

**FEATURES :**

- Small Footprint
- 14PIN SMD Package
- High Efficiency up to 80%
- Unregulated Output Types
- High Power Density
- No External Component Required
- Operating Temperature:-40°C TO +85°C
- Industry Standard Pinout

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number    | Output Voltage | Output Current | Efficiency | Package Style |
|----------------|----------------|----------------|------------|---------------|
|                | Vdc            | mA             | %TYP       |               |
| 13DS-XXS03NNL  | 3.3            | 303            | 65         | 1             |
| 13DS-XXS05NNL  | 5              | 200            | 70         | 1             |
| 13DS-XXS09NNL  | 9              | 110            | 75         | 1             |
| 13DS-XXS03N2NL | 3.3            | 303            | 65         | 2             |
| 13DS-XXS05N2NL | 5              | 200            | 70         | 2             |
| 13DS-XXS09N2NL | 9              | 110            | 75         | 2             |
| 13DS-XXS12N2NL | 12             | 84             | 78         | 2             |
| 13DS-XXS15N2NL | 15             | 67             | 80         | 2             |
| 13DS-XXS24N2NL | 24             | 42             | 80         | 2             |

**Note:**

1. "XX" is input voltage:03=3.3Vdc,05=5Vdc,09=9Vdc,12=12Vdc,15=15Vdc. 24=24Vdc
2. 12Vdc/15Vdc/24Vdc input voltage, using the 2nd package.
3. The input voltage increases, there will be an increase in efficiency.

**Input Specifications**

| Parameters        | Conditions | Min | Typ | Max | Units |
|-------------------|------------|-----|-----|-----|-------|
| Voltage Tolerance | Vo,Io Nom  |     |     | ±10 | %     |
| Filter            | Capacitor  |     |     |     |       |

**Output Specifications**

| Parameters                      | Conditions                    | Min | Typ | Max     | Units |
|---------------------------------|-------------------------------|-----|-----|---------|-------|
| Voltage Tolerance               | 100% full load                |     |     | ±5      | %     |
| Short Circuit Protection        | Short Term                    |     |     | 1       | Sec   |
| Line Regulation                 | For 1.0% OF Vin               |     | 1.2 |         | %     |
| Load Regulation                 | 3.3V (10% To 100% F.L)        |     | 15  |         | %     |
| Load Regulation                 | 5V,9V (10% To 100% F.L)       |     |     | 15&9.0  | %     |
| Load Regulation                 | 12V,15V,24V (10% To 100% F.L) |     |     | 7.5&7.0 | %     |
| Ripple & Noise                  | BW=DC To 20MHz                |     |     | 100     | mVp-p |
| Transient response setting time | 50% load step change          |     | 350 |         | us    |

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DC-DC Converter

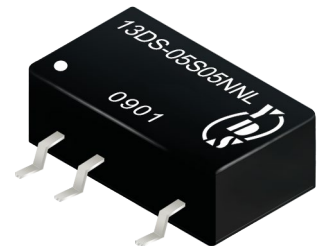
13DS SERIES

1Watt

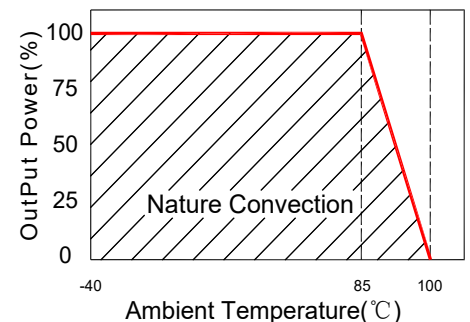
1KV Isolated

Single Output

SMD



Temperature Derating Graph



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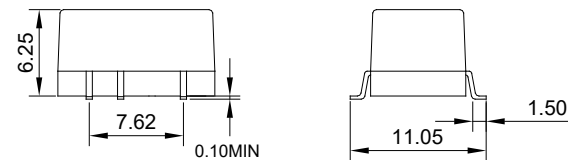
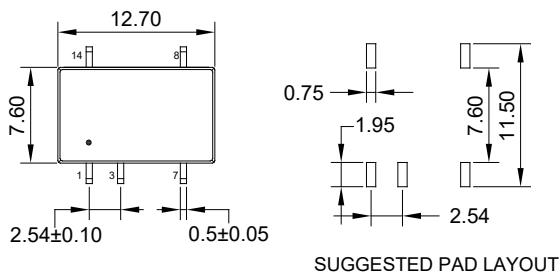
Rev:3 2020/12/15

General Specifications

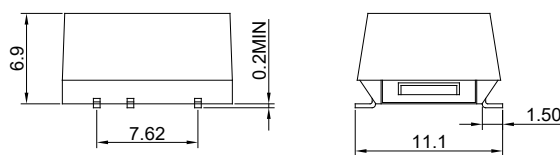
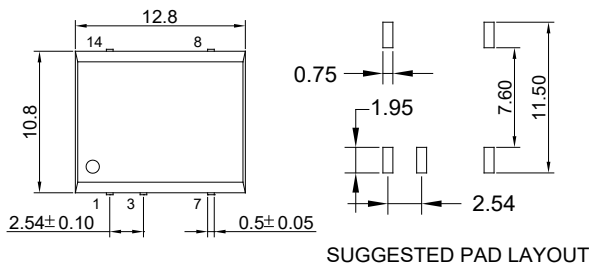
| Parameters            | Conditions               | Min     | Typ            | Max | Units |
|-----------------------|--------------------------|---------|----------------|-----|-------|
| Isolation Resistance  | 500Vdc                   | 1000    |                |     | MΩ    |
| Switching Frequency   | Full load, nominal input |         | 100            |     | KHz   |
| Operating Temperature |                          | -40     |                | +85 | °C    |
| Humidity              | Non Condensing           |         |                | 95  | %     |
| Cooling               | Free air Convection      |         |                |     |       |
| Case material         | DAP                      |         |                |     |       |
| MTBF                  | MIL-HDBK-217F @25°C      | 3500000 |                |     | Hours |
| Weight                | Package 1/2              |         | 1.2/1.28       |     | g     |
| Dimensions            |                          |         | 12.70x7.6x6.25 |     | mm    |
| Dimensions            |                          |         | 12.8X10.8X6.9  |     | mm    |

Markings and Dimensions

1

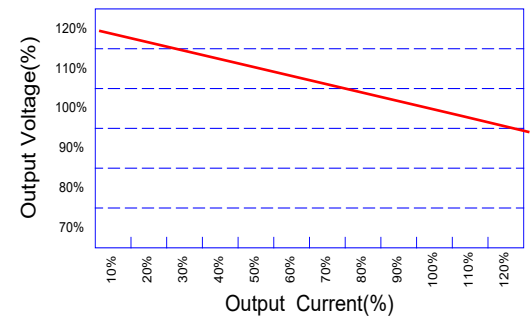


2



Unit: mm Unless otherwise specified, all tolerances are ±0.25

Tolerance Envelope Graph

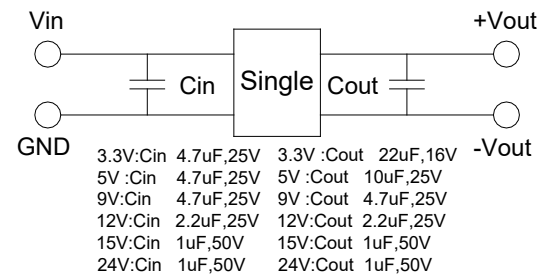


Part Number

13DS - 05 S 12 N 2 NL  
A B C D E F G

- A:Series
- B:Input Voltage
- C:Single Output
- D:Output Voltage
- E:Unregulated(N)
- F:Package
- G:RoHS Version

Recommended Test Circuit



PIN Connection

| PIN    | 1    | 3    | 7     | 8     | 14 |
|--------|------|------|-------|-------|----|
| Single | -Vin | +Vin | -Vout | +Vout | NC |