

**SERIES:** DSM1-S | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- 1 W isolated output
- industry standard SIP package
- single and dual unregulated output
- 4,000 Vdc isolation voltage
- certified to UL 62368-1
- -40 to 100°C temperature range with derating

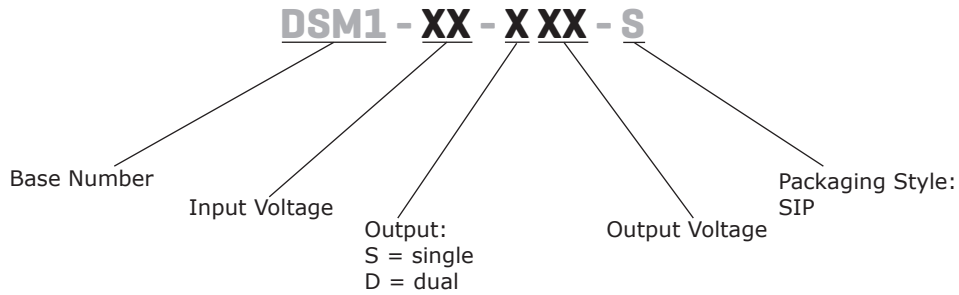


**MODEL**

MODEL	input voltage		output voltage	output current	output power	ripple & noise <sup>1</sup>	efficiency
	typ (Vdc)	range (Vdc)	(Vdc)	max (mA)	max (W)	max (mVp-p)	typ (%)
DSM1-5-S3-S	5	4.5~5.5	3.3	303	1	100	74
DSM1-5-S5-S	5	4.5~5.5	5	200	1	100	79
DSM1-5-S12-S	5	4.5~5.5	12	84	1	100	78
DSM1-5-S15-S	5	4.5~5.5	15	67	1	100	85
DSM1-5-D3-S	5	4.5~5.5	±3.3	±152	1	100	75
DSM1-5-D5-S	5	4.5~5.5	±5	±100	1	100	77
DSM1-5-D12-S	5	4.5~5.5	±12	±42	1	100	80
DSM1-5-D15-S	5	4.5~5.5	±15	±34	1	100	80
DSM1-12-S3-S	12	10.8~13.2	3.3	303	1	100	79
DSM1-12-S5-S	12	10.8~13.2	5	200	1	100	82
DSM1-12-S12-S	12	10.8~13.2	12	84	1	100	80
DSM1-12-S15-S	12	10.8~13.2	15	67	1	100	81
DSM1-12-D3-S	12	10.8~13.2	±3.3	±152	1	100	80
DSM1-12-D5-S	12	10.8~13.2	±5	±100	1	100	76
DSM1-12-D12-S	12	10.8~13.2	±12	±42	1	100	80
DSM1-12-D15-S	12	10.8~13.2	±15	±34	1	100	81
DSM1-24-S3-S	24	21.6~26.4	3.3	303	1	100	78
DSM1-24-S5-S	24	21.6~26.4	5	200	1	100	79
DSM1-24-S12-S	24	21.6~26.4	12	84	1	100	79
DSM1-24-S15-S	24	21.6~26.4	15	67	1	100	80
DSM1-24-D3-S	24	21.6~26.4	±3.3	±152	1	100	76
DSM1-24-D5-S	24	21.6~26.4	±5	±100	1	100	80
DSM1-24-D12-S	24	21.6~26.4	±12	±42	1	100	80
DSM1-24-D15-S	24	21.6~26.4	±15	±34	1	100	81

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 <sup>4,5</sup>	3.3, 5 Vdc output models ±3.3, ±5, 12 Vdc output models ±12, ±15, 15 Vdc output models			1,500 470 220	μF μF 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 Vdc output models 12, 15 Vdc output model			10 15	% %
switching frequency	at Vin nominal, full load	50			kHz

Note: 4. The capacitive load is tested by minimum input and constant resistive load.  
5. For dual output models, maximum capacitance applies to individual outputs.

## SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 second	4,000			Vdc
isolation capacitance			80		pF
safety approvals	certified to 62368-1: UL				
EMC	EN 55032/55024 <sup>6</sup>				
EMI	EN 55032, Class A/B				
ESD	IEC 61000-4-2, air ±8 kV; contact ±6 kV, perf. Criteria A				
radiated immunity	IEC 61000-4-3, 3 V/m, perf. Criteria A				
EFT/burst	IEC 61000-4-4, ±0.5 kV, perf. Criteria A				
surge	IEC 61000-4-5, ±0.5 kV, perf. Criteria A				
conducted immunity	IEC 61000-4-6, 3 Vrms, perf. Criteria A				
PfMF	IEC 61000-4-8, 1 A/m, perf. Criteria A				
vibration	MIL-STD-202G				
MTBF	at 25°C	17,100,000			hours
RoHS	yes				

Note: 6. Refer to Figures 2 and 3 for recommended EMC circuit.

## ENVIRONMENTAL

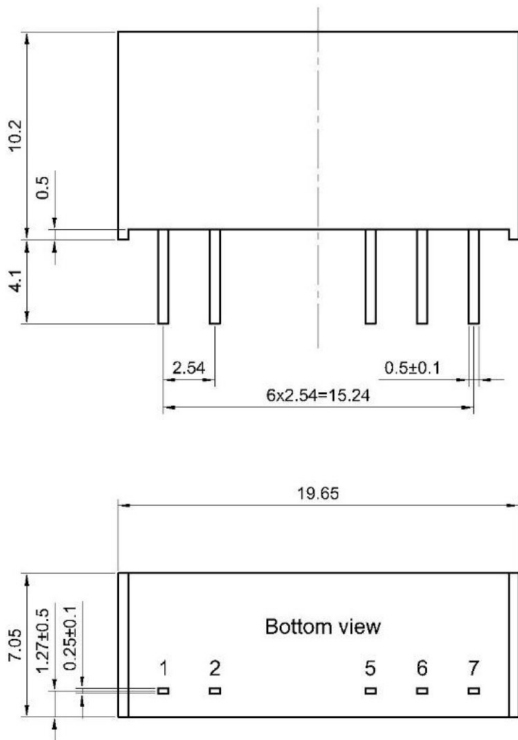
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		100	°C
storage temperature		-55		125	°C
maximum case temperature				110	°C
operating humidity	non-condensing	5		95	%

## MECHANICAL

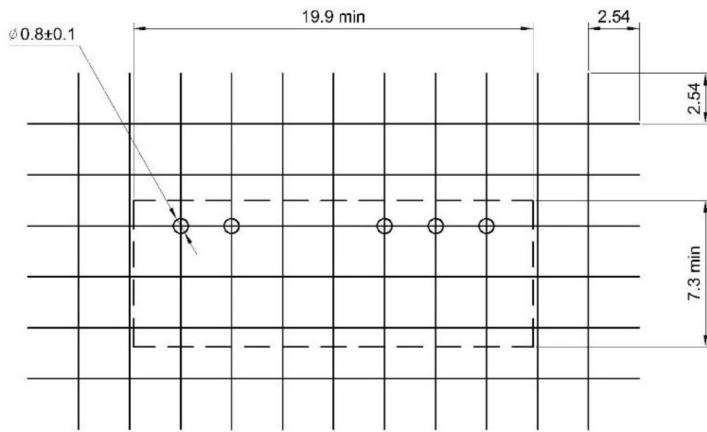
parameter	conditions/description	min	typ	max	units
dimensions	19.65 x 7.05 x 10.20				mm
case material	UL94V-0 black plastic				
potting material	epoxy (UL94V-0)				
weight			2.8		g

## MECHANICAL DRAWING

units: mm  
tolerance: ±0.25 mm

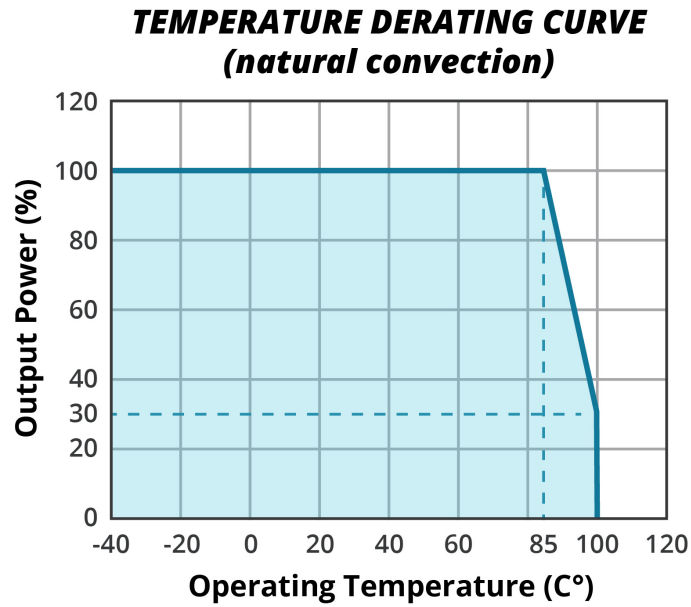


PIN CONNECTIONS		
PIN	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	no pin	Com
7	+Vout	+Vout

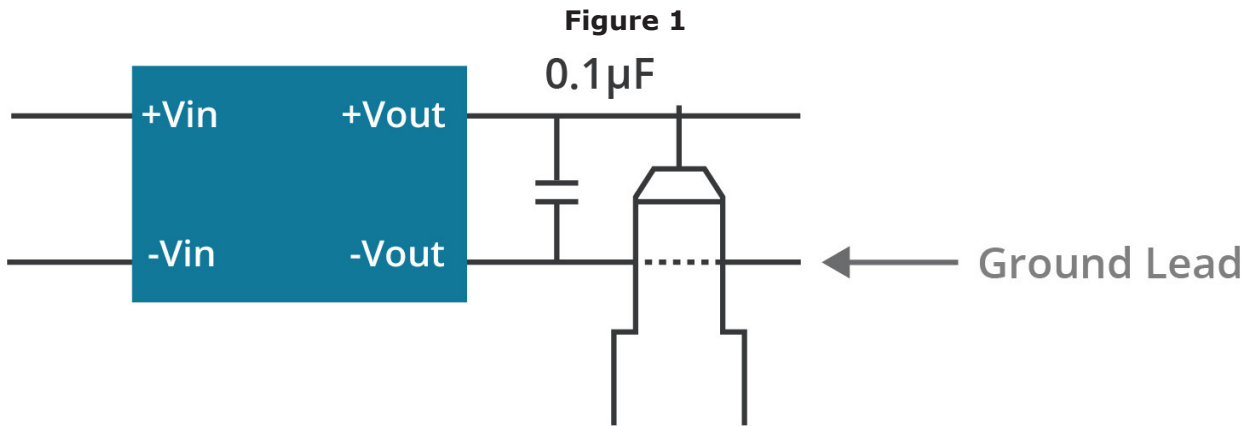


Footprint (Top view)

## DERATING CURVE



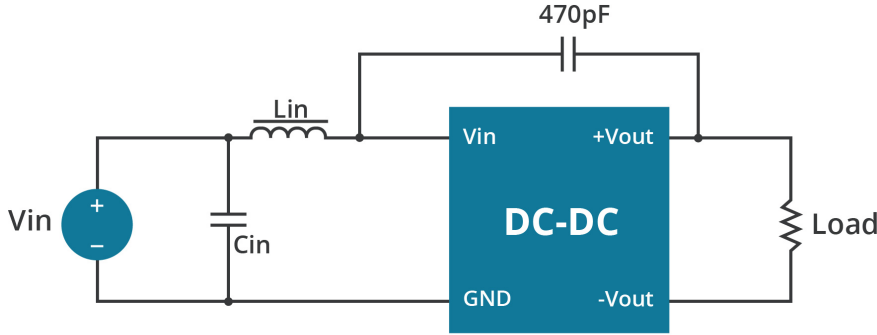
## RIPPLE AND NOISE MEASURE METHOD



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

**EMI RECOMMENDED CIRCUIT FOR EN 55032 CLASS A/B**

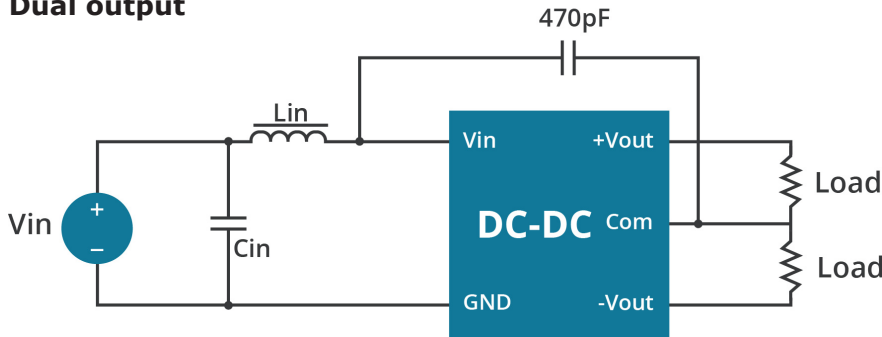
**Figure 2**  
Single output



**Table 1**  
Single output

Recommended EMI Filter Values				
Vin	Class A		Class B	
	Lin	Cin	Lin	Cin
5	47 $\mu$ H	2.2 $\mu$ F	47 $\mu$ H	10 $\mu$ F
12	22 $\mu$ H	2.2 $\mu$ F	22 $\mu$ H	4.7 $\mu$ F
24	10 $\mu$ H	2.2 $\mu$ F	22 $\mu$ H	4.7 $\mu$ F

**Figure 3**  
Dual output



**Table 2**  
Dual output

Recommended EMI Filter Values				
Vin	Class A		Class B	
	Lin	Cin	Lin	Cin
5	22 $\mu$ H	2.2 $\mu$ F	100 $\mu$ H	4.7 $\mu$ F
12	22 $\mu$ H	2.2 $\mu$ F	22 $\mu$ H	4.7 $\mu$ F
24	10 $\mu$ H	2.2 $\mu$ F	47 $\mu$ H	2.2 $\mu$ F

## REVISION HISTORY

rev.	description	date
1.0	initial release	09/24/2024
1.01	company address updated	11/05/2024

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



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