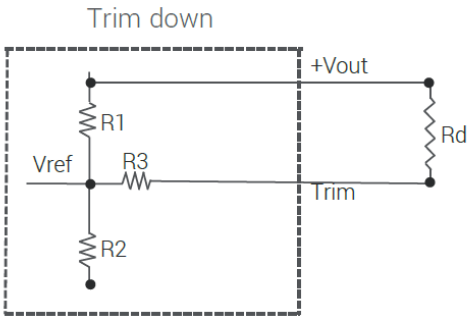
L1 Core: ACME A10 T6*3*3 (AL = 4μH/N^2 ±30%)

200μH = 0.4Φ*7T

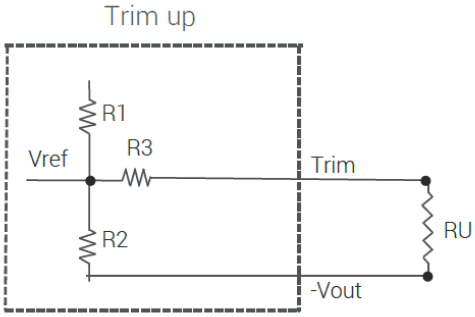
300μH = 0.36Φ*8T

600μH = 0.15Φ*12T

External Output Voltage Trimming



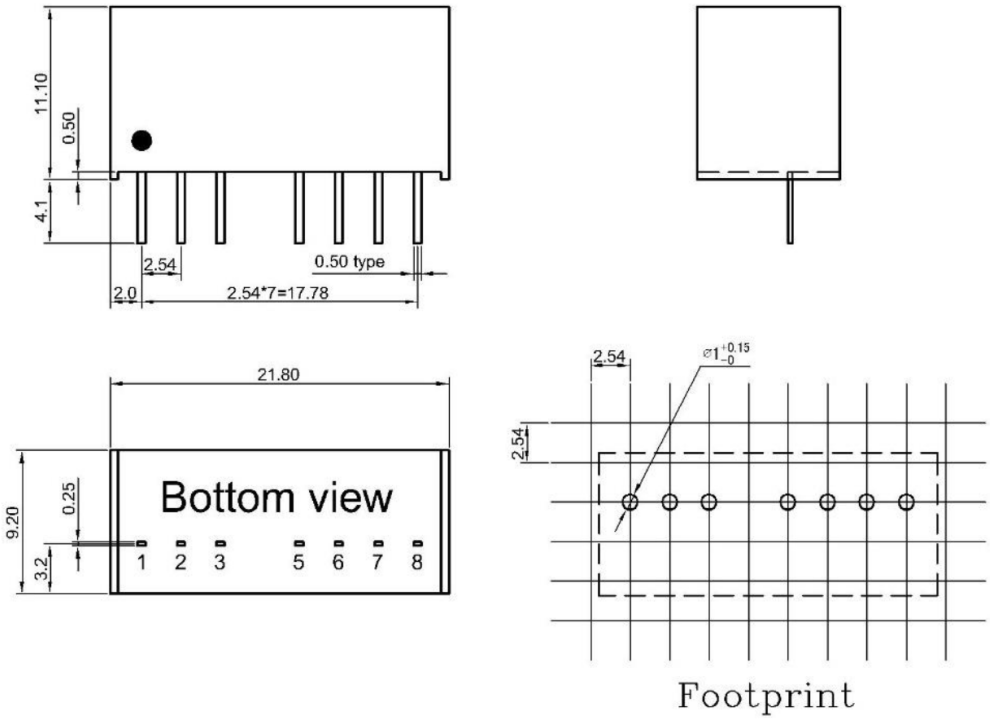
$$Rd = \frac{bR_1}{R_1 - b} - R_3 \qquad b = \frac{V_o' - V_{ref}}{V_{ref}} \cdot R_2$$



$$Ru = \frac{aR_2}{R_2 - a} - R_3 \qquad a = \frac{V_{ref}}{V_o' - V_{ref}} \cdot R_1$$

Model	M6WR-xx3.3	M6WR-xx05	M6WR-xx12	M6WR-xx15
R1	16.74 kΩ	10 kΩ	38 kΩ	50 kΩ
R2	10 kΩ	10 kΩ	10 kΩ	10 kΩ
R3	52.3 kΩ	39 kΩ	68 kΩ	68 kΩ
Vref	1.24 V	2.5 V	2.5 V	2.5 V

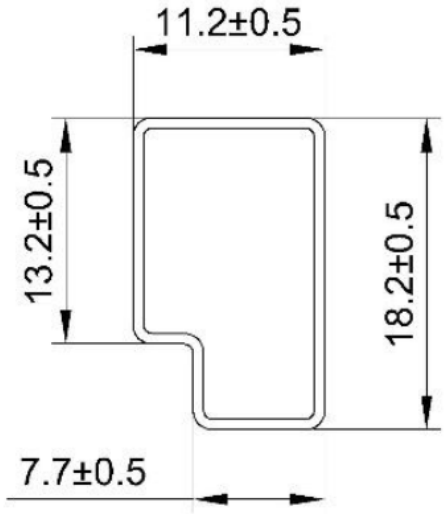
Mechanical Dimension & Pinning



Pin	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	Remote ON/OFF	Remote ON/OFF
5	Trim	NC
6	+Vout	+Vout
7	–Vout	COM
8	NC	–Vout

Package

Anti-static liquid tube



UNIT:mm
1 Tube = 22 pcs
Length:520±2mm