



3000Vdc Isolation Single & Dual Output 1 Watt Dc-Dc Converter



FEATURES:

- Small Footprint ● 22PIN
- SMD Package ● High
- Efficiency up to 80%
- Recognized By UL 60950-1
- Unregulated Output Types ● High Power Density ● Industry Standard Pinout
- Operating Temperature: -40°C TO +85°C ● No External Component Required



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 | |
| 13DS1-XXS03NNL | 3.3 | 303 | 65 | 1 |
| 13DS1-XXS05NNL | 5 | 200 | 70 | 1 |
| 13DS1-XXS09NNL | 9 | 112 | 75 | 1 |
| 13DS1-XXS12N2NL | 12 | 84 | 78 | 2 |
| 13DS1-XXS15N2NL | 15 | 67 | 80 | 2 |
| 13DS1-XXD03NNL | ±3.3 | ±150 | 65 | 1 |
| 13DS1-XXD05NNL | ±5 | ±100 | 70 | 1 |
| 13DS1-XXD09NNL | ±9 | ±56 | 75 | 1 |
| 13DS1-XXD12N2NL | ±12 | ±42 | 78 | 2 |
| 13DS1-XXD15N2NL | ±15 | ±34 | 80 | 2 |

Note: 1. "XX" Is Input Voltage: 03=3.3Vdc, 05=5Vdc, 09=9Vdc, 12=12Vdc, 15=15Vdc.
 3. The input voltage increases, there will be an increase in efficiency.

2. Over 12Vdc, 15Vdc input voltage, using the 2nd package.

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) | | | 12&8.0 | % |
| Load Regulation | 12V, 15V (10% To 100% F.L.) | | | 8.5&7.0 | % |
| Ripple & Noise | BW=DC To 20MHz | | | 75 | mVp-p |
| Transient response setting time | 50% load step change | | 350 | | us |

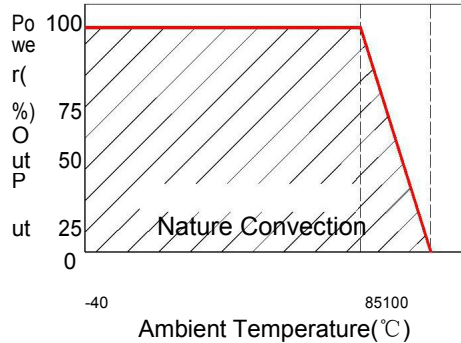
General Specifications

| 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 | Package1 or Package2 | | 1.8 | | g |
| Dimensions | Package 1 | 15.24x8.0x7.3 0 | | | mm |
| Dimensions | Package 2 | 15.24x8.0x8.50 | | | mm |

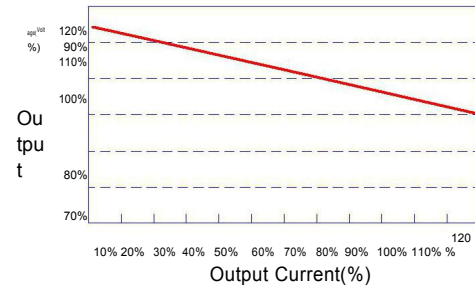


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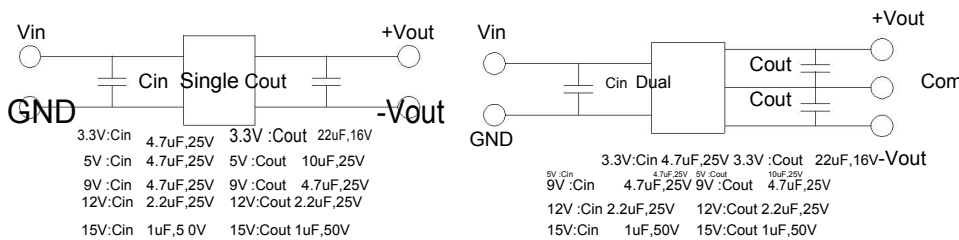
Temperature Derating Graph



Tolerance Envelope Graph



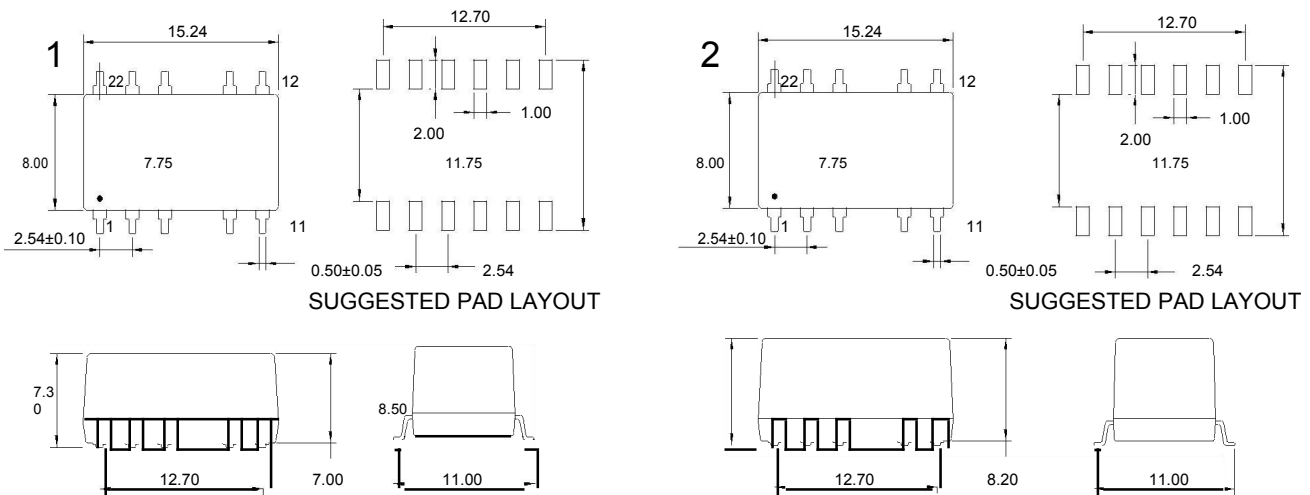
Recommended Test Circuit



Part Number

13DS1 - 05 S 12 N 2 NL
 A B C D E F G
 A:Series
 B:Input Voltage
 C:Single(S)Dual(D)
 D:Output Voltage
 E:Unregulated(N)
 F:Packge
 G:RoHS Version

Markings and Dimensions



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

PIN Connection

| PIN | 1 | 3 | 5 | 9 | 11 | 12 | 14 | 18 | 20 | 22 |
|--------|------|------|----|-------|-------|----|-------|----|----|----|
| Single | -Vin | +Vin | NC | -Vout | NC | NC | +Vout | NC | NC | NC |
| Dual | -Vin | +Vin | NC | Com | -Vout | NC | +Vout | NC | NC | NC |