

SERIES: DQD10-U | DESCRIPTION: DC-DC CONVERTER

FEATURES

- up to 10 W isolated output
- single and dual regulated outputs
- over voltage, input under voltage, short circuit, and over current protections
- remote on/off control
- 1,600 Vdc isolation
- -40 ~ 85°C temperature range, with derating
- efficiency up to 87%
- certified to IEC/EN 62368-1

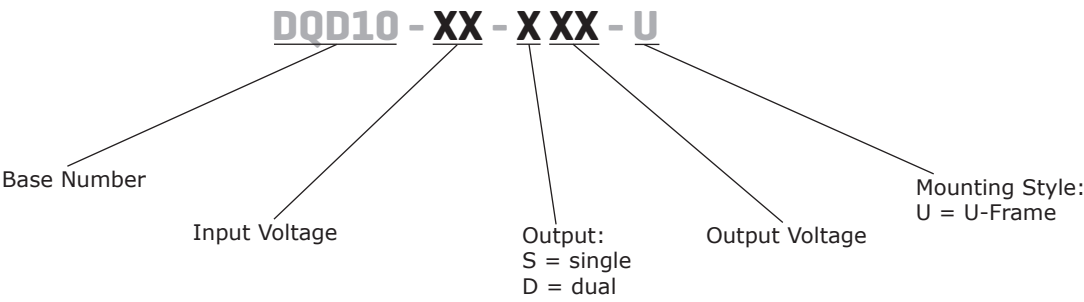


MODEL

MODEL	input voltage		output voltage typ (Vdc)	output current max (mA)	output power max (W)	ripple & noise ¹ max (mVp-p)	efficiency ² typ (%)
	typ (Vdc)	range (Vdc)					
DQD10-24-S3-U	24	9~36	3.3	2,400	7.92	100	77
DQD10-24-S5-U	24	9~36	5	2,000	10	100	82
DQD10-24-S9-U	24	9~36	9	1,111	10	100	84
DQD10-24-S12-U	24	9~36	12	833	10	100	86
DQD10-24-S15-U	24	9~36	15	667	10	100	86
DQD10-24-S24-U	24	9~36	24	417	10	100	88
DQD10-24-D5-U	24	9~36	±5	±1,000	10	120	82
DQD10-24-D9-U	24	9~36	±9	±556	10	120	85
DQD10-24-D12-U	24	9~36	±12	±417	10	120	86
DQD10-24-D15-U	24	9~36	±15	±333	10	120	86
DQD10-24-D24-U	24	9~36	±24	±208	10	120	86
DQD10-48-S3-U	48	18~75	3.3	2,400	7.92	100	78
DQD10-48-S5-U	48	18~75	5	2,000	10	100	82
DQD10-48-S12-U	48	18~75	12	833	10	100	86
DQD10-48-S15-U	48	18~75	15	667	10	100	86
DQD10-48-S24-U	48	18~75	24	417	10	100	87
DQD10-48-D5-U	48	18~75	±5	±1,000	10	120	82
DQD10-48-D12-U	48	18~75	±12	±417	10	120	87
DQD10-48-D15-U	48	18~75	±15	±333	10	120	87
DQD10-48-D24-U	48	18~75	±24	±208	10	120	87

- Notes:
1. The ripple & noise is measured at 20 MHz bandwidth, full load, parallel cable method. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product.
 2. The efficiency is measured at nominal input voltage and rated output 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).
 4. Ensure the input voltage remains within the specified range to prevent permanent and irreparable damage to the product.
 5. Operate with a load above 5%. Loads below 5% may result in ripple levels exceeding specifications, though this does not compromise product reliability.
 6. Maintain dual output module load imbalance within ±5%. Imbalances beyond this threshold may result in performance deviations from the specifications outlined in this manual.

PART NUMBER KEY



INPUT

parameter	conditions/description		min	typ	max	units
input voltage range	24 Vdc input models		9	24	40	Vdc
	48 Vdc input models		18	48	80	Vdc
input current (full load/no load)	single output	24 Vdc input models	3.3 V output	429/5	440/12	mA
			5 V output	508/5	521/12	mA
			9 V output	496/10	508/20	mA
			all other outputs	484/10	496/20	mA
	dual output	48 Vdc input models	3.3 V output	212/4	217/8	mA
			5 v output	254/4	260/8	mA
			9 V output	248/5	254/10	mA
			all other outputs	242/5	248/10	mA
reflected ripple current	at rated input voltage	24 Vdc input models	3.3 V output	429/5	440/12	mA
			5 V output	508/8	521/15	mA
surge voltage	1 second max	24 Vdc input models	all other outputs	490/10	502/20	mA
		48 Vdc input models	3.3 V output	212/4	217/8	mA
turn-on voltage threshold	24 Vdc input models		5 V output	254/4	260/8	mA
		48 Vdc input models	all other outputs	245/5	251/10	mA
turn-off voltage threshold	24 Vdc input models					
		48 Vdc input models				
filter	Pi filter					
remote on/off	module on	CTRL pin open or pulled high (TTL 2.7 ~ 12 Vdc)				
	module off	CTRL pin pulled low (0 ~ 1.2 Vdc)				
cut-off input current				2	7	mA

OUTPUT

parameter	conditions/description		min	typ	max	units
maximum capacitive load	3.3, 5 Vdc output models				2,200	μF
	±5 Vdc output models				1,000	μF
	9, ±9 Vdc output models				680	μF
	12, ±12 Vdc output models				470	μF
	15, ±15 Vdc output models				330	μF
	24, ±24 Vdc output models				100	μF
voltage accuracy	0% ~ 100% load	single output		±1	±3	%
		dual output	positive output	±1	±3	%
			negative output	±3	±5	%
line regulation	full voltage range, full load	positive output		±0.2	±0.5	%
		negative output		±0.5	±1.0	%
load regulation	0% ~ 100% load	single output		±1.0	±5.0	%
		dual output		±0.5	±5.0	%
	5% ~ 100% load	dual output	positive output negative output	±0.5 ±0.5	±1.0 ±1.5	% %
transient response deviation	25% rated load step change	3.3, 5 V output		±5	±8	%
		all other output models		±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	at full load				±0.03	%/°C
switching frequency	PWM mode			300		kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection		110	140		%
over voltage protection		110		160	%
short circuit protection	continuous, auto recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute, 1 mA max	1,600			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 A (no extra components) / CLASS B (see Fig. 3-2 for recommended circuit)				
radiated emissions	CISPR32/EN55032 CLASS A (no extra components) / CLASS B (see Fig. 3-2 for recommended circuit)				
ESD	IEC/EN61000-4-2 Contact ±4 kV, perf. Criteria B				
radiated immunity	IEC/EN61000-4-3 10 V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2 kV (see Fig. 3-1 for recommended circuit), perf. Criteria B				
surge	IEC/EN61000-4-5 line to line ±2 kV (see Fig. 3-1 for recommended circuit) perf. Criteria B				
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
storage humidity	non condensing	5		95	%

MECHANICAL

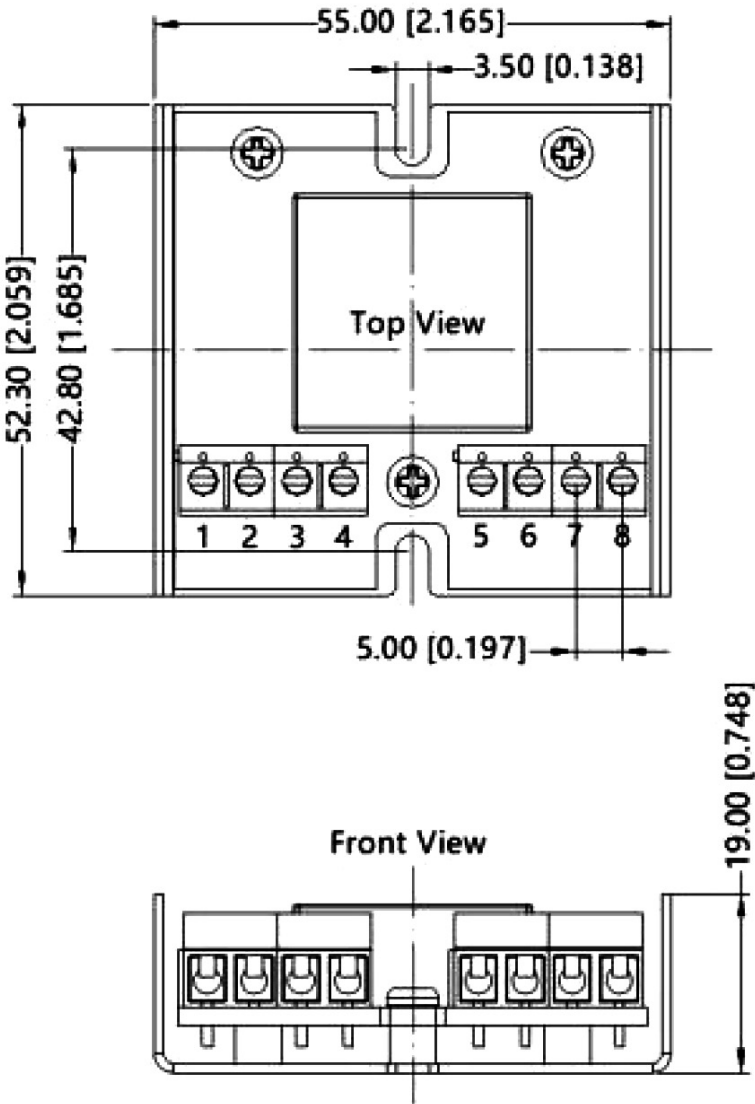
parameter	conditions/description	min	typ	max	units
dimensions	55.0 x 52.30 x 19.0 [2.165 x 2.059 x 0.748 inch]				mm
case material	aluminum alloy				
weight			44		g
cooling	natural convection				

MECHANICAL DRAWING

units: mm [inch]
general tolerance: ±1.00 [±0.039]
wire range: 24~12 AWG
tightening torque: Max 0.4 N•m

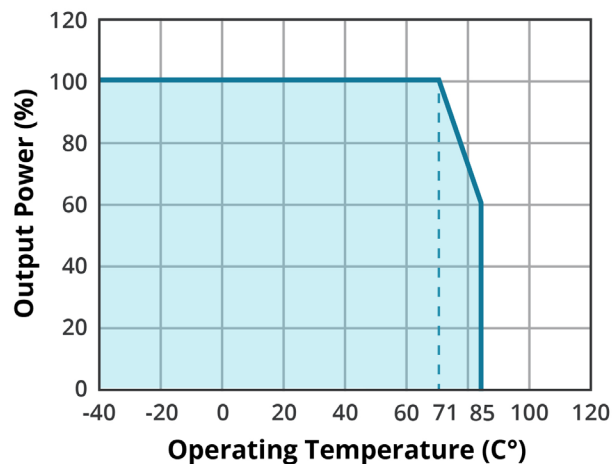
PIN CONNECTIONS		
PIN	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	CTRL	CTRL
4	CASE	CASE
5	NC	NC
6	+Vo	+Vo
7	NC	COM
8	GND	GND

Note: NC = no connection



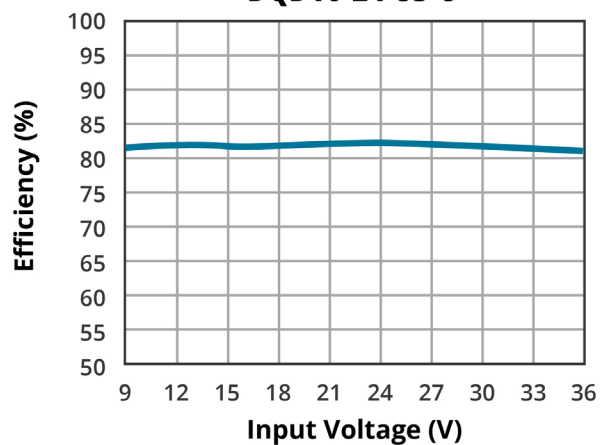
DERATING CURVES

TEMPERATURE DERATING CURVE

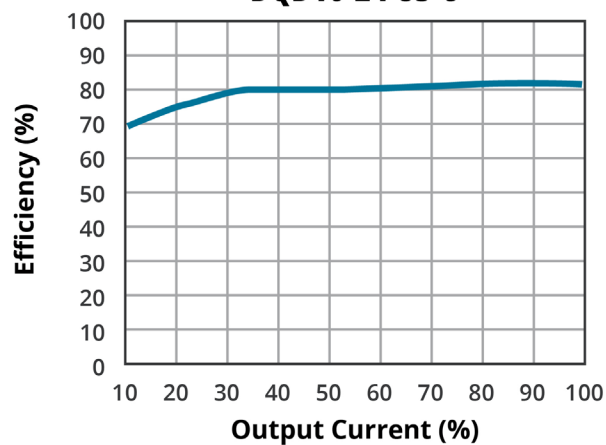


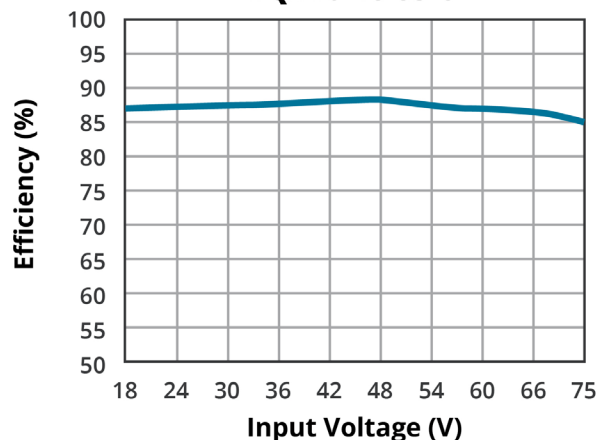
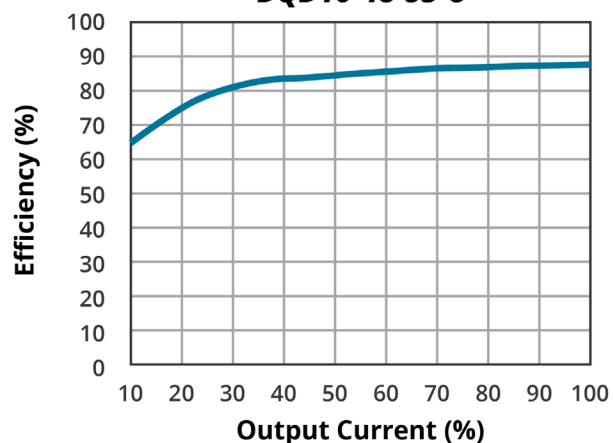
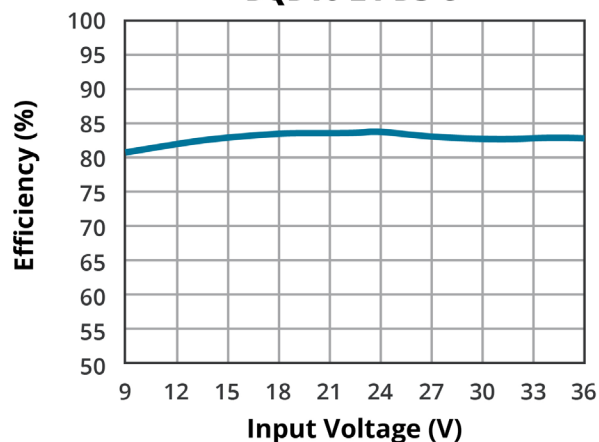
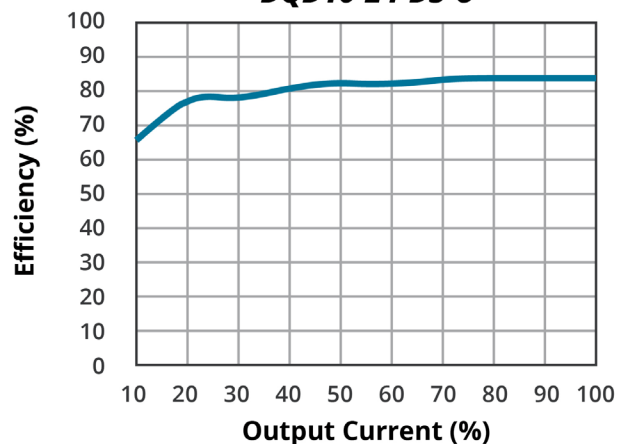
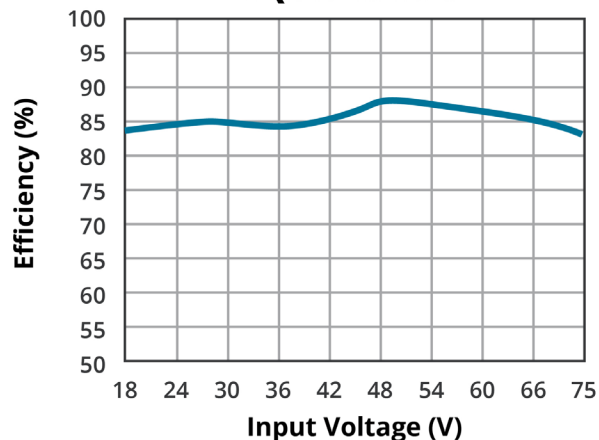
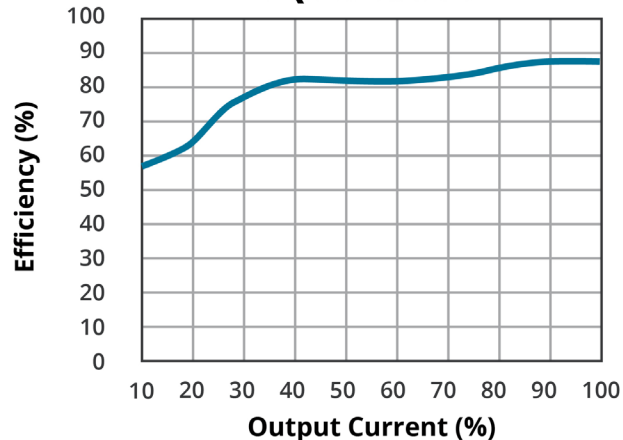
EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE
DQD10-24-S5-U



EFFICIENCY VS OUTPUT CURRENT
DQD10-24-S5-U



EFFICIENCY CURVES (CONTINUED)**EFFICIENCY VS INPUT VOLTAGE
DQD10-48-S5-U****EFFICIENCY VS OUTPUT CURRENT
DQD10-48-S5-U****EFFICIENCY VS INPUT VOLTAGE
DQD10-24-D5-U****EFFICIENCY VS OUTPUT CURRENT
DQD10-24-D5-U****EFFICIENCY VS INPUT VOLTAGE
DQD10-48-D5-U****EFFICIENCY VS OUTPUT CURRENT
DQD10-48-D5-U**

APPLICATION NOTES

Figure 1
Single output

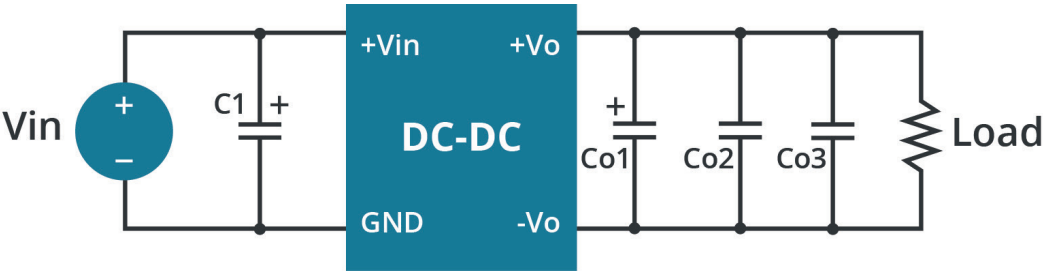


Table 1

Vout (Vdc)	C1 (μF)	Co1 (μF)	Co2 (μF)	Co3 (μF)
3.3, 5	100 μF/ 100 V	100 μF/ 16 V	10 μF/ 50 V	0.1 μF/ 16 V
9, 12, 15, 24	100 μF/ 100 V	47 μF/ 50 V	10 μF/ 50 V	0.1 μF/ 50 V

Figure 2
Dual output

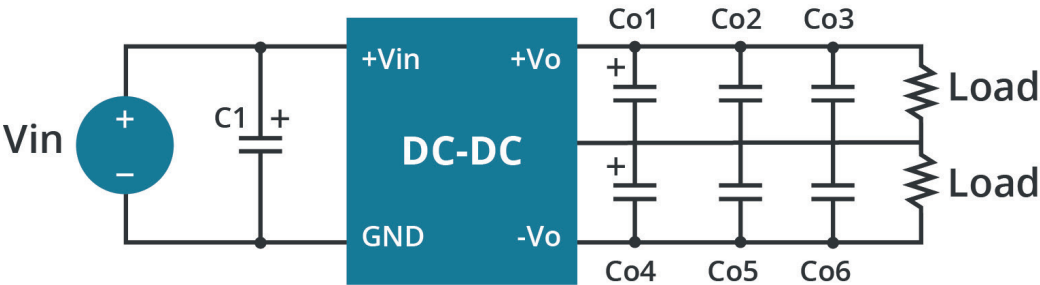


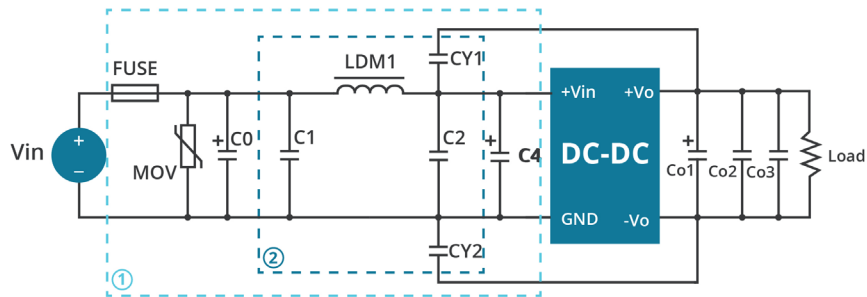
Table 2

Vout (Vdc)	C1 (μF)	Co1/Co4 (μF)	Co2/Co5 (μF)	Co3/Co6 (μF)
3.3, 5	100 μF/ 100 V	100 μF/ 16 V	0.1 μF/ 50 V	10 μF/ 50 V
9, 12, 15	100 μF/ 100 V	47 μF/ 25 V	0.1 μF/ 50 V	10 μF/ 50 V
24	100 μF/ 100 V	47 μF/ 50 V	0.1 μF/ 50 V	10 μF/ 50 V

Note: All DC-DC converters in this series are tested prior to delivery using the recommended circuits shown in Figures 1 and 2. To further minimize input and output ripple, consider increasing the values of input and output capacitors (C1, Co1, Co2, Co3, Co4, Co5, Co6) or selecting capacitors with low equivalent series resistance (ESR). Ensure that the total capacitance does not exceed the product’s specified maximum capacitive load.

EMC RECOMMENDED CIRCUIT

Figure 3
Single output

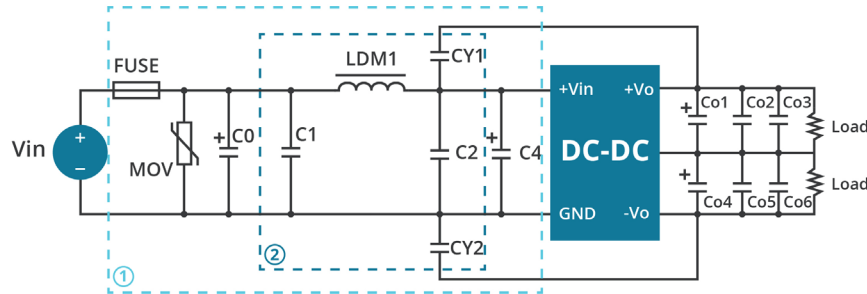


Note: Section 1 of the circuit diagram is dedicated to EMS, while Section 2 provides EMI filtering. Both sections can be customized to meet specific requirements or application needs.

Table 3

COMPONENT	24 Vdc	48 Vdc
Fuse	TBD by customer	
MOV	20D470K	14D101K
C0	680 μ F/50 V	680 μ F/100 V
C1	1 μ F/50 V	1 μ F/100 V
C2	4.7 μ F/50 V	4.7 μ F/100 V
C4	470 μ F/50 V	470 μ F/100 V
LDM1	10 μ H	
Co1, Co2, Co3	refer to Table 1	
CY1, CY2	2.2 nF/2 kV	

Figure 4
Dual output



Note: Section 1 of the circuit diagram is provides EMI filtering, while Section 2 is dedicated to EMS. Both sections can be customized to meet specific requirements or application needs.

Table 4

COMPONENT	24 Vdc	48 Vdc
Fuse	TBD by customer	
MOV	20D470K	14D101K
C0	680 μ F/50 V	680 μ F/100 V
C1	1 μ F/50 V	1 μ F/100 V
C2	4.7 μ F/50 V	4.7 μ F/100 V
C4	470 μ F/50 V	470 μ F/100 V
LDM1	10 μ H	
Co1, Co2, Co3 Co4, Co5, Co6	refer to Table 2	
CY1, CY2	2.2 nF/2 kV	

REVISION HISTORY

rev.	description	date
1.0	initial release	08/17/2026

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



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