SERIES: DQD6 | DESCRIPTION: DC-DC CONVERTER

FEATURES

- up to 6 W isolated output
- single and dual regulated outputs
- over voltage, input under voltage, short circuit, and over current protections
- remote on/off control
- 1,500 Vdc isolation
- -40 ~ 85°C temperature range, with derating
- certified to IEC/EN 62368-1
- PCB, chassis and DIN-rail mount options

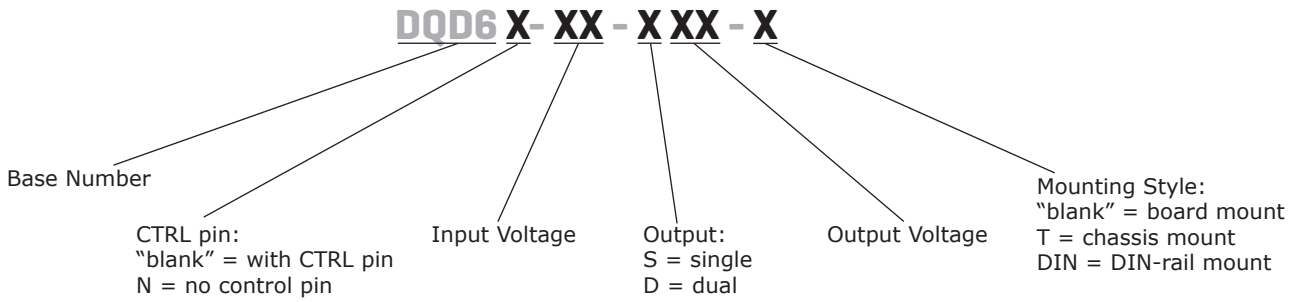
RoHS CE UKCA

MODEL	input voltage		output voltage	output current	output power	ripple & noise[1]	efficiency[2]
	typ (Vdc)	range (Vdc)	typ (Vdc)	max (mA)	max (W)	max (mVp-p)	typ (%)
DQD6-24-S3	24	9~36	3.3	1,500	4.95	100	77
DQD6-24-S5	24	9~36	5	1,200	6	100	83
DQD6-24-S9	24	9~36	9	667	6	100	84
DQD6-24-S12	24	9~36	12	500	6	100	85
DQD6-24-S15	24	9~36	15	400	6	100	86
DQD6-24-S24	24	9~36	24	250	6	100	86
DQD6-24-S40	24	9~36	40	150	6	100	86
DQD6-24-D5	24	9~36	±5	±600	6	100	82
DQD6-24-D9	24	9~36	±9	±333	6	100	84
DQD6-24-D12	24	9~36	±12	±250	6	100	85
DQD6-24-D15	24	9~36	±15	±200	6	100	86
DQD6-24-D24	24	9~36	±24	±125	6	100	86
DQD6-48-S3	48	18~75	3.3	1,500	4.95	100	80
DQD6-48-S5	48	18~75	5	1,200	6	100	84
DQD6-48-S9	48	18~75	9	667	6	100	85
DQD6-48-S12	48	18~75	12	500	6	100	87
DQD6-48-S15	48	18~75	15	400	6	100	88
DQD6-48-S24	48	18~75	24	250	6	100	87
DQD6-48-D5	48	18~75	±5	±600	6	100	83
DQD6-48-D9	48	18~75	±9	±333	6	100	84
DQD6-48-D12	48	18~75	±12	±250	6	100	87
DQD6-48-D15	48	18~75	±15	±200	6	100	88
DQD6-48-D24	48	18~75	±24	±125	6	100	86

Notes:
1. The ripple & noise ≤5%Vo at 0% ~ 5% load, it is tested by the twisted pair method. Please refer to the Ripple & noise test instructions below.
2. The efficiency is tested at full load.
3. Unless otherwise specified, all values or indicators in this manual are tested at Ta=25°C, humidity<75%RH, rated input voltage and rated load (pure resistance load).

Please read our datasheet & drawing disclaimer here.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
input voltage range	24 Vdc input models	9	24	36	Vdc
	48 Vdc input models	18	48	75	Vdc
surge voltage	1 second max				
	24 Vdc input models	-0.7		50	Vdc
	48 Vdc input models	-0.7		100	Vdc
turn-on voltage threshold	at full load				
	24 Vdc input models			9	Vdc
	48 Vdc input models			18	Vdc
turn-off voltage threshold	at full load				
	24 Vdc input models	5.5	6.5		Vdc
	48 Vdc input models	12	15		Vdc
filter	Pi filter				
reflected ripple current	at rated input voltage		20		mA
remote on/off	module on	CTRL pin opened or pulled high (3~12 Vdc) with respect to -Vin			
	module off	CTRL pin pulled low (0~1.2 Vdc) with respect to -Vin			

OUTPUT

parameter	conditions/description		min	typ	max	units
maximum capacitive load	3.3, 5 Vdc output models				2200	µF
	±5, 9 Vdc output models				1000	µF
	12, 15, 24 Vdc output models				680	µF
	40 Vdc output models				470	µF
	±9, ±12, ±15 Vdc output models				330	µF
	±24 Vdc output models				220	µF
voltage accuracy	5% ~ 100% load			±1	±3	%
	0% ~ 5% load	single output		±1	±3	%
		dual output		±2	±5	%
voltage balance	dual output			±0.5	±1.5	%
voltage regulation	full voltage range, full load	positive output		±0.2	±0.5	%
		negative output		±0.5	±1	%
load regulation	5% ~ 100% load	positive output		±0.5	±1	%
		negative output		±0.5	±1.5	%
transient response deviation	25% rated load step change			±3	±5	%
transient response recovery	25% rated load step change			300	500	µs
start-up time	at rated input voltage and constant resistance load			10		ms
temperature coefficient					±0.03	%/°C
switching frequency	PWM mode			300		kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection		110	150	260	%
over voltage protection		110	160	230	%
short circuit protection	continuous, auto recovery				
output overshoot				10	%

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute, 1 mA max	1,500			Vdc
isolation capacitance	input to output, (100 kHz, 0.1V)		1,000		pF
safety approvals	certified to 62368-1: IEC, EN				
conducted emissions	CISPR32/EN55032 Class B (see recommended circuit)				
radiated emissions	CISPR32/EN55032 Class B (see recommended circuit)				
ESD	IEC/EN61000-4-2 Contact ±4 kV, Air ±8 kV, Perf. Criteria B				
radiated immunity	IEC/EN61000-4-3 10 V/m, Perf. Criteria A				
conducted immunity	IEC/EN61000-4-6 3 Vrms, Perf. Criteria A				
MTBF	as per MIL-HDBK-217F at 25 °C	1,000,000			hours
RoHS	yes				

ENVIRONMENTAL

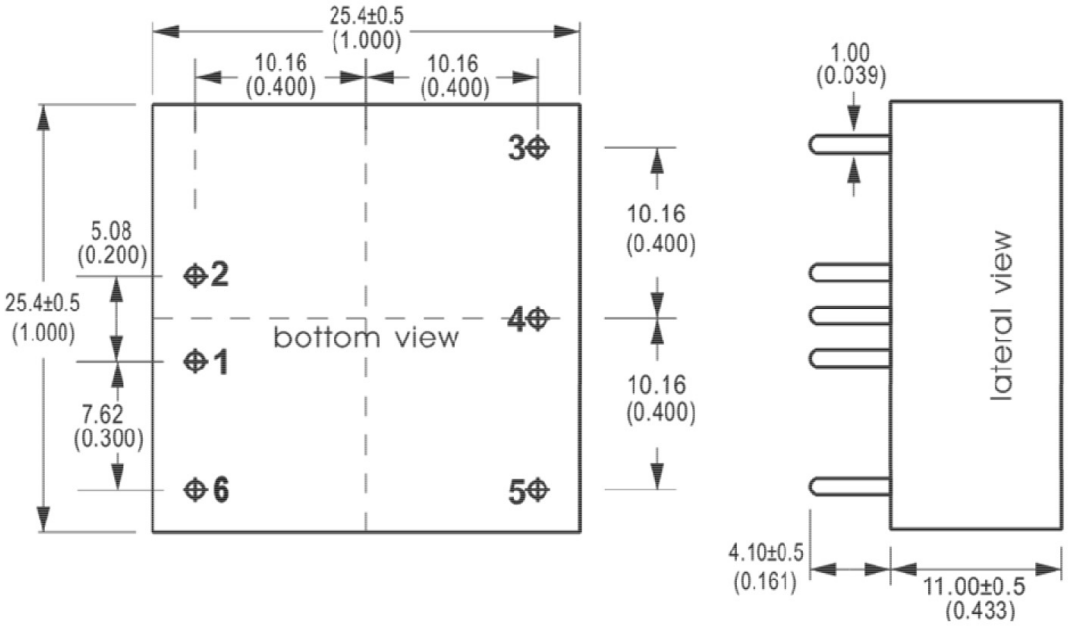
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
operating humidity	non condensing	5		95	%

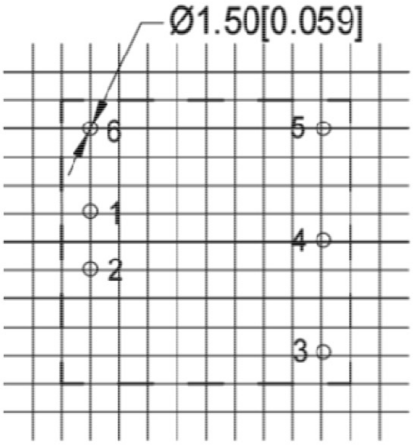
MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	board mount: 25.4 x 25.4 x 11.0 [1.000 x 1.000 x 0.433 inches] chassis mount: 76.0 x 31.5 x 21.3 [2.990 x 1.240 x 0.838 inches] DIN-rail mount: 76.0 x 31.5 x 26.0 [2.990 x 1.240 x 1.023 inches]				mm mm mm
case material	aluminum				
weight	board mount chassis mount DIN-rail mount		15 36 56		g g g
cooling	natural convection				

MECHANICAL DRAWING

Board Mount
units: mm [inch]
pin diameter tolerance: ±0.10 [±0.004]
general tolerance: ±0.50 [±0.020]



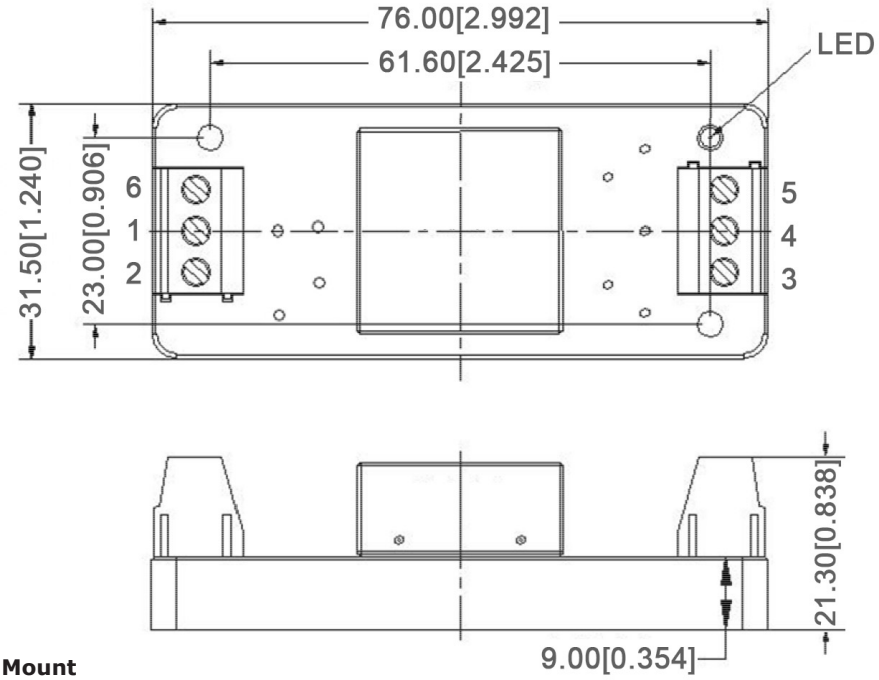


PIN CONNECTIONS				
PIN	Single		Dual	
1	-Vin		-Vin	
2	+Vin		+Vin	
3	+Vout		+Vout	
4	NC		COM	
5	GND		-Vout	
6	Ctrl	No pin	Ctrl	No pin

Note: NC = no connection

MECHANICAL DRAWING (CONTINUED)

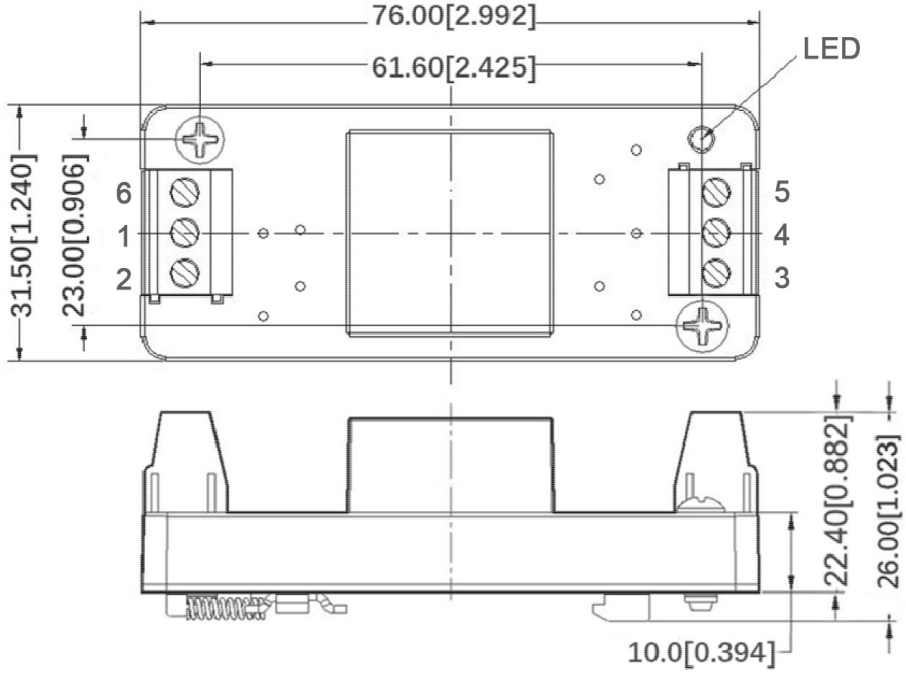
Chassis Mount
units: mm [inch]
pin diameter tolerance: ±0.10 [±0.004]
general tolerance: ±0.50 [±0.02]
wire range: 24~12 AWG
tightening torque: max 0.4 N·m



PIN CONNECTIONS				
PIN	Single		Dual	
1	-Vin		-Vin	
2	+Vin		+Vin	
3	+Vout		+Vout	
4	NC		COM	
5	GND		-Vout	
6	Ctrl	No pin	Ctrl	No pin

Note: NC = no connection

DIN-rail Mount
units: mm [inch]
pin diameter tolerance: ±0.10 [±0.004]
general tolerance: ±0.50 [±0.02]
wire range: 24~12 AWG
tightening torque: max 0.4 N·m

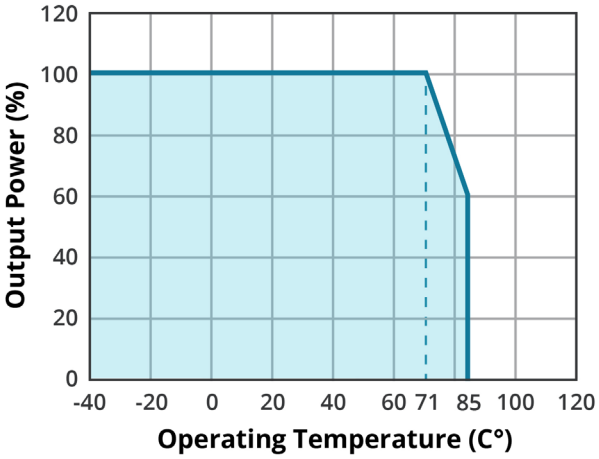


PIN CONNECTIONS				
PIN	Single		Dual	
1	-Vin		-Vin	
2	+Vin		+Vin	
3	+Vout		+Vout	
4	NC		COM	
5	GND		-Vout	
6	Ctrl	No pin	Ctrl	No pin

Note: NC = no connection

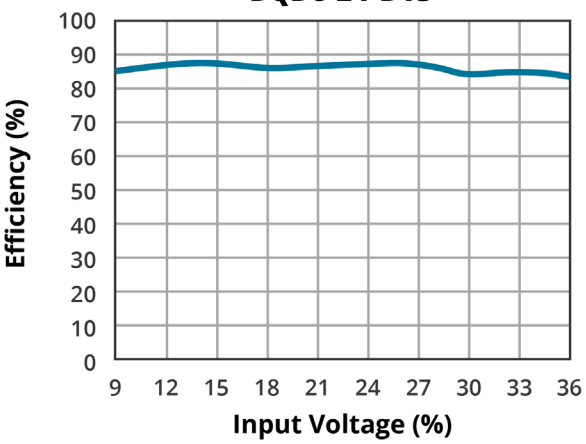
DERATING CURVES

TEMPERATURE DERATING CURVE

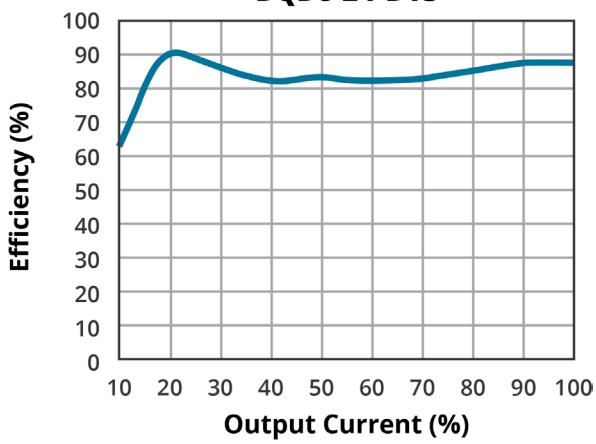


EFFICIENCY CURVES

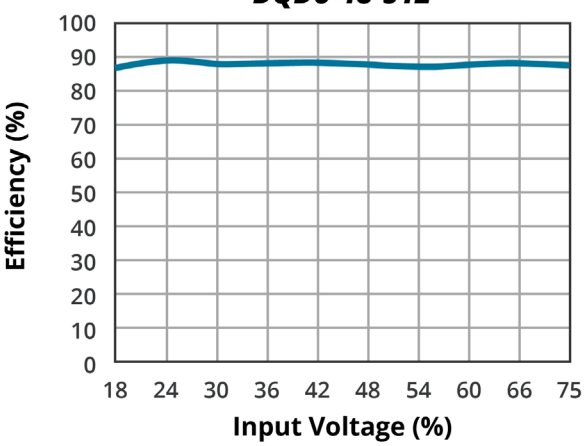
EFFICIENCY VS INPUT VOLTAGE
DQD6-24-D15



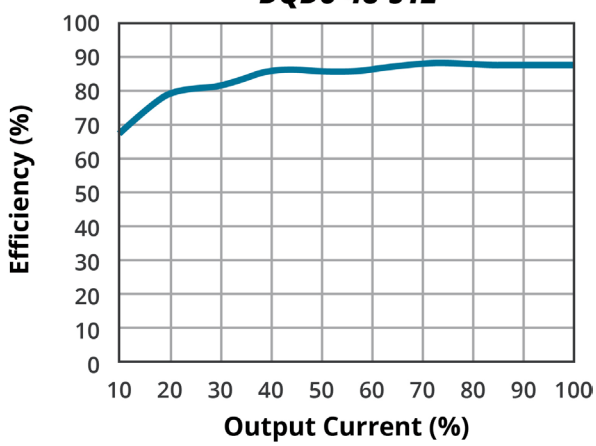
EFFICIENCY VS OUTPUT CURRENT
DQD6-24-D15



EFFICIENCY VS INPUT VOLTAGE
DQD6-48-S12



EFFICIENCY VS OUTPUT CURRENT
DQD6-48-S12

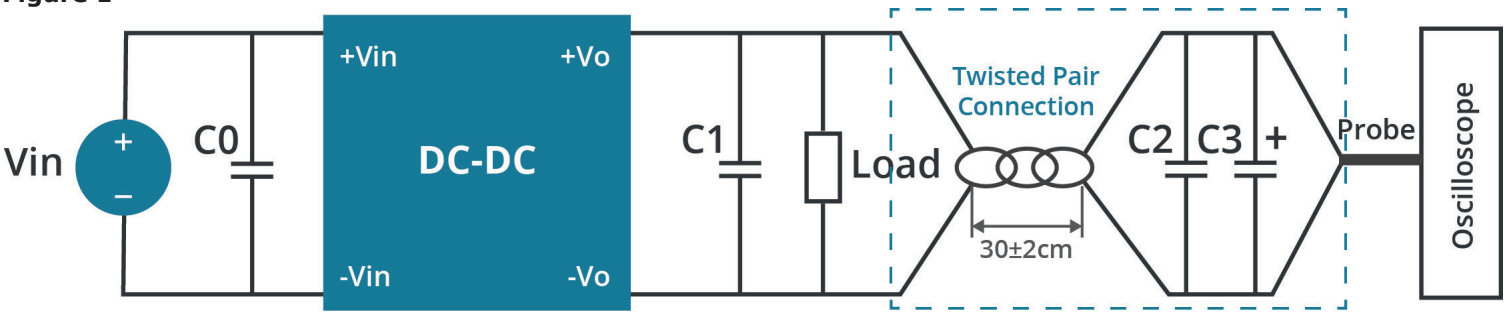


RIPPLE AND NOISE TEST INSTRUCTION

1. The ripple noise test requires the following setup:
- 12 twisted pair cables.
- An oscilloscope configured to Sample Mode with a bandwidth of 20 MHz.
- A 100 MHz bandwidth probe with the capacitor and ground removed.
- Capacitors C2 (0.1 µF), a polypropylene capacitor, and C3 (10 µF), a high-frequency, low-resistance electrolytic capacitor, connected in parallel to the probes and one side of the twisted pair.
- C0 and C1 refer to the application circuit as per the recommended specifications.

2. The power supply output is connected to the load using cables. The opposite end of the twisted pair (30 cm ± 2 cm in length) should be connected in parallel with the load. Ensure that the polarity of the output and the oscilloscope probe is correct and not reversed. The test can start once the power is switched on.

Figure 1



RIPPLE AND NOISE TEST CIRCUIT

Figure 2

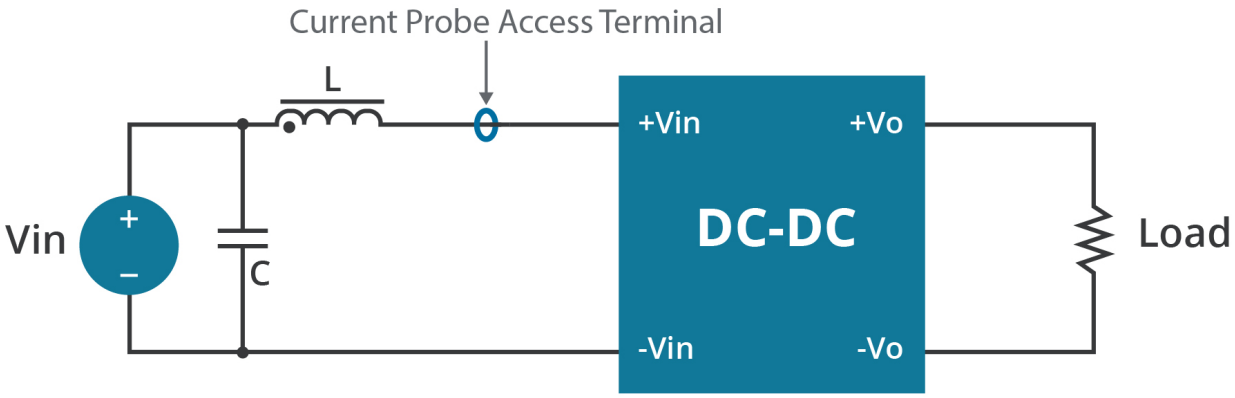


Table 1

COMPONENT	PARAMETER
C	100 µF/ 100 V
L	4.7 µH

APPLICATION NOTES

Figure 3
Single output

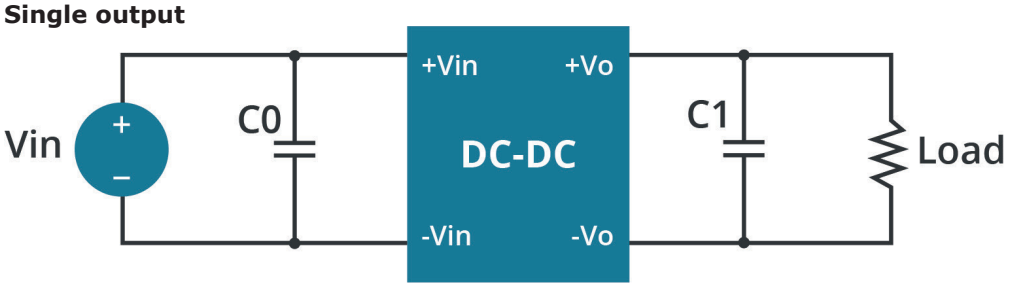


Table 2

COMPONENT	PARAMETER
C0	100 µF/ 100 V
C1	10 µF/ 50 V

Figure 4
Dual output

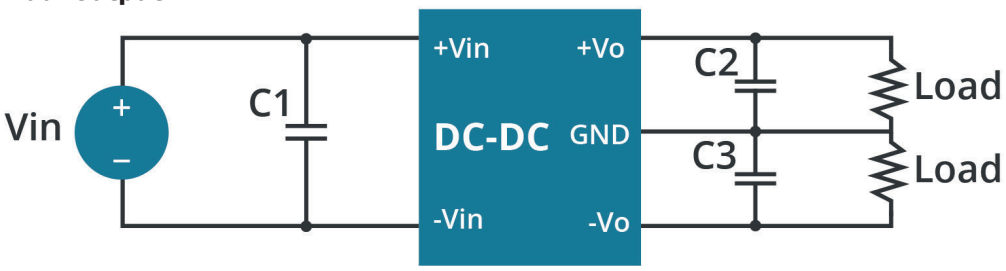


Table 3

COMPONENT	PARAMETER
C1	100 µF/ 100 V
C2, C3	10 µF/ 50 V

EMC RECOMMENDED CIRCUIT

Figure 5

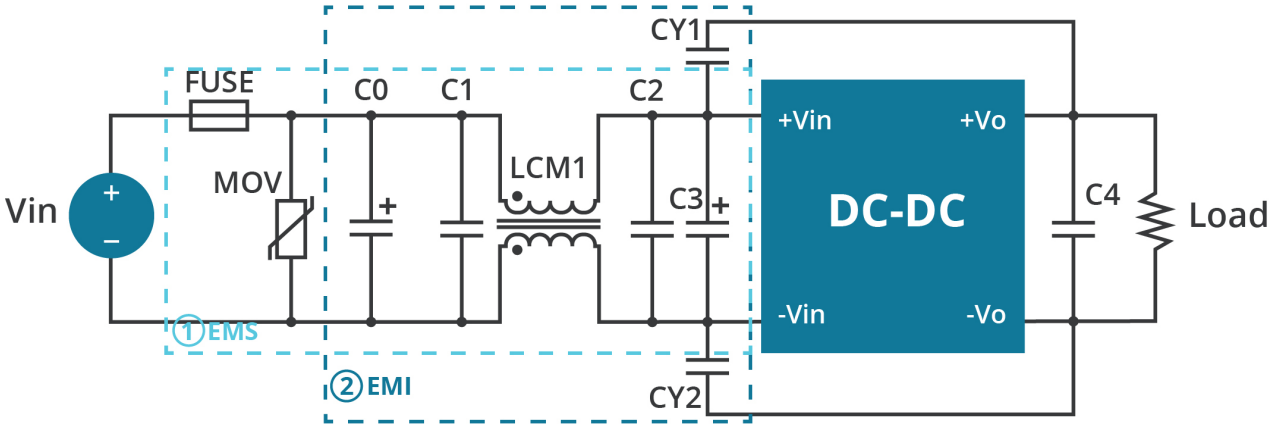


Table 4

COMPONENT	24 Vdc	48 Vdc
Fuse	TBD by customer	
MOV	10D470K	10D101K
C0, C3	330 µF/50 V	100 µF/100 V
C1, C2, C4	10 µF/50 V	10 µF/100 V
LCM1	10 mH	
CY1, CY2	1 nF/3 kV	

Note: 1. Section 1 of the circuit diagram corresponds to EMS, while Section 2 handles EMI filtering. Both sections can be modified to suit specific requirements or situations.

REVISION HISTORY

rev.	description	date
1.0	initial release	05/29/2025
1.01	no control pin option added	07/21/2025
1.02	remote on/off description added to input section	09/02/2025

The revision history provided is for informational purposes only and is believed to be accurate.

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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