

## 1MD8A\_3UP Series

1W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

### DC-DC Converter

1 Watt

- ⊕ High Efficiency up to 81%
- ⊕ 3000VDC Isolation
- ⊕ Temperature Range: -40°C ~ +85°C
- ⊕ No Heatsink Required
- ⊕ No External Component Required
- ⊕ Internal SMD Construction
- ⊕ Industry Standard Pinout
- ⊕ RoHS Compliance
- ⊕ Short Circuit Protection



The 1MD8A\_3UP series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

They apply to:

- 1) Where the voltage of the input power supply is fixed (Voltage variation  $\leq \pm 10\%$ )
- 2) Where isolation is necessary between input and output (Isolation voltage  $\leq 3000\text{VDC}$ )
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

#### Common specifications

|                                      |  |
|--------------------------------------|--|
| Short circuit protection*:           | continuous   |
| Case temperature rise above ambient: | All types<br>35°C MAX: 1MD8A_0505S3UP / 1MD8A_1205S3UP |
| Cooling:                             | Free air convection                                    |
| Operation temperature range:         | -40°C~+85°C  |
| Storage temperature range:           | -50°C ~+130°C  |
| Lead temperature:                    | 300°C MAX, 1.5mm from case for 10 sec                  |
| Storage humidity range:              | < 95%  |
| Case material:                       | Plastic [UL94-V0]                                      |
| MTBF:                                | >3,500,000 hours                                       |
| Weight:                              | 1.25g  |

\*Supply voltage must be discontinued at the end of short circuit duration.

#### Input specifications

| Item                       | Test condition | Min  | Typ | Max  | Units |
|----------------------------|----------------|------|-----|------|-------|
| Voltage range              | • 3.3V input   | 2.9  | 3.3 | 3.6  | VDC   |
|                            | • 5V input     | 4.5  | 5   | 5.5  | VDC   |
|                            | • 12V input    | 11   | 12  | 13.3 | VDC   |
|                            | • 24V input    | 21.6 | 24  | 26.4 | VDC   |
| Internal power dissipation |                |      |     | 520  | mW    |

#### Isolation specifications

| Item                 | Test condition                  | Min  | Typ | Max | Units |
|----------------------|---------------------------------|------|-----|-----|-------|
| Isolation voltage    | Tested for 1 minute and 1mA max | 3000 |     |     | VDC   |
| Isolation resistance | Test at 500VDC                  | 1000 |     |     | MΩ    |

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
2. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. Only typical models listed, other models may be different, please contact our technical person for more details.
4. In this datasheet, all the test methods of indications are based on corporate standards.

#### Output specifications

| Item                    | Test condition   | Min | Typ | Max   | Units |
|-------------------------|--|-----|-----|-------|-------|
| Output power            |  | 0.1 |     | 1     | W     |
| Line regulation         | High Vin to low Vin  |     |     | 1.2   | %     |
| Load regulation         | 10% to 100% load<br>• 3.3V output & 0309<br>• 5V output<br>• 9V output<br>• 12V output<br>• 15V output |     |     | 15    | %     |
|                         |  |     |     | 15    | %     |
|                         |  |     |     | 10    | %     |
|                         |  |     |     | 10    | %     |
|                         |  |     |     | 9     | %     |
| Output voltage accuracy | See tolerance envelope graph   |     |     |       |       |
| Temperature drift       | 100% full load   |     |     | ±0.03 | %/°C  |
| Ripple & Noise*         | 20MHz Bandwidth  |     | 75  | 120   | mVp-p |
| Switching frequency     | Full load, nominal input   |     | 120 |       | KHz   |

\*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

#### Example:

1MD8A\_0505S3UP

1 = 1 Watt; MD8 = Micro DIP8; A = Pinning; 05 = 5 Vin; 05 = 5Vout;  
S = Single Output; 3 = 3kVDC Isolation; U = Unregulated Output;  
P = Short Circuit Protection (SCP)

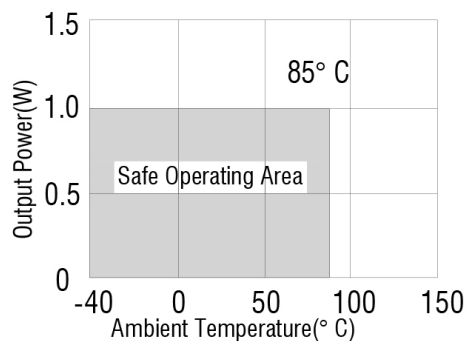
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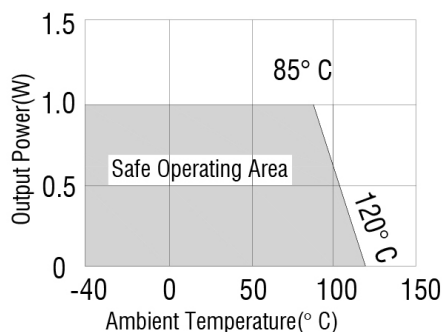
| Part Number    | Input Voltage [V] | Output Voltage [VDC] | Output Current [mA, min] | Output Current [mA, max] | Efficiency [%, max] |
|----------------|-------------------|----------------------|--------------------------|--------------------------|---------------------|
| 1MD8A_0303S3UP | 3.3               | 3.3                  | 30.3                     | 303                      | 71                  |
| 1MD8A_0305S3UP | 3.3               | 5                    | 20                       | 200                      | 74                  |
| 1MD8A_0309S3UP | 3.3               | 9                    | 11.1                     | 111                      | 75                  |
| 1MD8A_0503S3UP | 5                 | 3.3                  | 30.3                     | 303                      | 74                  |
| 1MD8A_0505S3UP | 5                 | 5                    | 20                       | 200                      | 69                  |
| 1MD8A_0509S3UP | 5                 | 9                    | 11.1                     | 111                      | 74                  |
| 1MD8A_0512S3UP | 5                 | 12                   | 8.3                      | 83                       | 78                  |
| 1MD8A_0515S3UP | 5                 | 15                   | 6.7                      | 67                       | 78                  |
| 1MD8A_1205S3UP | 12                | 5                    | 20                       | 200                      | 72                  |
| 1MD8A_1209S3UP | 12                | 9                    | 11.1                     | 111                      | 78                  |
| 1MD8A_1212S3UP | 12                | 12                   | 8.3                      | 83                       | 80                  |
| 1MD8A_1215S3UP | 12                | 15                   | 6.7                      | 67                       | 81                  |
| 1MD8A_2403S3UP | 24                | 3.3                  | 30.3                     | 303                      | 73                  |
| 1MD8A_2405S3UP | 24                | 5                    | 20                       | 200                      | 69                  |
| 1MD8A_2412S3UP | 24                | 12                   | 20                       | 83                       | 78                  |
| 1MD8A_2415S3UP | 24                | 15                   | 20                       | 67                       | 79                  |

## Typical characteristics

For types:  
1MD8A\_0303S3UP / 1MD8A\_0305S3UP /  
1MD8A\_0309S3UP / 1MD8A\_0503S3UP

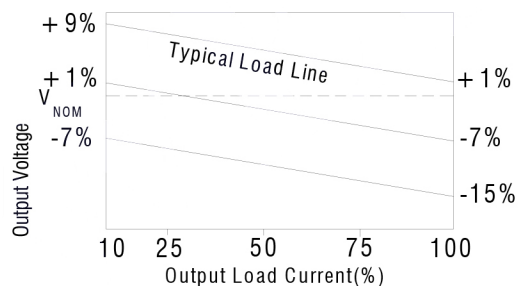


All other types:

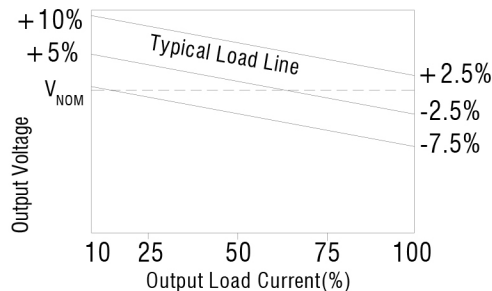


## Tolerance envelope

3.3V output types:



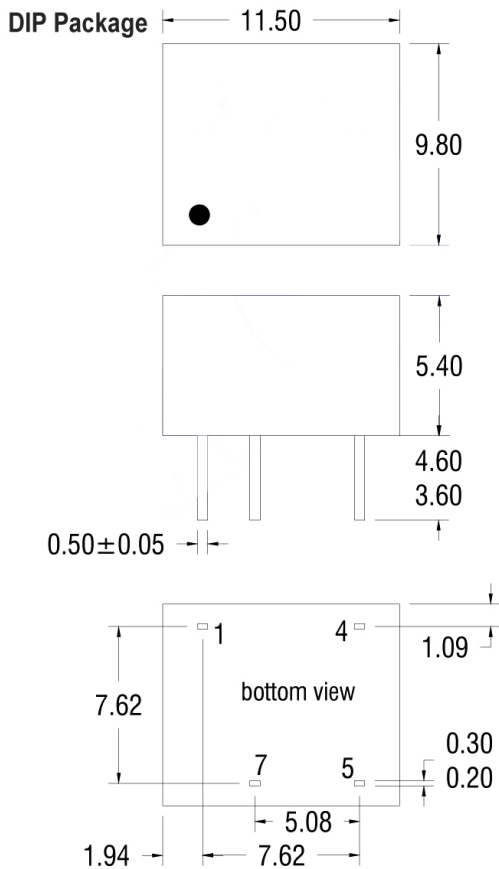
All other types:



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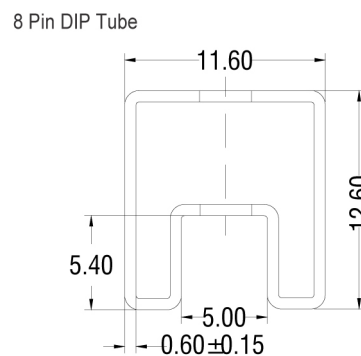
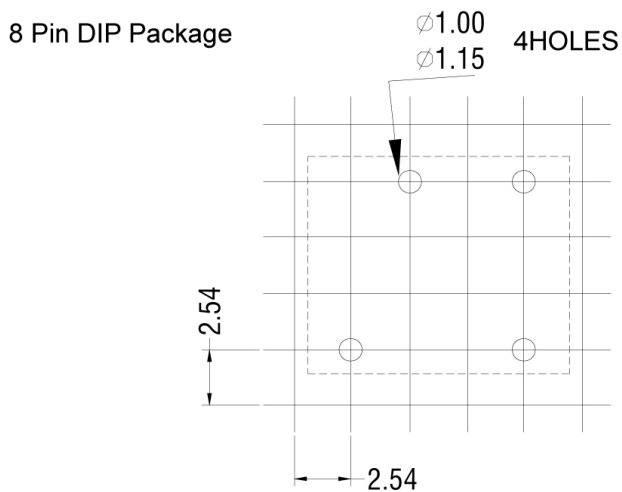
## Mechanical dimensions Pin connections



| 8 PIN DIP |          |
|-----------|----------|
| Pin       | Function |
| 1         | -Vin     |
| 4         | +Vin     |
| 5         | +Vout    |
| 7         | -Vout    |

**Note:**  
 All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54mm pitch and within  $\pm 0.25$ mm of true position.  
 Weight: 1.25g(DIP)

## Recommended footprint Tube outline dimensions



**Note:**  
 Tube length: 520mm  $\pm 2$ mm  
 Tube quantity: 40pcs