

## FEATURES:

- 14PIN SMD Package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 89%
- Unregulated Output Types
- 1.5KVDC& 3KVDC Isolation
- Operating Temperature:-40°C to +105°C
- Industry Standard Pinout
- UL/cUL/IEC/EN 62368-1 approved, CB-Report

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

| Part Number                     | Output Voltage | Output Current | Efficiency | Capacitive Load(μF) | Package Style |
|---------------------------------|----------------|----------------|------------|---------------------|---------------|
|                                 | Vdc            | mA             | %TYP       | Max.                |               |
| 13DSC-05S03NYP2 <sup>(H3)</sup> | 3.3            | 600            | 78         | 2400                | 1/2/3/4       |
| 13DSC-05S05NYP2 <sup>(H3)</sup> | 5              | 400            | 85         | 2400                | 1/2/3/4       |
| 13DSC-05S09NYP2 <sup>(H3)</sup> | 9              | 223            | 87         | 820                 | 1/2/3/4       |
| 13DSC-05S12NYP2 <sup>(H3)</sup> | 12             | 167            | 87         | 470                 | 1/2/3/4       |
| 13DSC-05S15NYP2 <sup>(H3)</sup> | 15             | 133            | 88         | 220                 | 1/2/3/4       |
| 13DSC-05S24N3P2 <sup>(H3)</sup> | 24             | 84             | 89         | 100                 | 3/4           |
| 13DSC-XXS03NYP2 <sup>(H3)</sup> | 3.3            | 600            | 80         | 2400                | 1/2/3/4       |
| 13DSC-XXS05NYP2 <sup>(H3)</sup> | 5              | 400            | 85         | 2400                | 1/2/3/4       |
| 13DSC-XXS09NYP2 <sup>(H3)</sup> | 9              | 223            | 87         | 820                 | 1/2/3/4       |
| 13DSC-XXS12NYP2 <sup>(H3)</sup> | 12             | 167            | 87         | 470                 | 1/2/3/4       |
| 13DSC-XXS15NYP2 <sup>(H3)</sup> | 15             | 133            | 88         | 220                 | 1/2/3/4       |
| 13DSC-XXS24N3P2 <sup>(H3)</sup> | 24             | 84             | 89         | 100                 | 3/4           |

### Note:

1. No suffix is standard isolation (1.5KVDC) e.g. 13DSC-15S05NP2, \*add suffix "H3" for 3KVDC isolation, e.g. 13DSC-12S09NP2H3, 13DSC-12S12NP2H3.
2. Y = 1 or 2 or 3 or 4 for package, no suffix Y package1, when Y=2, package2, and so on, e.g. 13DSC-15S05NP2, 13DSC-24S12N3P2H3.

**When the I / O is equal to 24 V, package 1 and 2 disable.**

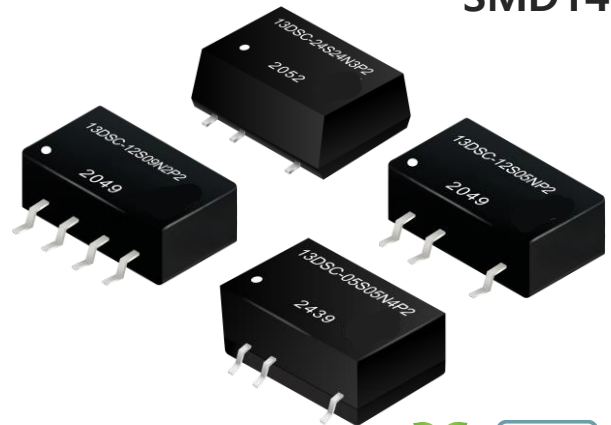
3. "XX" is input voltage : 12=12Vdc, 15=15Vdc, 24=24Vdc  
e.g. 13DSC-12S05N3P2, 13DSC-15S12NP2H3, 13DSC-24S15N2P2

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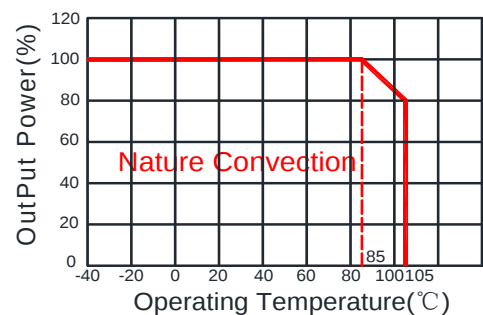
## DC-DC Converter 13DSC-2W SERIES

2Watt

1.5KV & 3KV Isolated  
SingleOutput  
SMD14



### Temperature Derating Graph



## CONTACT US

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## Input Specifications

| Parameters                  | Conditions  | Min  | Typ | Max | Units |
|-----------------------------|-------------|------|-----|-----|-------|
| Voltage Range               | Vo,lo Nom   |      | ±10 |     | %     |
| Filter                      | Capacitor   |      |     |     |       |
| SurgeRange<br>(1 sec. max.) | 5VDC input  | -0.7 |     | 9   | VDC   |
|                             | 9VDC input  | -0.7 |     | 15  | VDC   |
|                             | 12VDC input | -0.7 |     | 18  | VDC   |
|                             | 15VDC input | -0.7 |     | 21  | VDC   |
|                             | 24VDC input | -0.7 |     | 30  | VDC   |
| Reflected Ripple Current    |             |      | 15  |     | mA    |

## Output Specifications

| Parameters               | Conditions             | Min | Typ | Max | Units |
|--------------------------|------------------------|-----|-----|-----|-------|
| Voltage Tolerance        | 100% full load         |     |     | ±5  | %     |
| Short Circuit Protection | Continuous             |     |     |     |       |
| Line Regulation          | For 1.0% of Vin        |     | 1.2 |     | %     |
| Load Regulation          | 3.3V (10% To 100% F.L) |     | 15  | 20  | %     |
|                          | 5V (10% To 100% F.L)   |     | 8   | 15  | %     |
|                          | 9V (10% To 100% F.L)   |     | 6   | 10  | %     |
|                          | 12V (10% To 100% F.L)  |     | 5   | 10  | %     |
|                          | 15V (10% To 100% F.L)  |     | 4   | 10  | %     |
| Ripple & Noise           | 24V (10% To 100% F.L)  |     | 3   | 10  | %     |
|                          | BW=DC To 20MHz         |     | 75  | 150 | mVp-p |

## General Specifications

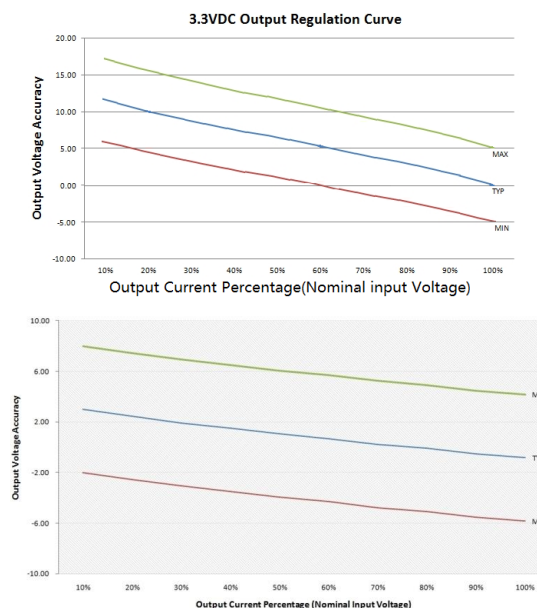
| Parameters            | Conditions                         | Min               | Typ | Max  | Units |
|-----------------------|------------------------------------|-------------------|-----|------|-------|
| Isolation Resistance  | 500Vdc                             | 1000              |     |      | MΩ    |
| Isolation Capacitance | Input-output, 100KHz/0.1V          |                   | 20  |      | pF    |
| Switching Frequency   | Full load,nominal input @5V Vin    |                   | 215 |      | KHz   |
|                       | Full load,nominal input @other Vin |                   | 250 |      | KHz   |
| Operation Temperature |                                    | -40               |     | +105 | °C    |
| Storage Temperature   |                                    | -55               |     | +125 | °C    |
| Humidity              | Non Condensing                     |                   |     | 95   | %     |
| Cooling               | Free air Convection                |                   |     |      |       |
| Case material         | DAP                                |                   |     |      |       |
| MTBF                  | MIL-HDBK-217F@25°C                 | 3500000           |     |      | Hours |
| Weight                | Package 1/2/3/4                    | 1.2/1.2/1.28/1.36 |     |      | g     |
| Dimensions            | Package 1/2                        | 12.7x7.6x6.25     |     |      | mm    |
|                       | Package 3                          | 12.8x10.8x6.9     |     |      | mm    |
|                       | Package 4                          | 13.2x8.5x7.0      |     |      | mm    |

## Part Number

13DSC - 12 S 12 N 3 P 2  
A B C D E F G H

A:Series  
B:Input Voltage  
C:Single Output  
D:Output Voltage  
E:Unregulated(N)  
F:Package  
G:Protection  
H:Output Power

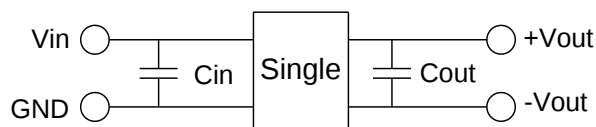
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

|     |     |                                                                 |
|-----|-----|-----------------------------------------------------------------|
| EMI | CE  | CISPR32/EN55032 CLASS B<br>(see Fig. 1 for recommended circuit) |
|     | RE  | CISPR32/EN55032 CLASS B<br>(see Fig. 1 for recommended circuit) |
| EMS | ESD | IEC/EN61000-4-2 Air ±8kV ,<br>Contact ±6kV perf. Criteria B     |

## Recommended Test Circuit



| Vin   | Cin       | Single Vout | Cout      |
|-------|-----------|-------------|-----------|
| 5Vdc  | 4.7μF/25V | 3.3Vdc      | 10μF/16V  |
| 12Vdc | 2.2μF/25V | 5Vdc        | 10μF/16V  |
| 15Vdc | 2.2μF/25V | 9Vdc        | 2.2μF/16V |
| 24Vdc | 1μF/50V   | 12Vdc       | 2.2μF/25V |
| - -   | - -       | 15Vdc       | 1μF/25V   |
| - -   | - -       | 24Vdc       | 1μF/50V   |

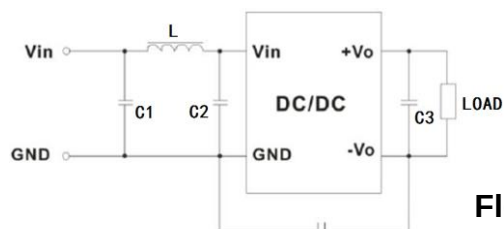
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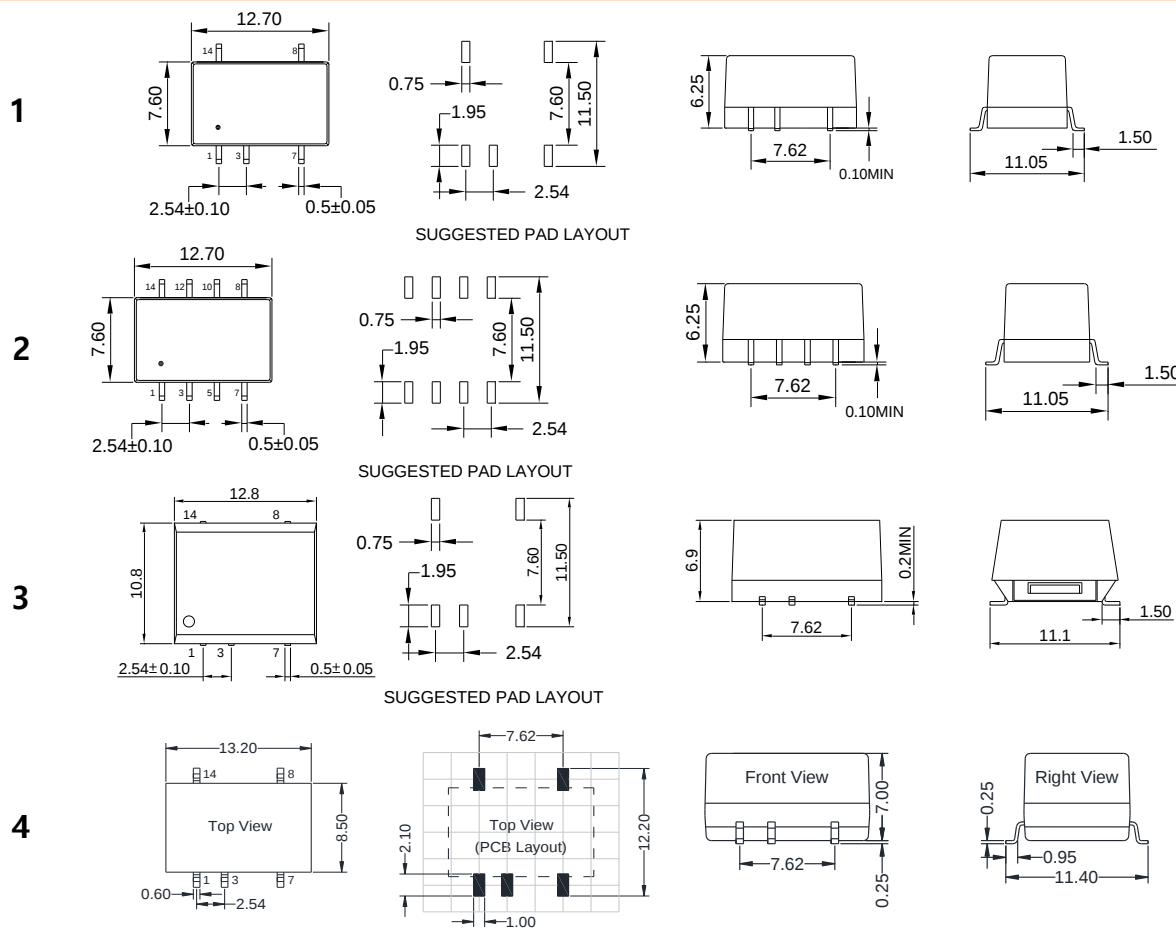
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**EMC (CLASS B) Compliance Circuit**

**Fig.1**
**EMC recommended circuit value table**

|     |    |                          |
|-----|----|--------------------------|
| EMI | C1 | 4.7μF /50V               |
|     | C2 | 4.7μF /50V               |
|     | CY | 1nF/4kV                  |
|     | C3 | Recommended Test Circuit |
|     | L  | 6.8μH                    |

**Markings and Dimensions**

 UNIT:mm Unless otherwise specified,all tolerances are  $\pm 0.25$ 
**PIN Connection**

| PIN           | 1    | 3    | 7     | 8     | 14 | Other  |
|---------------|------|------|-------|-------|----|--------|
| Package 1/3/4 | -Vin | +Vin | -Vout | +Vout | NC | NO PIN |
| Package 2     | -Vin | +Vin | -Vout | +Vout | NC | NC     |

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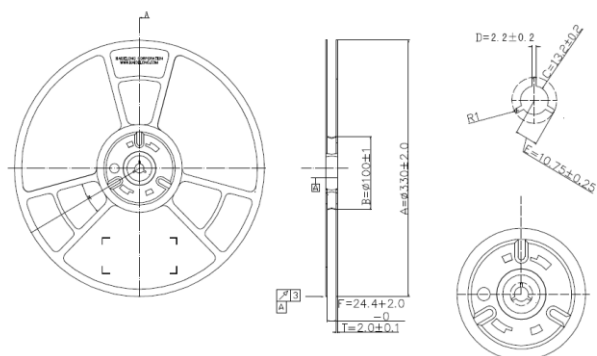
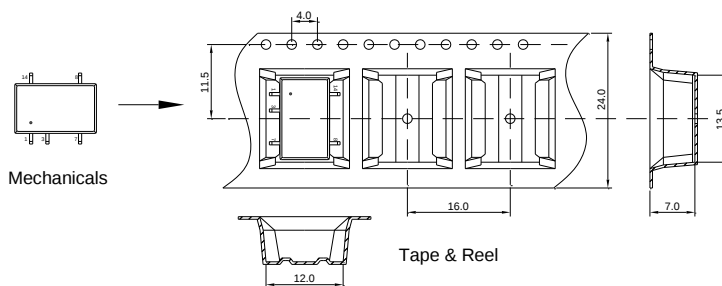
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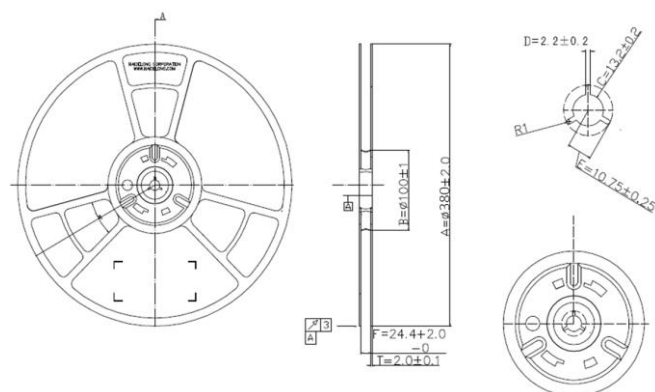
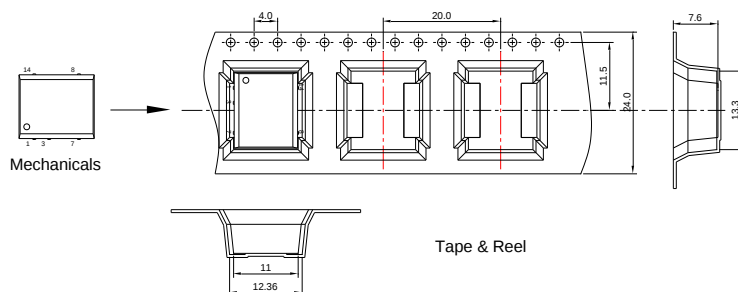
## Packaging

### N1 / N2 / N4 Package



Tape & Reel----- 500 pcs

### N3 Package



Tape & Reel----- 500 pcs

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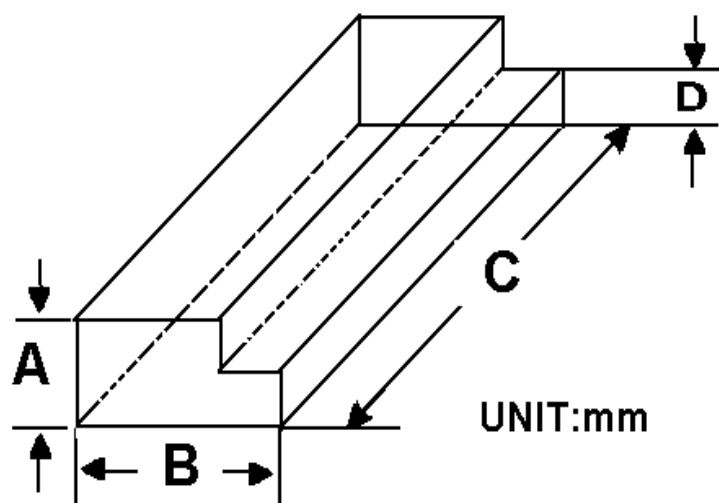
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Packaging



TUBE-----39pcs

| Size(mm) |       |     |      |
|----------|-------|-----|------|
| A        | B     | C   | D    |
| 9.50     | 16.50 | 522 | 5.00 |

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