GAPTEC®
GREEN TECHNOLOGY

# 1S7A_DS3UP Series

1W - Dual Separate Output - Fixed Input - Isolated & Unregulated
SIP PACKAGE

## DC-DC Converter 1 Watt

- **7PIN SIP package**
- **Efficiency up to 80%**
- **Temperature range: -40°C ~ +85°C**
- **No external component required**
- **Short circuit protection (SCP)**
- **3KVDC isolation**
- **Internal SMD construction**
- **Unregulated output types**
- **Industry standard pinout**
- **RoHS compliance**
- **Dual separate isolated outputs**

The 1S7A_DS3UP Series are miniature, isolated 1W DC/DC-converters with twin output voltage in a SIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

### Common specifications

| | |
|---|---|
| Short circuit protection: | continuous, automatic recovery |
| Temperature rise at full load: | 25°C MAX, 15°C TYP |
| Cooling: | Free air convection |
| Operation temperature range: | -40°C – +85°C |
| Storage temperature range: | -55°C – +130°C |
| Lead temperature: | 300°C (1.5mm from case for 10 sec.) |
| Storage humidity range: | < 95% |
| Case material: | Plastic [UL94-V0] |
| MTBF: | >3,500,000 hours |
| Weight: | 2.3g |

### Input specifications

| Item | Test condition | Min | Typ | Max | Units |
|---|---|---|---|---|---|
| Voltage range | • 5V input types<br>• 12V input types | 4.5<br>11 | 5<br>12 | 5.5<br>13 | V<br>V |
| Voltage tolerance | Vo, Io nom | | | ±5 | % |
| Filter | Capacitor | | | | |

### Isolation specifications

| Item | Test condition | Min | Typ | Max | Units |
|---|---|---|---|---|---|
| Isolation voltage | Tested for 1 minute | 3000 | | | VDC |
| Isolation resistance | Test at 1000VDC | 1 | | | GΩ |

### Output specifications

| Item | Test condition | Min | Typ | Max | Units |
|---|---|---|---|---|---|
| Voltage tolerance | 100% full load | | | ±5 | % |
| Line regulation | For Vin change of ±1% | | 1.0 | 1.2 | % |
| Load regulation | 10% to 100% full load<br>• 3.3V/5V<br>• 9V/12V/15V | | | <br>14<br>9 | <br>%<br>% |
| Temperature drift | 100% full load | | | ±0.03 | %/°C |
| Ripple & Noise | 20MHz Bandwidth | | 75 | 100 | mVp-p |
| Switching frequency | Full load, nominal input | | 110 | | KHz |

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

**Model selection:**
**WCTP**_xxyyN##O**
**W=**Watt; **C=** Case; **T=**Type; **P=**Pinning; ****=** Voltage Variation (omitted ± 10%); **xx=** Vin; **yy=** Vout; **N=** Numbers of Output; **##=** Isolation (kVDC); **O=** output regulation

**Example:**
**1S7A_050503DS3UP**
**1=1Watt; S7= SIP7; A=Pinning; 5Vin; 5Vout1; 3.3Vout2**
**DS= Dual Separate Output; 3=3kVDC; U=Unregulated Output;**
**P= Short circuit protection**

**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. This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. SIP types in this series are backward compatible with Sn/Pb soldering systems.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.



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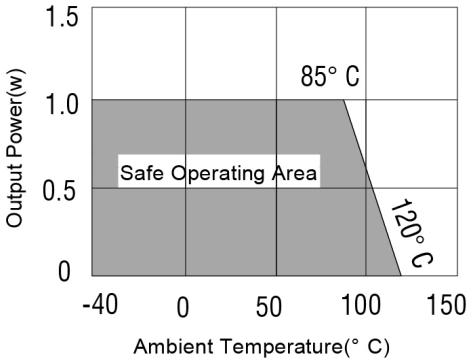
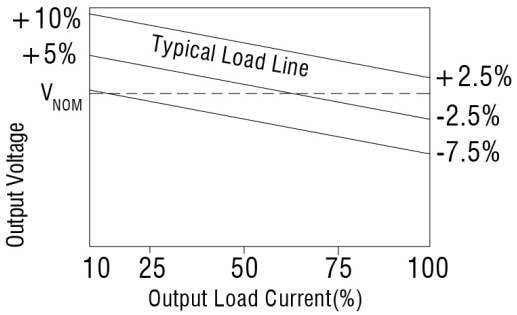
| Part Number | Input Voltage [V] | Output Voltage 1 [VDC] | Output Voltage 2 [VDC] | Output Current 1 [mA] | Output Current 2 [mA] | Efficiency [%, max] | Package Style |
|---|---|---|---|---|---|---|---|
| 1S7A_050503DS3UP | 5 | 5 | 3.3 | 100 | 151 | 70 | SIP |
| 1S7A_050505DS3UP | 5 | 5 | 5 | 100 | 99 | 72 | SIP |
| 1S7A_050509DS3UP | 5 | 5 | 9 | 100 | 55 | 79 | SIP |
| 1S7A_050512DS3UP | 5 | 5 | 12 | 100 | 41 | 80 | SIP |
| 1S7A_050515DS3UP | 5 | 5 | 15 | 100 | 35 | 80 | SIP |
| 1S7A_120505DS3UP | 12 | 5 | 5 | 100 | 99 | 70 | SIP |
| 1S7A_120509DS3UP | 12 | 5 | 9 | 100 | 55 | 80 | SIP |
| 1S7A_120512DS3UP | 12 | 5 | 12 | 100 | 41 | 79 | SIP |
| 1S7A_120515DS3UP | 12 | 5 | 15 | 100 | 35 | 80 | SIP |

# Typical characteristics

**Temperature derating graph**

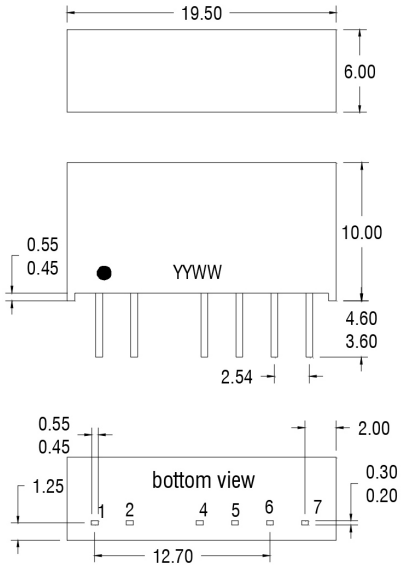



**Tolerance envelope graph**




# Mechanical Dimensions

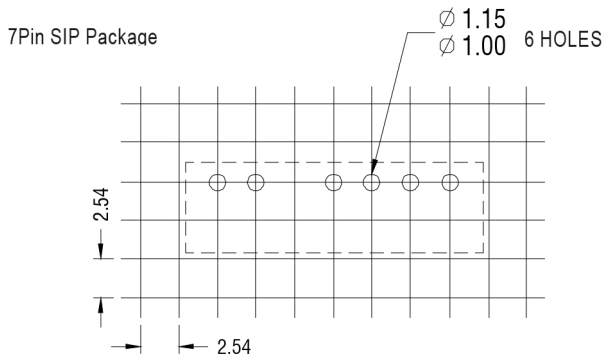
**SIP Package**



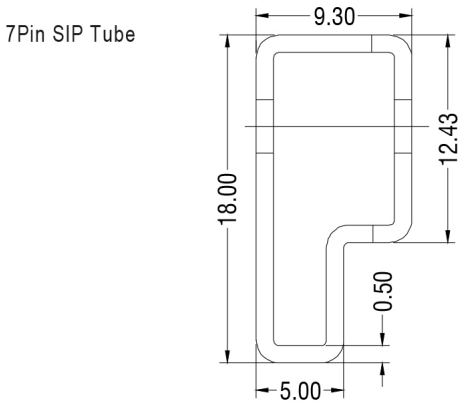

| PIN CONNECTIONS-7PIN SIP | |
|---|---|
| Pin | Function |
| 1 | +Vin |
| 2 | -Vin |
| 4 | +Vout1 |
| 5 | -Vout1 |
| 6 | +Vout2 |
| 7 | -Vout2 |

All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.
Weight: 2.3g

## Recommended footprint




## Tube outline dimensions




Unless otherwise stated all dimensions in mm ±0.5mm.

Tube length (7 Pin SIP) : 520mm ±2mm
Tube Quantity : 25