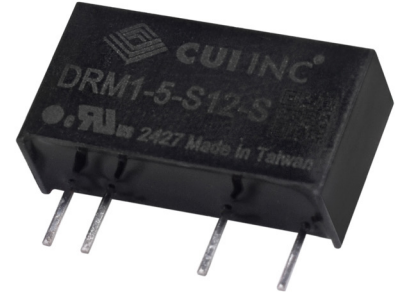


SERIES: DRM1-S | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

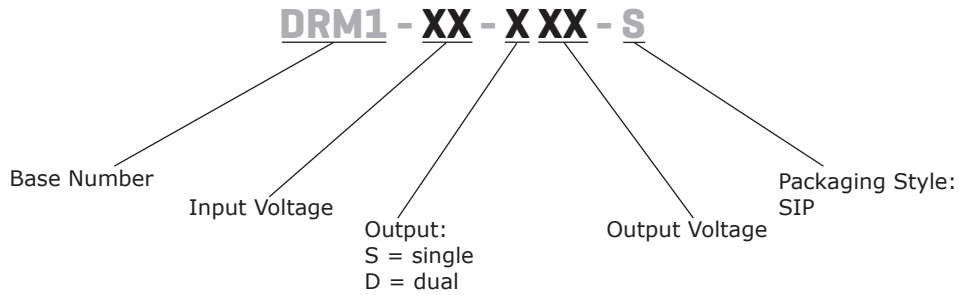
- 1 W isolated output
- industry standard SIP package
- single and dual unregulated output
- 3,000 Vdc isolation voltage
- certified to UL 62368-1
- -40 to 100°C temperature range with derating



| MODEL | input voltage | | output voltage | output current | output power | ripple & noise ¹ | efficiency |
|---------------|---------------|-------------|----------------|----------------|--------------|-----------------------------|------------|
| | typ (Vdc) | range (Vdc) | (Vdc) | max (mA) | max (W) | max (mVp-p) | typ (%) |
| DRM1-5-S3-S | 5 | 4.5~5.5 | 3.3 | 303 | 1 | 100 | 74 |
| DRM1-5-S5-S | 5 | 4.5~5.5 | 5 | 200 | 1 | 100 | 79 |
| DRM1-5-S12-S | 5 | 4.5~5.5 | 12 | 84 | 1 | 100 | 78 |
| DRM1-5-S15-S | 5 | 4.5~5.5 | 15 | 67 | 1 | 100 | 85 |
| DRM1-5-D3-S | 5 | 4.5~5.5 | ±3.3 | ±152 | 1 | 100 | 75 |
| DRM1-5-D5-S | 5 | 4.5~5.5 | ±5 | ±100 | 1 | 100 | 77 |
| DRM1-5-D12-S | 5 | 4.5~5.5 | ±12 | ±42 | 1 | 100 | 80 |
| DRM1-5-D15-S | 5 | 4.5~5.5 | ±15 | ±34 | 1 | 100 | 80 |
| DRM1-12-S3-S | 12 | 10.8~13.2 | 3.3 | 303 | 1 | 100 | 79 |
| DRM1-12-S5-S | 12 | 10.8~13.2 | 5 | 200 | 1 | 100 | 82 |
| DRM1-12-S12-S | 12 | 10.8~13.2 | 12 | 84 | 1 | 100 | 80 |
| DRM1-12-S15-S | 12 | 10.8~13.2 | 15 | 67 | 1 | 100 | 81 |
| DRM1-12-D3-S | 12 | 10.8~13.2 | ±3.3 | ±152 | 1 | 100 | 80 |
| DRM1-12-D5-S | 12 | 10.8~13.2 | ±5 | ±100 | 1 | 100 | 76 |
| DRM1-12-D12-S | 12 | 10.8~13.2 | ±12 | ±42 | 1 | 100 | 80 |
| DRM1-12-D15-S | 12 | 10.8~13.2 | ±15 | ±34 | 1 | 100 | 81 |
| DRM1-24-S3-S | 24 | 21.6~26.4 | 3.3 | 303 | 1 | 100 | 78 |
| DRM1-24-S5-S | 24 | 21.6~26.4 | 5 | 200 | 1 | 100 | 79 |
| DRM1-24-S12-S | 24 | 21.6~26.4 | 12 | 84 | 1 | 100 | 79 |
| DRM1-24-S15-S | 24 | 21.6~26.4 | 15 | 67 | 1 | 100 | 80 |
| DRM1-24-D3-S | 24 | 21.6~26.4 | ±3.3 | ±152 | 1 | 100 | 76 |
| DRM1-24-D5-S | 24 | 21.6~26.4 | ±5 | ±100 | 1 | 100 | 80 |
| DRM1-24-D12-S | 24 | 21.6~26.4 | ±12 | ±42 | 1 | 100 | 80 |
| DRM1-24-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 ^{4,5} | 3.3, 5 Vdc output models | | | 1,500 | μF |
| | ±3.3, ±5, 12 Vdc output models | | | 470 | μF |
| | ±12, ±15, 15 Vdc output models | | | 220 | 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 | | | 10 | % |
| | 12, 15 Vdc output model | | | 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 | 3,000 | | | Vdc |
| isolation capacitance | | | 80 | | 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, 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 | | | | |

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 | % |

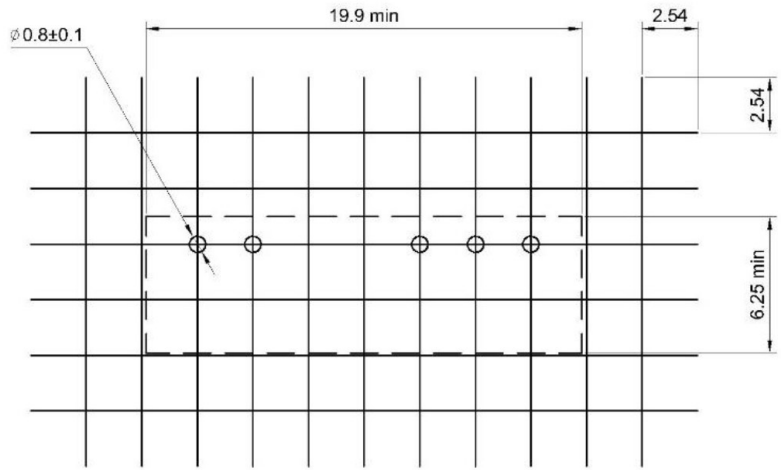
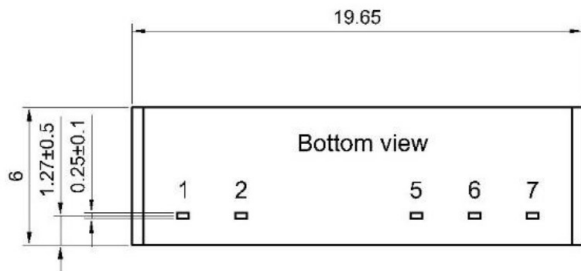
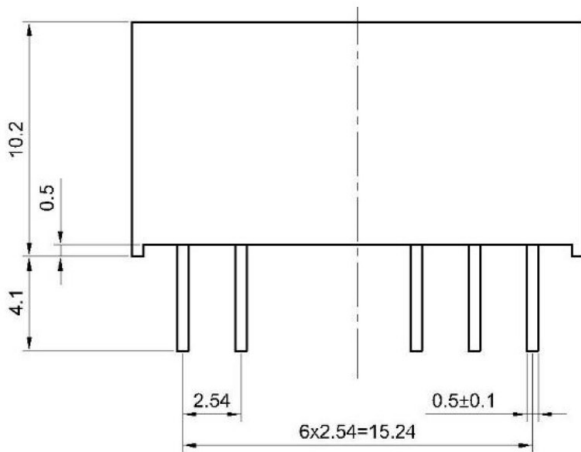
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|------------------|------------------------|-----|-----|-----|-------|
| dimensions | 19.65 x 6.00 x 10.20 | | | | mm |
| case material | UL94V-0 black plastic | | | | |
| potting material | epoxy (UL94V-0) | | | | |
| weight | | | 2.6 | | g |

MECHANICAL DRAWING

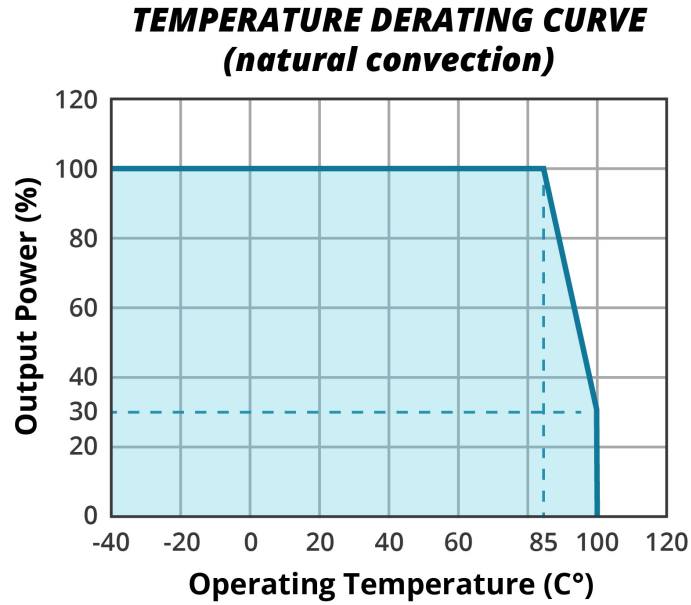
units: mm
tolerance: ±0.25 mm

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

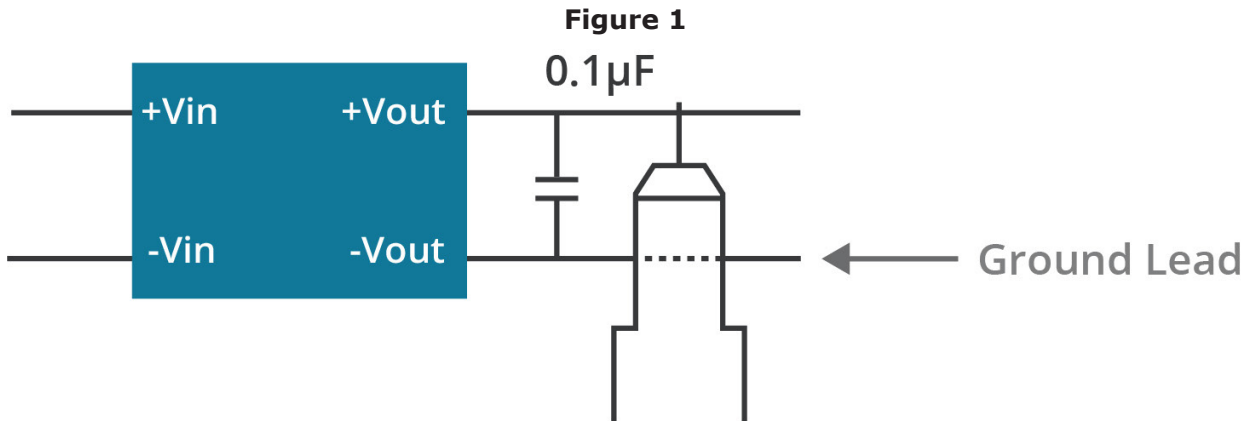


Footprint (Top view)

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

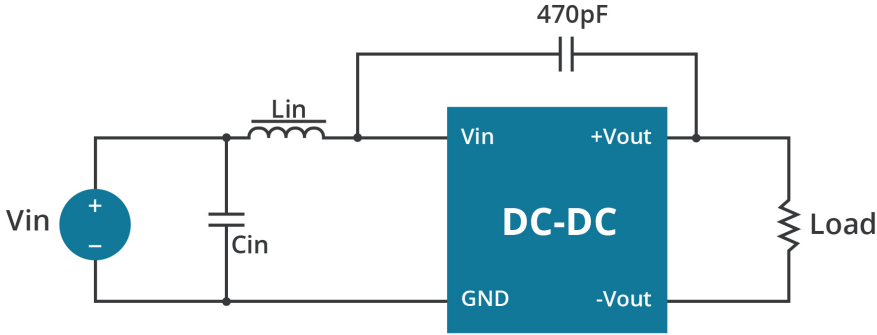


Table 1
Single output

| Recommended EMI Filter Values | | | | |
|-------------------------------|------------|-------------|------------|-------------|
| Vin | Class A | | Class B | |
| | Lin | Cin | Lin | Cin |
| 5 | 47 μ H | 2.2 μ F | 47 μ H | 10 μ F |
| 12 | 22 μ H | 2.2 μ F | 22 μ H | 4.7 μ F |
| 24 | 10 μ H | 2.2 μ F | 22 μ H | 4.7 μ F |

Figure 3
Dual output

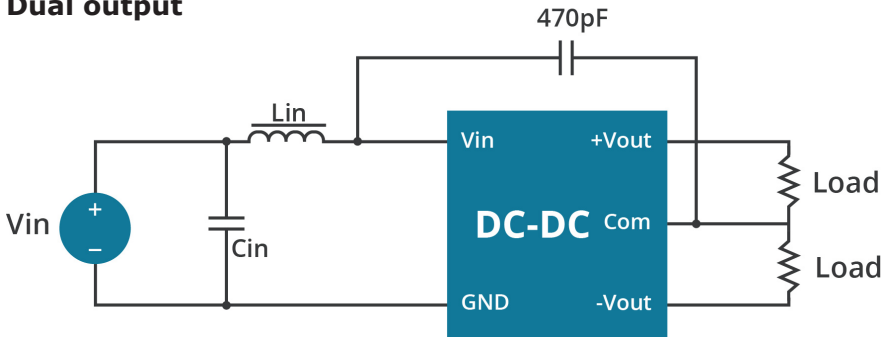


Table 2
Dual output

| Recommended EMI Filter Values | | | | |
|-------------------------------|------------|-------------|-------------|-------------|
| Vin | Class A | | Class B | |
| | Lin | Cin | Lin | Cin |
| 5 | 22 μ H | 2.2 μ F | 100 μ H | 4.7 μ F |
| 12 | 22 μ H | 2.2 μ F | 22 μ H | 4.7 μ F |
| 24 | 10 μ H | 2.2 μ F | 47 μ H | 2.2 μ 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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a bel group

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

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