

Features

- SIP7 package with international standard pinout
- Operating temperature range -40 ~ +95°C
- Comply with IEC/UL62368-1 (Expect for 15Vo/±15Vo) and LVD IEC60601-1
- Medical safety approved (1xMOPP/2xMOOP) according to IEC60601-1
- Low patient leakage current <2µA
- Protections: Short circuit (Continuous)
- 6KVDC high I/O isolation (Reinforced insulation)
- Low cost
- 3 years warranty

Applications

- Medical devices
- Medical oxygen monitor
- CT scanning
- Medical carts
- Oral care equipment
- Telecom / datacom system
- Wireless network
- Industrial control facility

GTIN CODE

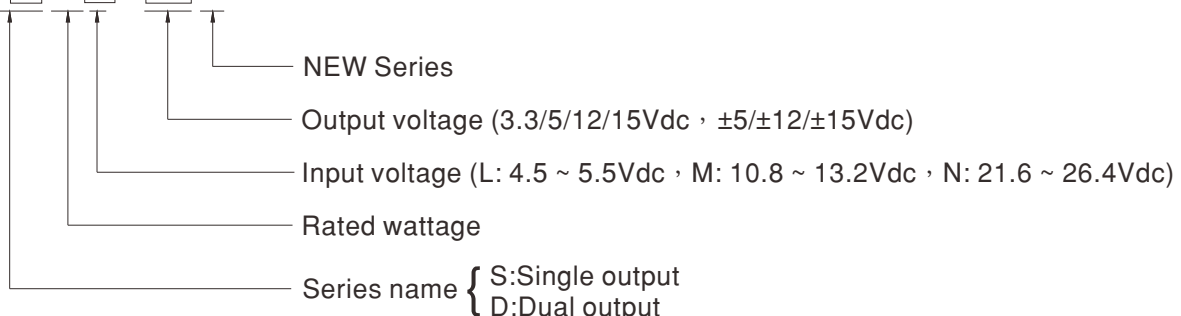
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

Description

MDS01-N and MDD01-N series are 1W isolated and unregulated module type medical grade DC-DC converter with SIP7 package. It features international standard pins, a high efficiency up to 84%, wide working temperature range -40~+95°C, 6KVDC I/P-O/P high isolation voltage, short circuit protection, etc. The models account for different input voltage 5V/12V/24V±10%, and various output voltage, 3.3V/5V/12V/15V for single output and ±5V/±12V/±15V for dual outputs, which are suitable for medical systems, ultra low low leakage current or industrial control, telecommunication field, distributed power architecture, and so on.

Model Encoding

MDS01L-12N





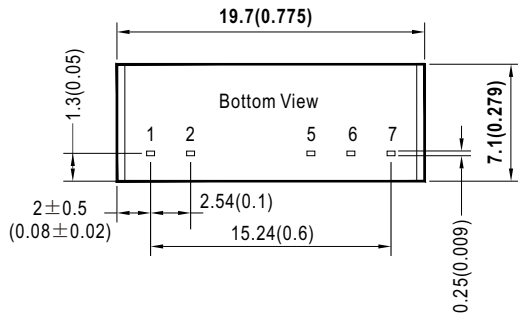
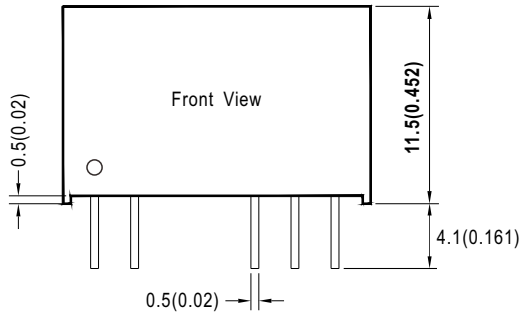
| MODEL SELECTION TABLE | | | | | | | |
|-----------------------|------------------------------|---------------|-----------|----------------|----------------|-------------------|-----------------------|
| ORDER NO. | INPUT | | | OUTPUT | | EFFICIENCY (TYP.) | CAPACITOR LOAD (MAX.) |
| | INPUT VOLTAGE (RANGE) | INPUT CURRENT | | OUTPUT VOLTAGE | OUTPUT CURRENT | | |
| | | NO LOAD | FULL LOAD | | | | |
| MDS01L-03N | Normal 5V (4.5 ~ 5.5V) | 30mA | 257mA | 3.3V | 31 ~ 303mA | 76% | 1000μF |
| MDS01L-05N | | 30mA | 248mA | 5V | 20 ~ 200mA | 79% | 1000μF |
| MDS01L-12N | | 26mA | 240mA | 12V | 9 ~ 84mA | 82% | 220μF |
| MDS01L-15N | | 29mA | 240mA | 15V | 7 ~ 67mA | 84% | 220μF |
| MDD01L-05N | | 30mA | 245mA | ±5V | ±10 ~ 100mA | 78% | *330μF |
| MDD01L-12N | | 31mA | 245mA | ±12V | ±5 ~ 42mA | 81% | *100μF |
| MDD01L-15N | | 28mA | 238mA | ±15V | ±4 ~ 34mA | 82% | *100μF |
| MDS01M-03N | Normal 12V (10.8 ~ 13.2V) | 15mA | 110mA | 3.3V | 31 ~ 303mA | 75% | 1000μF |
| MDS01M-05N | | 15mA | 105mA | 5V | 20 ~ 200mA | 79% | 1000μF |
| MDS01M-12N | | 15mA | 103mA | 12V | 9 ~ 84mA | 81% | 220μF |
| MDS01M-15N | | 15mA | 105mA | 15V | 7 ~ 67mA | 83% | 220μF |
| MDD01M-05N | | 16mA | 107mA | ±5V | ±10 ~ 100mA | 78% | *330μF |
| MDD01M-12N | | 18mA | 104mA | ±12V | ±5 ~ 42mA | 80% | *100μF |
| MDD01M-15N | | 18mA | 114mA | ±15V | ±4 ~ 34mA | 80% | *100μF |
| MDS01N-03N | Normal 24V (21.6 ~ 26.4V) | 8mA | 55mA | 3.3V | 31 ~ 303mA | 75% | 1000μF |
| MDS01N-05N | | 8mA | 52mA | 5V | 20 ~ 200mA | 79% | 1000μF |
| MDS01N-12N | | 8mA | 52mA | 12V | 9 ~ 84mA | 82% | 220μF |
| MDS01N-15N | | 9mA | 52mA | 15V | 7 ~ 67mA | 81% | 220μF |
| MDD01N-05N | | 9mA | 53mA | ±5V | ±10 ~ 100mA | 77% | *330μF |
| MDD01N-12N | | 9mA | 53mA | ±12V | ±5 ~ 42mA | 81% | *100μF |
| MDD01N-15N | | 9mA | 53mA | ±15V | ±4 ~ 34mA | 81% | *100μF |

* For each output

| SPECIFICATION | | | | |
|---|---|---|------------------------------|--|
| INPUT | VOLTAGE RANGE | L: 4.5 ~ 5.5Vdc M: 10.8 ~ 13.2Vdc N: 21.6 ~ 26.4Vdc | | |
| | FILTER | Internal capacitor | | |
| | PROTECTION | Fuse recommended. 500mA Slow-Blow Type for all models | | |
| OUTPUT | VOLTAGE ACCURACY | ±5.0% | | |
| | RATED POWER | 1W | | |
| | RIPPLE & NOISE <small>Note.2</small> | 100mVp-p | | |
| | LINE REGULATION <small>Note.3</small> | 1.2% for 1% input variation | | |
| | LOAD REGULATION <small>Note.4</small> | ±15% for 3.3Vo, 5Vo ; ±10% for others | | |
| | SWITCHING FREQUENCY (Typ.) | 30KHz | | |
| PROTECTION | SHORT CIRCUIT | Protection type : Continuous, automatic recovery | | |
| ENVIRONMENT | COOLING | Free-air convection | | |
| | WORKING TEMP. | -40 ~ +95°C (Refer to "Derating Curve") | | |
| | CASE TEMPERATURE | +105°C | | |
| | WORKING HUMIDITY | 20% ~ 90% RH non-condensing | | |
| | STORAGE TEMP., HUMIDITY | -55 ~ +125°C, 10 ~ 95% RH non-condensing | | |
| | TEMP. COEFFICIENT | 0.02% / °C (0 ~ 90°C) | | |
| | SOLDERING TEMPERATURE | 1.5mm from case of 1 ~ 3sec./260°C max. | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | | |
| SAFETY & EMC (<small>Note.6</small>) | SAFETY STANDARDS | IEC62368-1 / UL62368-1(Expect for 15Vo/±15Vo models), LVD IEC60601-1, EAC TP TC 020/2011 approved | | |
| | WITHSTAND VOLTAGE | I/P-O/P:6KVDC | | |
| | ISOLATION RESISTANCE | I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH | | |
| | ISOLATION LEVEL | Primary-secondary: 1xMOPP / 2xMOOP when system input voltage is with 250VAC | | |
| | ISOLATION CAPACITANCE (Typ.) | 10pF | | |
| | EMC EMISSION | Parameter | Standard | Test Level / Note |
| | | Conducted | BS EN/EN55032, BS EN/EN55011 | Class A/B with external components |
| | | Radiated | BS EN/EN55032, BS EN/EN55011 | Class A/B with external components |
| | EMC IMMUNITY | Parameter | Standard | Test Level / Note |
| | | ESD | BS EN/EN61000-4-2 | Level 2, ±4KV contact, Level 3, ±8KV air |
| | | Radiated Susceptibility | BS EN/EN61000-4-3 | Level 2, 3V/m |
| | | EFT/Burest | BS EN/EN61000-4-4 | Level 1, 0.5KV / 5KHz |
| | | Surge | BS EN/EN61000-4-5 | Level 1, 0.5KV Line to Ground |
| | | Conducted | BS EN/EN61000-4-6 | Level 2, 3V(e.m.f.) |
| Magnetic Field | | BS EN/EN61000-4-8 | Level 1, 1A/m | |
| OTHERS | MTBF | 15000Khrs MIL-HDBK-217F(25°C) | | |
| | DIMENSION (L*W*H) | 19.7*7.1*11.5mm (0.775*0.279*0.452 inch) | | |
| | CASE MATERIAL | Non-Conductive black plastic (UL 94V-0 rated) | | |
| | PACKING | 2.8g ; 24pcs/per tube, 2160pcs/90 tube/per carton | | |
| NOTE | <p>1.All parameters are specified at normal input(L:5Vdc, M:12Vdc, N:24Vdc), rated load, 25°C 70% RH ambient.</p> <p>2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µf & 47µf capacitor.</p> <p>3.Line regulation is measured from low line to high line at rated load.</p> <p>4.Load regulation is measured from 10% to 100% rated load.</p> <p>5.Patient leakage current(2µA max.) and reinforced isolation is based on a 250VAC, 50/60Hz system input voltage.</p> <p>6.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."(as available on http://www.meanwell.com)</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p> | | | |

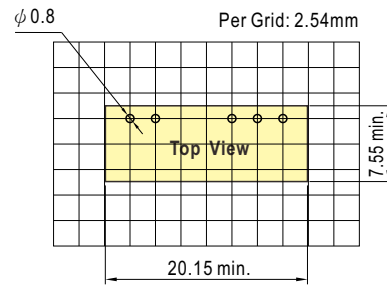
Mechanical Specification

- All dimensions in mm (inch)
- Tolerance: $x.x \pm 0.5\text{mm}$ ($x.xx \pm 0.02''$)
 $x.xx \pm 0.10\text{mm}$ ($x.xxx \pm 0.004''$)
- Pin pitch tolerance: $\pm 0.05\text{mm}$ ($\pm 0.002''$)



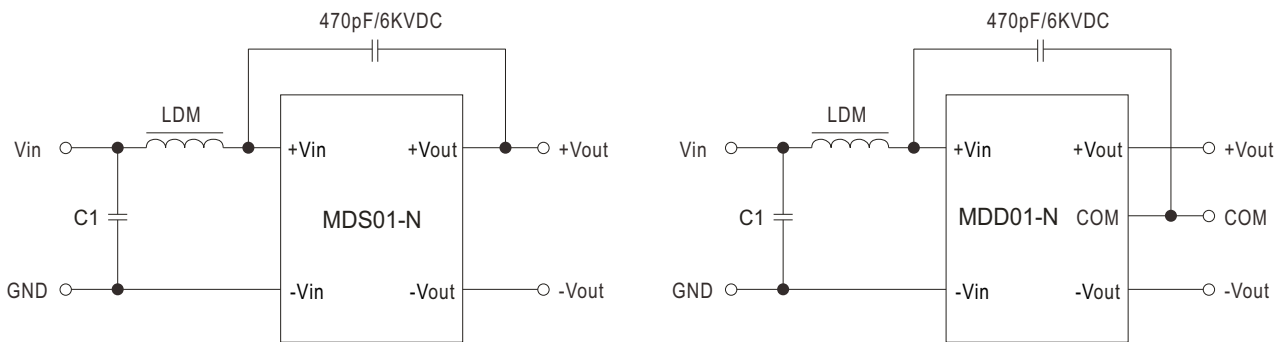
Plug Assignment

| Pin-Out | | |
|---------|-------------------------|-----------------------|
| Pin No. | MDS01-N (Single output) | MDD01-N (Dual output) |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 5 | -Vout | -Vout |
| 6 | No pin | Common |
| 7 | +Vout | +Vout |



EMC Suggestion

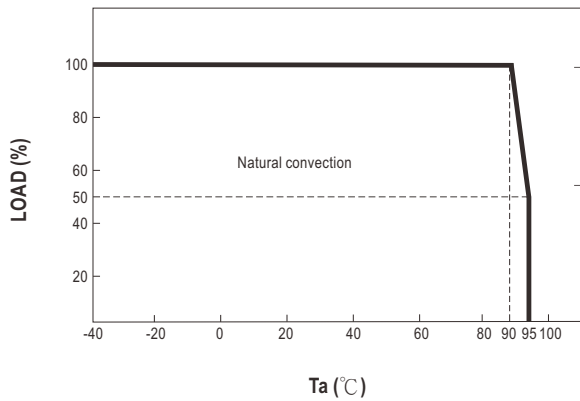
EMC typical recommended circuit (Class A/B)



Recommended typical circuit parameters:

| Input | LDM | C1 |
|-------|-------------|-------------|
| 5V | 47 μ H | 10 μ F |
| 12V | 47 μ H | 10 μ F |
| 24V | 100 μ H | 4.7 μ F |

Derating Curve



Packing

| Standard Tube Packing | MPQ Per Tube (PCS) | One Tube G.W. | Max. Q'TY/ Carton(PCS) | One Carton G.W. |
|---|--------------------|---------------|------------------------|-----------------|
| <p>Unit : mm</p> <p>CARTON L545 x W145 x H220</p> | 24 | 105.5g | 2160 | 9.5Kg |

Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>