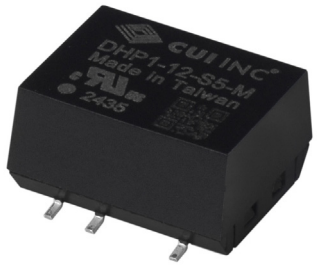
CUI INC
a bel group

SERIES: DHP1-M | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 1 W isolated output
- compact SMT package
- single and dual unregulated outputs
- 2,000 Vdc isolation voltage
- -40 to 105°C with derating
- certified to UL 62368-1
- continuous short circuit protection



RoHS c UL us

MODEL

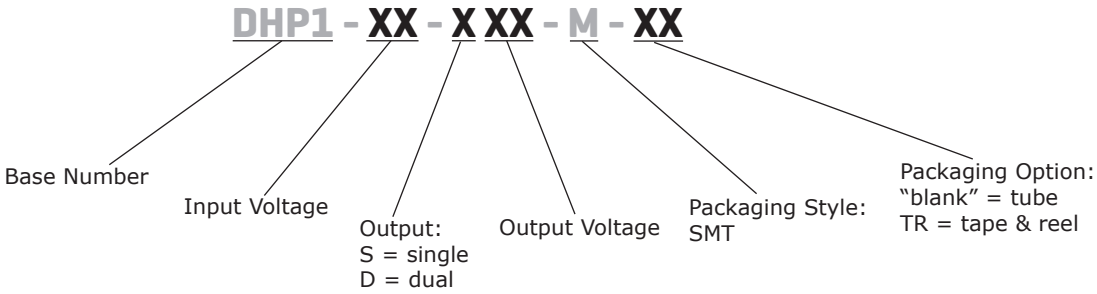
MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] typ (%)
DHP1-3-S3-M	3.3	2.97~3.63	3.3	303	1	100	73
DHP1-3-S5-M	3.3	2.97~3.63	5	200	1	100	78.9
DHP1-3-S12-M	3.3	2.97~3.63	12	84	1	100	82.5
DHP1-3-S15-M	3.3	2.97~3.63	15	67	1	100	85.5
DHP1-3-D3-M	3.3	2.97~3.63	±3.3	±152	1	100	77
DHP1-3-D5-M	3.3	2.97~3.63	±5	±100	1	100	79
DHP1-3-D9-M	3.3	2.97~3.63	±9	±56	1	100	79
DHP1-3-D12-M	3.3	2.97~3.63	±12	±42	1	100	79
DHP1-3-D15-M	3.3	2.97~3.63	±15	±34	1	100	79
DHP1-5-S3-M	5	4.5~5.5	3.3	303	1	100	77
DHP1-5-S5-M	5	4.5~5.5	5	200	1	100	77.8
DHP1-5-S9-M	5	4.5~5.5	9	112	1	100	78
DHP1-5-S12-M	5	4.5~5.5	12	84	1	100	78.5
DHP1-5-S15-M	5	4.5~5.5	15	67	1	100	79.4
DHP1-5-D3-M	5	4.5~5.5	±3.3	±152	1	100	77
DHP1-5-D5-M	5	4.5~5.5	±5	±100	1	100	78
DHP1-5-D9-M	5	4.5~5.5	±9	±56	1	100	78
DHP1-5-D12-M	5	4.5~5.5	±12	±42	1	100	79
DHP1-5-D15-M	5	4.5~5.5	±15	±34	1	100	77
DHP1-12-S3-M	12	10.8~13.2	3.3	303	1	100	74
DHP1-12-S5-M	12	10.8~13.2	5	200	1	100	73.5
DHP1-12-S9-M	12	10.8~13.2	9	112	1	100	78.5
DHP1-12-S12-M	12	10.8~13.2	12	84	1	100	80
DHP1-12-S15-M	12	10.8~13.2	15	67	1	100	83
DHP1-12-D3-M	12	10.8~13.2	±3.3	±152	1	100	74
DHP1-12-D5-M	12	10.8~13.2	±5	±100	1	100	75
DHP1-12-D9-M	12	10.8~13.2	±9	±56	1	100	80
DHP1-12-D12-M	12	10.8~13.2	±12	±42	1	100	84
DHP1-12-D15-M	12	10.8~13.2	±15	±34	1	100	80

MODEL

	input voltage		output voltage	output current	output power	ripple & noise[1]	efficiency[2]
	typ (Vdc)	range (Vdc)	(Vdc)	max (mA)	max (W)	max (mVp-p)	typ (%)
DHP1-15-S5-M	15	13.5~16.5	5	200	1	100	74.1
DHP1-15-S12-M	15	13.5~16.5	12	84	1	100	81
DHP1-24-S5-M	24	21.6~26.4	5	200	1	100	73.5
DHP1-24-S12-M	24	21.6~26.4	12	84	1	100	80
DHP1-24-S15-M	24	21.6~26.4	15	67	1	100	81.5
DHP1-24-D3-M	24	21.6~26.4	±3.3	±152	1	100	79
DHP1-24-D5-M	24	21.6~26.4	±5	±100	1	100	74
DHP1-24-D9-M	24	21.6~26.4	±9	±56	1	100	79
DHP1-24-D12-M	24	21.6~26.4	±12	±42	1	100	82
DHP1-24-D15-M	24	21.6~26.4	±15	±34	1	100	82

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope.
2. The efficiency is test by nominal input and max. full load at 25°C.
3. All specifications measured at Ta=25°C, nominal input voltage, rated output load, and after warm up unless otherwise specified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
input voltage range		-10		+10	%
filter	capacitance filter				

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	3.3, 5 Vdc output models			470	µF
	9 Vdc output models			220	µF
	12, 15 Vdc output models			100	µF
	±3.3, ±5 Vdc output models			±150	µF
	±9 Vdc output models			±100	µF
	±12, ±15 Vdc output models			±47	µF
voltage accuracy		-5		+5	%
line regulation	measured from low to high line, full load		1.2		%
load regulation	measured from 10~100% load				
	3.3, 5, ±3, ±5 Vdc output models			15	%
	9, 12, 15, ±9, ±12, ±15 Vdc output model			10	%
switching frequency	at Vin nominal, full load	20			kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous				

SAFETY AND COMPLIANCE

parameter	conditions/description		min	typ	max	units
isolation voltage	input to output for 1 minute		2,000			Vdc
isolation capacitance					20	pF
safety approvals	certified to 62368-1: UL					
EMI	EN 55032 Class A/B (see recommended circuits)					
ESD	EN 61000-4-2, Air ±8 kV; Contact ±6 kV, perf. Criteria B					
radiated immunity	EN 61000-4-3, 3 V/m, perf. Criteria A					
fast transient	EN 61000-4-4, ±1 kV, perf. Criteria B					
surge	EN 61000-4-5, ±0.5 kV, perf. Criteria B					
conducted immunity	EN 61000-4-6, 3 Vrms, perf. Criteria A					
magnetic field immunity	EN 61000-4-8, 1 A/m at 50 Hz, perf. Criteria A					
vibration	MIL-STD-202G					
MTBF	at 25°C	single output dual output	2,992,000 21,400,000			hours hours
	at 85°C	single output dual output	955,000 7,800,000			hours hours
RoHS	yes					

ENVIRONMENTAL

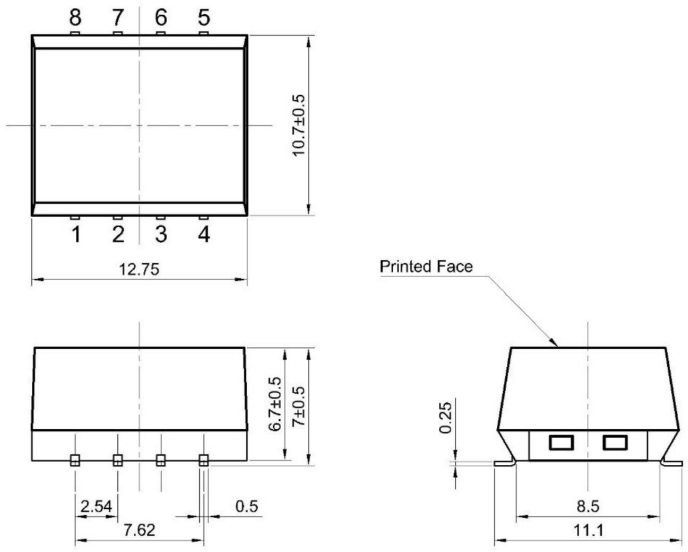
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		105	°C
storage temperature		-55		125	°C
maximum case temperature				120	°C
operating humidity	non-condensing	-		95	%

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	single output dual output	12.75 (L) x 10.70 (W) x 7.00 (H) 15.24 (L) x 10.70 (W) x 7.00 (H)			mm mm
case material	UL94V-0 black plastic				
weight	single output dual output		1.0 1.2		g g

MECHANICAL DRAWING

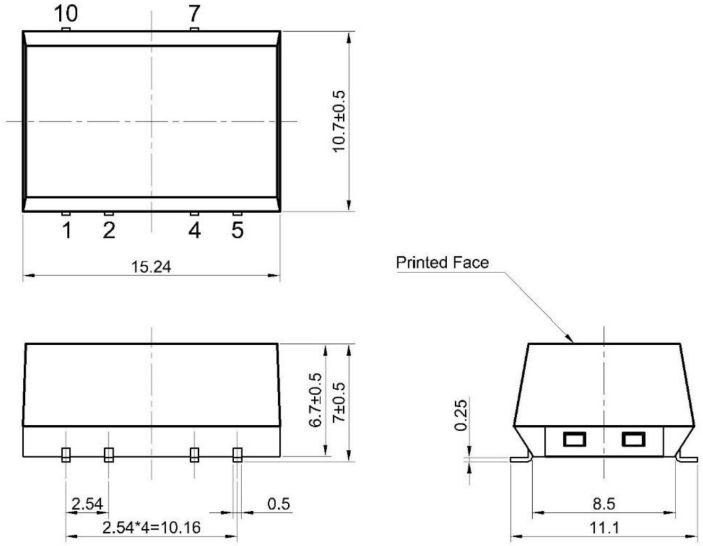
Single output
units: mm
tolerance: ±0.25 mm
pin section tolerance: ±0.1 mm



PIN CONNECTIONS	
PIN	Functions
1	-Vin
2	+Vin
3	no pin
4	-Vout
5	+Vout
6	no pin
7	no pin
8	NC

NC = no connection

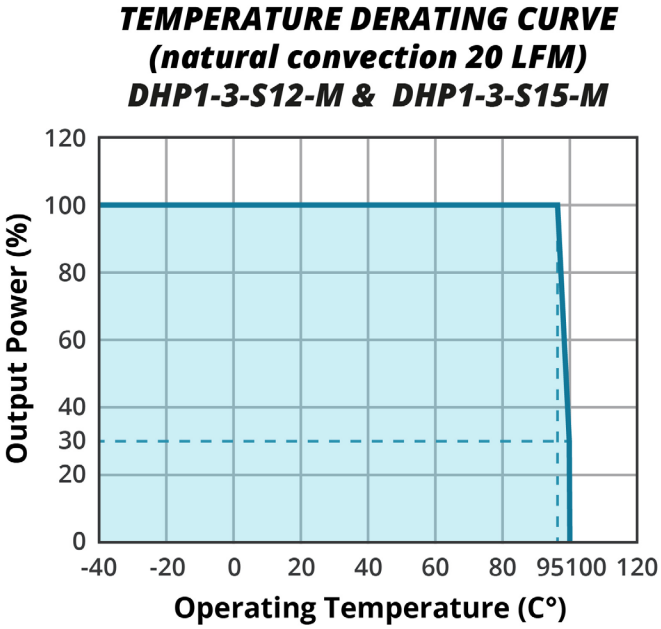
Dual output
units: mm
tolerance: ±0.25 mm
pin section tolerance: ±0.1 mm

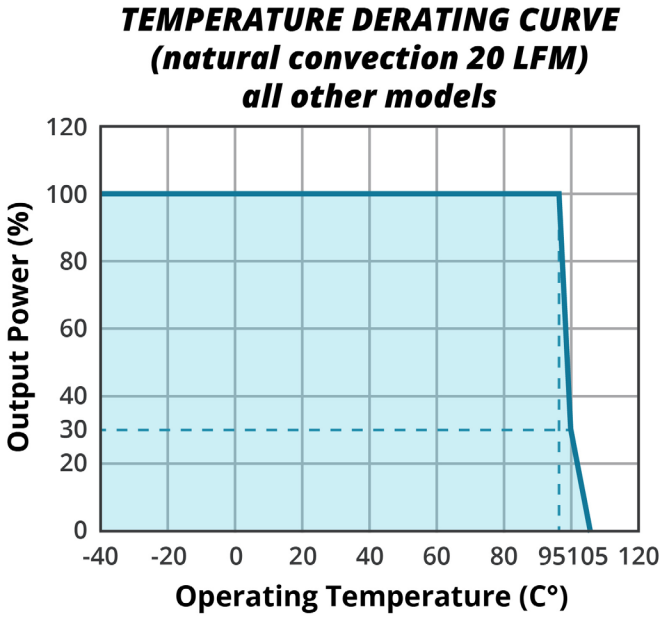


PIN CONNECTIONS	
PIN	Functions
1	-Vin
2	+Vin
4	Com.
5	-Vout
7	+Vout
10	NC

NC = no connection

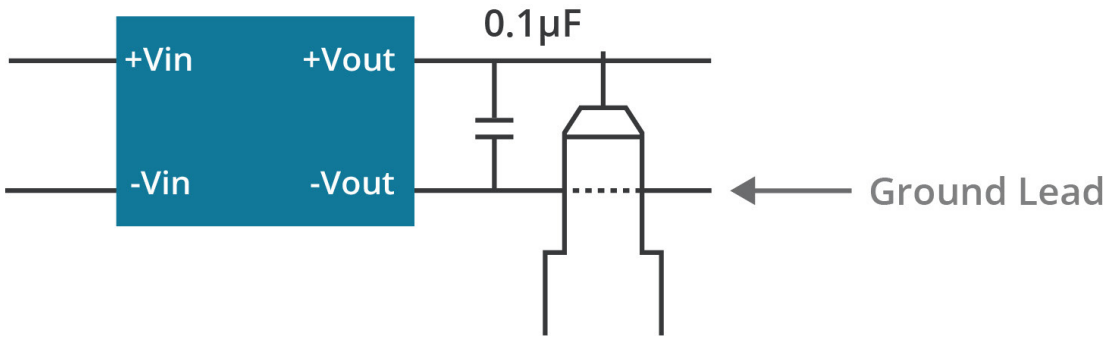
DERATING CURVE





RIPPLE AND NOISE MEASURE METHOD

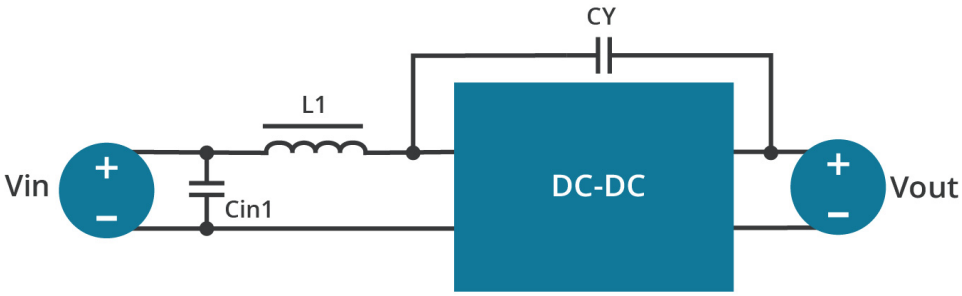
Figure 1



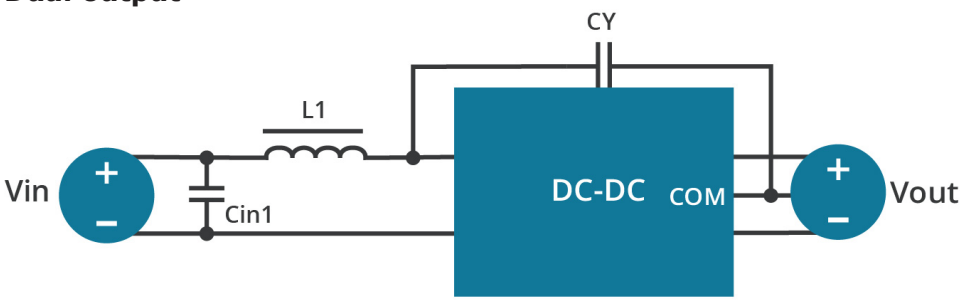
Note: Measured with 20MHz bandwidth and 0.1µF ceramic capacitor.

EMI RECOMMENDED CIRCUIT FOR CLASS A

Figure 2
Single output



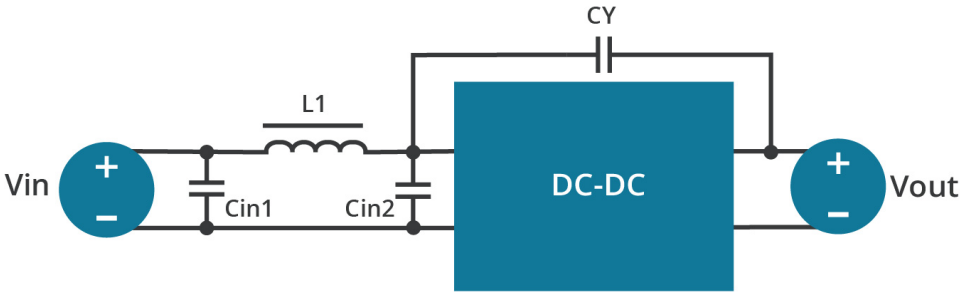
Dual output



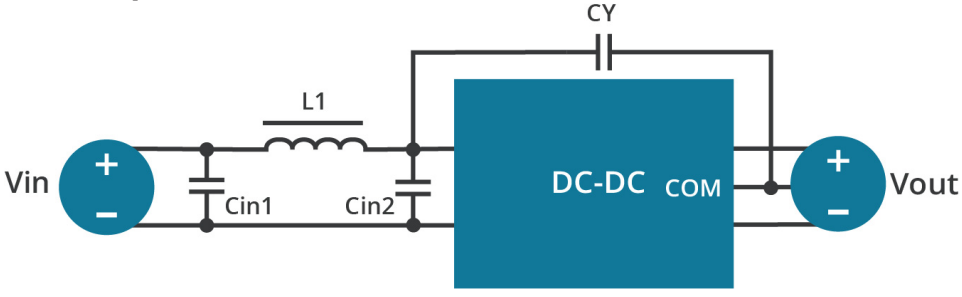
Vin	Inductance/Capacitance	
	(Lin/Cin1)	CY
3.3	22μH/4.7μF	NA
others	22μH/4.7μF	220P

EMI RECOMMENDED CIRCUIT FOR CLASS B

Figure 3
Single output



Dual output



Vin	Inductance/Capacitance	
	(Lin/Cin1/Cin2)	CY
3.3	22μH/4.7μF/4.7μF	NA
others	22μH/4.7μF/4.7μF	220P

REVISION HISTORY

rev.	description	date
1.0	initial release	10/16/2024
1.01	maximum operating temperature updated, EMI filtering added	01/15/2025
1.02	features updated	03/12/2025

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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