CUI INC
a bel group

SERIES: DRS1-S | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 1 W isolated output
- industry standard SIP package
- single unregulated output
- short circuit protection
- 2,000 Vdc isolation voltage
- certified to UL 62368-1



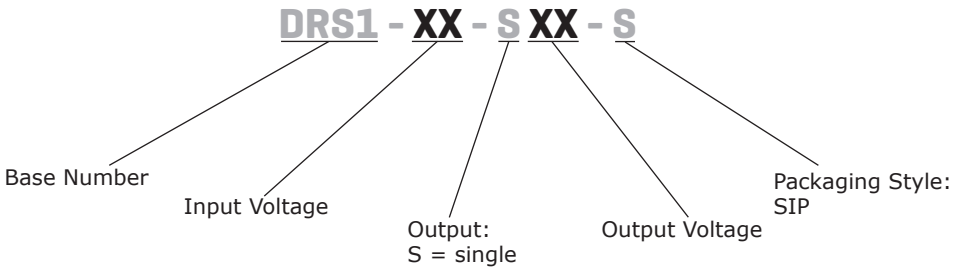
RoHS c UL us

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 (%)
DRS1-3-S3-S	3.3	2.97~3.63	3.3	303	1	100	75
DRS1-3-S5-S	3.3	2.97~3.63	5	200	1	100	76
DRS1-3-S12-S	3.3	2.97~3.63	12	84	1	100	77
DRS1-3-S15-S	3.3	2.97~3.63	15	67	1	100	78
DRS1-5-S3-S	5	4.5~5.5	3.3	303	1	100	74
DRS1-5-S5-S	5	4.5~5.5	5	200	1	100	78
DRS1-5-S12-S	5	4.5~5.5	12	84	1	100	78
DRS1-5-S15-S	5	4.5~5.5	15	67	1	100	83
DRS1-12-S3-S	12	10.8~13.2	3.3	303	1	100	79
DRS1-12-S5-S	12	10.8~13.2	5	200	1	100	82
DRS1-12-S12-S	12	10.8~13.2	12	84	1	100	80
DRS1-12-S15-S	12	10.8~13.2	15	67	1	100	81
DRS1-24-S3-S	24	21.6~26.4	3.3	303	1	100	78
DRS1-24-S5-S	24	21.6~26.4	5	200	1	100	79
DRS1-24-S12-S	24	21.6~26.4	12	84	1	100	80
DRS1-24-S15-S	24	21.6~26.4	15	67	1	100	84

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[4]	3.3, 5 Vdc output models 12 Vdc output models 15 Vdc output models			1500 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 test by minimum input and constant resistive load.

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				
EMC	EN 55032/55024				
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, 10 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, 10 Vrms, perf. Criteria A				
PFMF	IEC 61000-4-8, 1 A/m, perf. Criteria A				
vibration	MIL-STD-202G				
MTBF	as per MIL-HDBK-217F, at 25°C	13,100,000			hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve 3.3, 5, 12 Vdc input models 24 Vdc input model	 -40 -40		 95 90	 °C °C
storage temperature		-55		125	°C
operating humidity	non-condensing	5		95	%

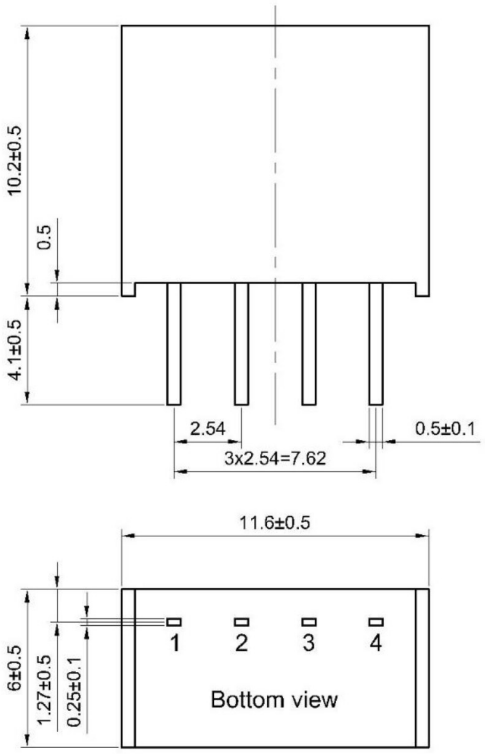
MECHANICAL

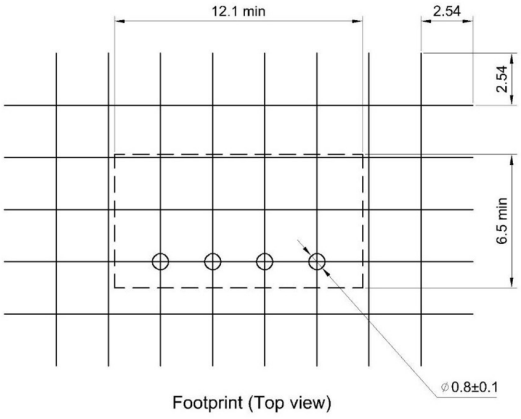
parameter	conditions/description	min	typ	max	units
dimensions	11.60 x 6.00 x 10.20				mm
case material	UL94V-0 black plastic				
potting material	epoxy (UL94V-0)				
weight			1.4		g

MECHANICAL DRAWING

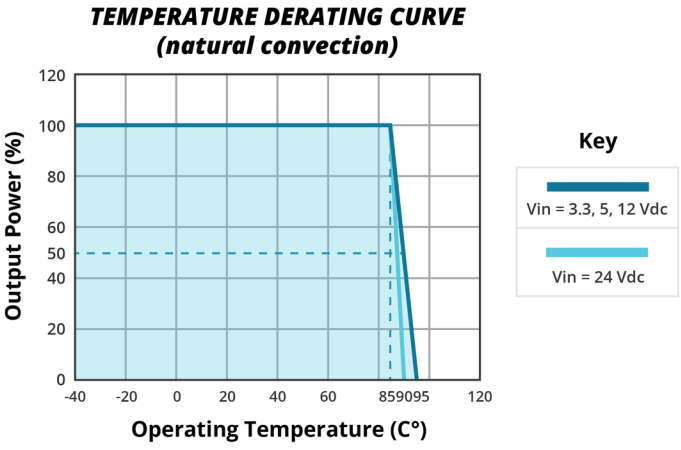
units: mm
tolerance: ±0.25 mm

PIN CONNECTIONS	
PIN	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

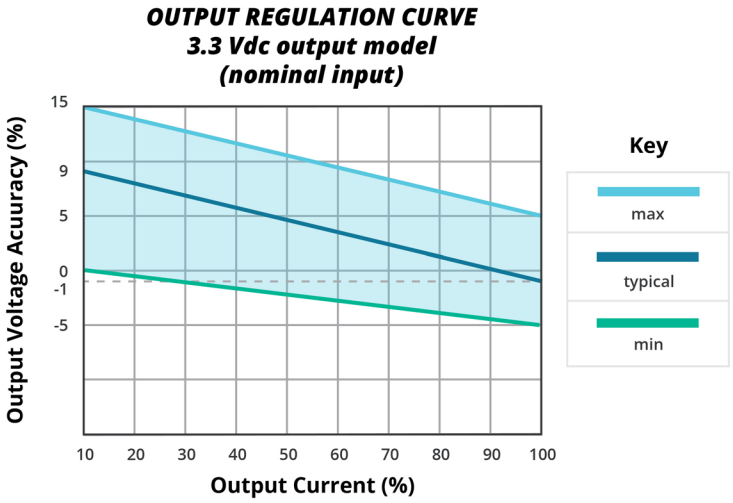


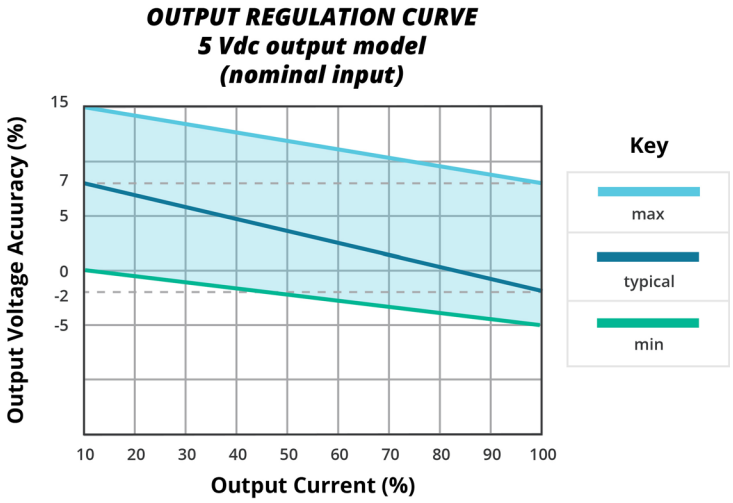


DERATING CURVES



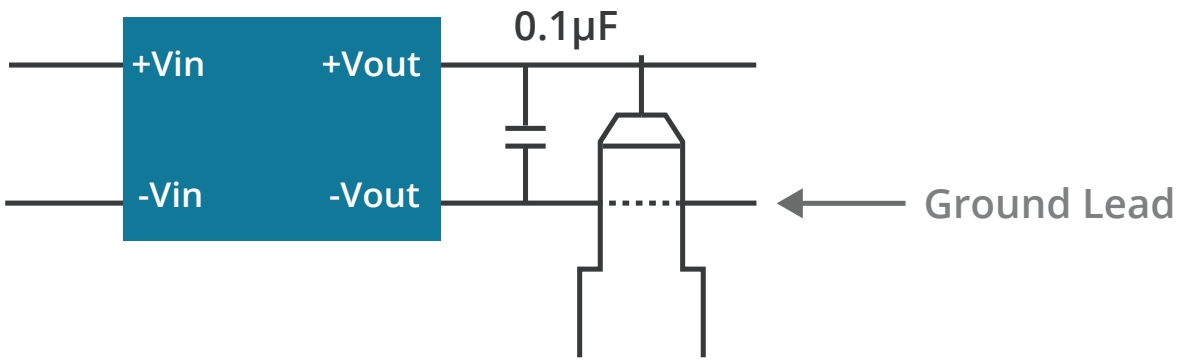
DERATING CURVES (CONTINUED)





RIPPLE AND NOISE MEASURE METHOD

Figure 1



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

EMI RECOMMENDED CIRCUIT FOR EN 55032 CLASS A/B

Figure 2

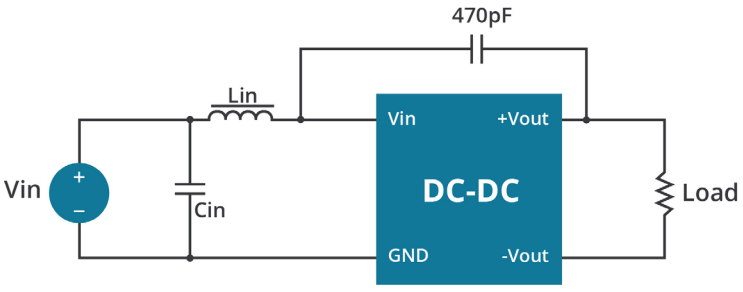


Table 1

Recommended EMI Filter Values				
Vin	Class A		Class B	
	Lin	Cin	Lin	Cin
3.3	6.8 µH	1 µF	47 µH	4.7 µF
5	47 µH	2.2 µF	47 µH	10 µF
12	22 µH	2.2 µF	22 µH	4.7 µF
24	10 µH	2.2 µF	47 µH	4.7 µF

REVISION HISTORY

rev.	description	date
1.0	initial release	09/08/2024

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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