

QS7A_3UP series

0.25W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter

0.25 Watt

- ⊕ RoHS compliant
- ⊕ 3kVDC isolation
- ⊕ Efficiency up to 80%
- ⊕ Operating temperature: -40°C to 105°C
- ⊕ Power density up to 0.90W/cm³
- ⊕ UL 94V-0 package material
- ⊕ Footprint from 1.17cm²
- ⊕ Industry standard pinout
- ⊕ Input voltage: 3.3V, 5V, 12V, 15V, 24V
- ⊕ Output voltage: 3.3V, 5V, 9V, 12V, 15V, 24V
- ⊕ Custom solutions available
- ⊕ CE certification

The QS7A_3UP series are miniature, isolated 0.25W DC-DC converters 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: | 1 second |
| Operation temperature range: | -40°C~+105°C (Derating if the temperature ≥85°C) |
| Storage temperature range: | -50°C ~+130°C |
| Storage humidity range: | < 95% |
| Lead temperature: | 300°C MAX, 1.5mm from case for 10 sec |
| Internal power dissipation: | 540mW |
| Power density: | < 0.90W/cm ³ |
| Input voltage Vin, 03 variants: | 5.5V |
| Input voltage Vin, 05 variants: | 7V |
| Input voltage Vin, 12 variants: | 15V |
| Input voltage Vin, 15 variants: | 18V |
| Input voltage Vin, 24 variants: | 28V |
| MTBF (MIL-HDFK-217F@25°C): | >3,500,000 hours |
| Case Temperature above ambient | • 5V output 35°C • Other 30°C |
| Case material: | Plastic [UL94-V0] |
| Cooling: | Free air convection |
| Weight: | 2.1g |

| Input specifications | | | | | |
|----------------------------|----------------|------|-----|------|-------|
| Item | Test condition | Min | Typ | Max | Units |
| Input voltage range | • 3.3VDC input | 2.9 | 3.3 | 3.6 | V |
| | • 5VDC input | 4.5 | 5.0 | 5.5 | V |
| | • 12VDC input | 11.0 | 12 | 13.1 | V |
| | • 15VDC input | 13.4 | 15 | 16.5 | V |
| | • 15VDC input | 22.0 | 24 | 26.5 | V |
| Reflected ripple current | | | 22 | 45 | mA |
| Internal power dissipation | | | | 450 | mW |

| Output specifications | | | | | | |
|------------------------------------|--|-----|-------|-----|-------|--|
| Item | Test condition | Min | Typ | Max | Units | |
| Output voltage accuracy | See tolerance envelope graph | | | | | |
| Rated Power | TA = -40°C to 85°C | | | 1 | W | |
| Line regulation | high vin to low vin | | 1.2 | | % | |
| Load regulation (10% to 100% load) | 5V/12V input •05 output •12 output | | 13 | | % | |
| | | | 7 | | % | |
| Ripple & Noise* | 20MHz Bandwidth | | 50 | 75 | mVp-p | |
| Temperature drift | 100% full load | | ±0.03 | | %/°C | |

* Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

Example:

QS7A_0505S3UP

Q = 0.25 Watt; S7 = SIP7; A = Pinning; 05 = 5 Vin; 05 = 5Vout;
S = Single Output; 3 = 3kVDC Isolation; U = Unregulated Output;
P = Short circuit protection (SCP)

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

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.

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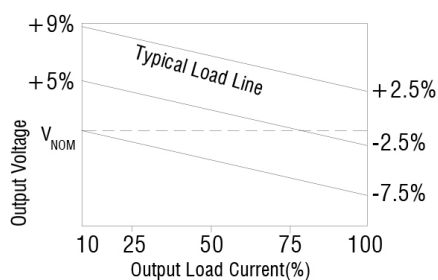
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Product Selection Guide

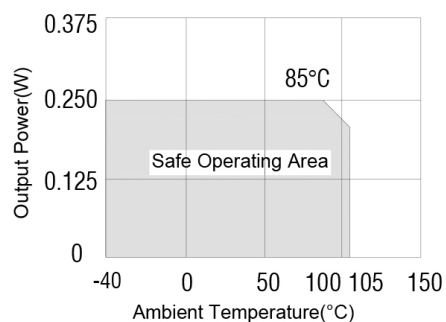
| Part Number | Input Voltage [Nominal, VDC] | Output Voltage [VDC] | Output Current [mA, max/min] | Efficiency [%, typ] | Package Style |
|---------------|------------------------------|----------------------|------------------------------|---------------------|---------------|
| QS7A_0303S3UP | 3.3 | 3.3 | 75.8/7.58 | 62 | SIP |
| QS7A_0505S3UP | 5 | 5 | 50/5 | 70 | SIP |
| QS7A_0509S3UP | 5 | 9 | 27.8/2.78 | 65 | SIP |
| QS7A_0512S3UP | 5 | 12 | 21/2.1 | 75 | SIP |
| QS7A_0515S3UP | 5 | 15 | 16/1.6 | 75 | SIP |
| QS7A_0524S3UP | 5 | 24 | 10.4/1.04 | 67 | SIP |
| QS7A_1203S3UP | 12 | 3.3 | 75.8/7.58 | 62 | SIP |
| QS7A_1205S3UP | 12 | 5 | 50/5 | 71 | SIP |
| QS7A_1209S3UP | 12 | 9 | 27.8/2.78 | 66 | SIP |
| QS7A_1212S3UP | 12 | 12 | 21/2.1 | 75 | SIP |
| QS7A_1515S3UP | 12 | 15 | 16/1.6 | 75 | SIP |
| QS7A_1505S3UP | 15 | 5 | 50/5 | 70 | SIP |
| QS7A_2405S3UP | 24 | 5 | 50/5 | 63 | SIP |
| QS7A_2409S3UP | 24 | 9 | 27.8/2.78 | 63 | SIP |
| QS7A_2412S3UP | 24 | 12 | 20.8/2.08 | 65 | SIP |
| QS7A_2415S3UP | 24 | 15 | 16.7/1.67 | 65 | SIP |
| QS7A_2424S3UP | 24 | 24 | 10.4/1.04 | 64 | SIP |

Typical characteristics

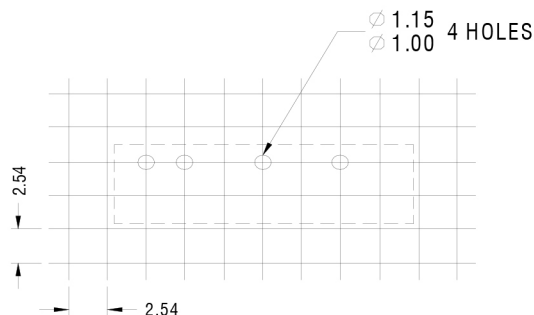
Tolerance envelope graph



Temperature derating graph



Recommended footprints

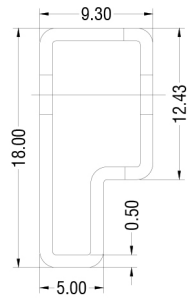


All dimensions in mm ± 0.25 mmTube

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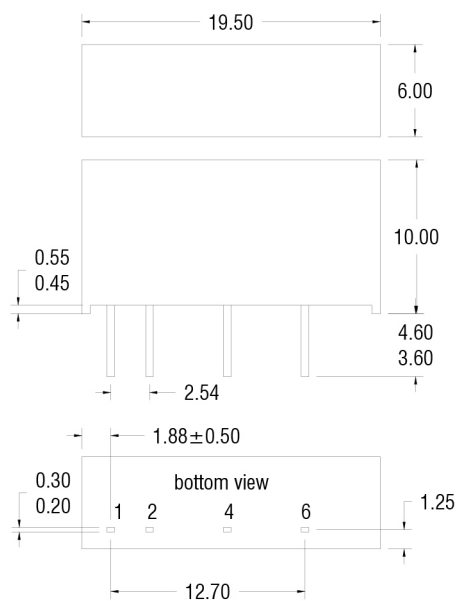
Tube outline



All dimensions in mm ± 0.25 mm
Quantity : 25PCS

Mechanical dimensions

SIP Package



7 PIN SIP

| Pin | Function |
|-----|----------|
| 1 | +Vin |
| 2 | -Vin |
| 4 | -Vout |
| 6 | +Vout |

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