

Features

- Qualified with 65kV/μs @ Vcommon mode =1KV
- 6V Output for GaN driver Applications
- Pot-Core Transformer with separated windings
- High 6.4kVDC/sec Isolation in compact size
- Low isolation capacitance (10pF max.)
- UL/IEC/EN62368-1 and IEC/EN60950-1 certified

Unregulated Converters



RxxP06S

**1 Watt
SIP7
Output for GaN
Application**



Description

High slew rate GaN transistor drivers require an isolated 6V supply with high isolation voltage and low isolation capacitance. The RxxP06S series have been specially designed to fulfill this demanding requirement with 6400VDC/sec isolation and <10pF isolation capacitance. The internal transformer uses a pot-core to physically separate the input and output windings, yet the converter still fits into an industry standard SIP7 case. Input voltage options of 5, 12, 15 or 24V are available and the RxxP06S series is safety certified to the latest UL/IEC62368 standard.



UL62368-1 certified
CAN/CSA-C22.2 No. 62368-1-14 certified
IEC/EN62368-1 certified
IEC/EN60950-1 certified
CB Report

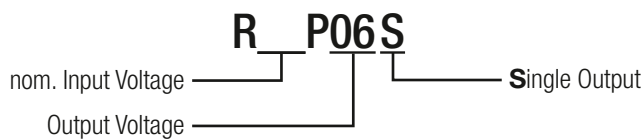
Selection Guide

| Part Number | nom. Input Voltage [VDC] | Output Voltage [VDC] | Output Current [mA] | Efficiency typ. (1) [%] | max. Capacitive Load (2) [μF] |
|-------------|--------------------------|----------------------|---------------------|-------------------------|-------------------------------|
| R05P06S | 5 | 6 | 167 | 76 | 1000 |
| R12P06S | 12 | 6 | 167 | 81 | 1000 |
| R15P06S | 15 | 6 | 167 | 79 | 1000 |
| R24P06S | 24 | 6 | 167 | 80 | 1000 |

Notes:

- Note1: Efficiency is tested at nominal input and full load at +25°C ambient
Note2: Max Cap Load is tested at nominal input and full resistive load

Model Numbering



www.recom-power.com/eval-ref-boards

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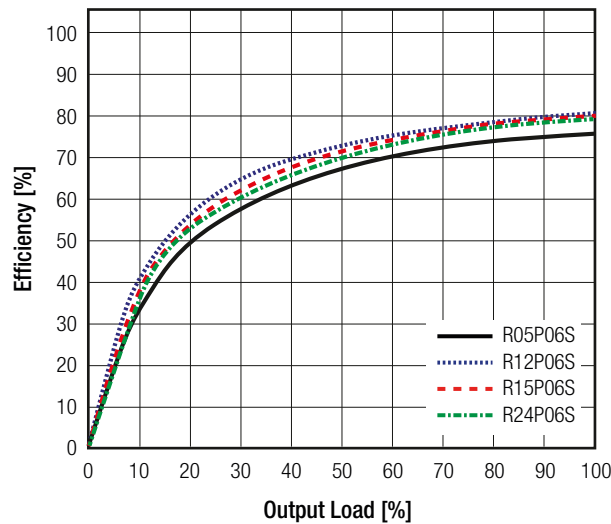
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

| BASIC CHARACTERISTICS | | | | |
|------------------------------|---|---|----------------|---|
| Parameter | Condition | Min. | Typ. | Max. |
| Internal Input Filter | | | | capacitor type |
| Input Voltage Range | nom. Vin = 5VDC 12VDC 15VDC 24VDC | 4.5VDC 10.8VDC 13.5VDC 21.6VDC | | 5.5VDC 13.2VDC 16.5VDC 26.4VDC |
| Minimum Load ⁽³⁾ | | 0% | | |
| Internal Operating Frequency | nom. Vin = 5VDC, 12VDC, 15VDC 24VDC | 20kHz | 55kHz 60kHz | |
| Output Ripple and Noise | 20MHz BW | | | 200mVp-p |

Notes:

Note3: Operation below 10% load won't harm the converter, but specifications may not be met

Efficiency vs. Load

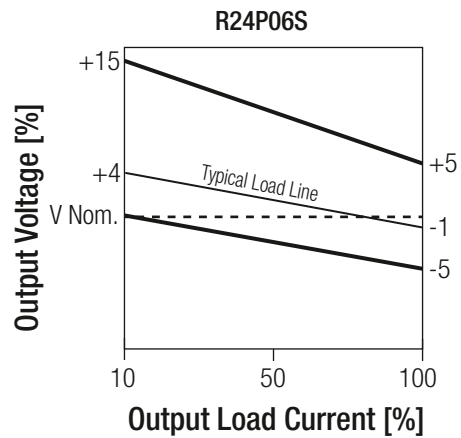
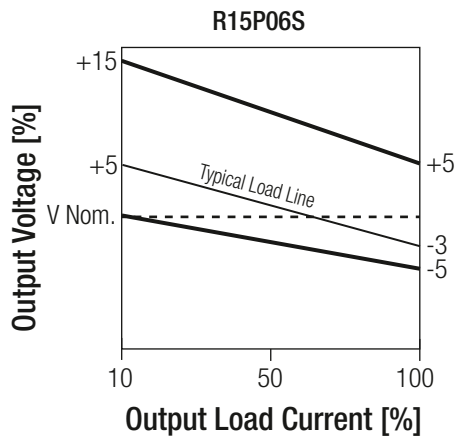
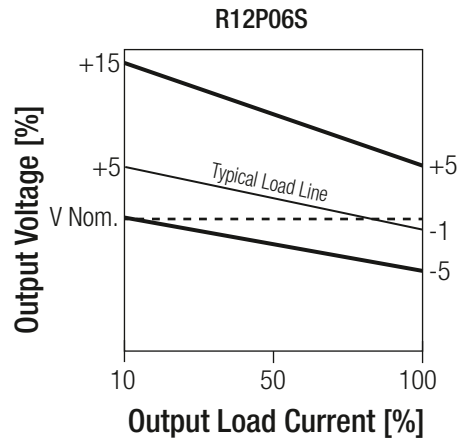
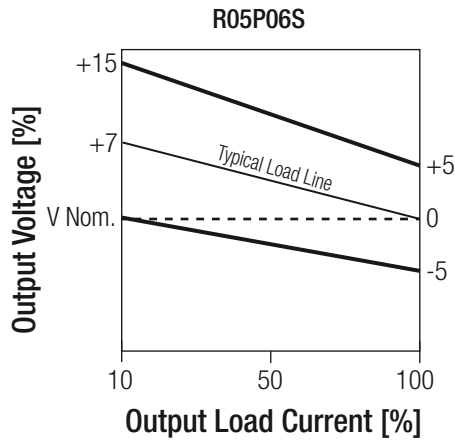


| REGULATIONS | | |
|-----------------|----------------------------------|--|
| Parameter | Condition | Value |
| Output Accuracy | | ±5.0% max. |
| Line Regulation | low line to high line, full load | 1.2% typ. / 1% of Vin |
| Load Regulation | 10% to 100% load | nom. Vin = 5VDC, 12VDC |
| | | 15VDC |
| | | 24VDC |
| | | 6.0% typ. / 15.0% max. 5.0% typ. / 15.0% max. 4.0% typ. / 15.0% max. |

continued on next page

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Tolerance Envelope



PROTECTIONS

| Parameter | Type | | Value |
|----------------------------------|--------------------|---------------------|-----------|
| Isolation Voltage ⁽⁴⁾ | I/P to O/P | tested for 1 second | 6.4kVDC |
| | | rated for 1 minute | 5.2kVDC |
| Isolation Resistance | | | 15GΩ min. |
| Isolation Capacitance | | | 10pF max. |
| Insulation Grade | | | basic |
| Internal | clearance/creepage | | 2.0mm |
| External | clearance/creepage | | 7.0mm |

Notes:

Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note5: Refer to local safety regulations if input over-current protection is required. Recommended fuse: slow blow type

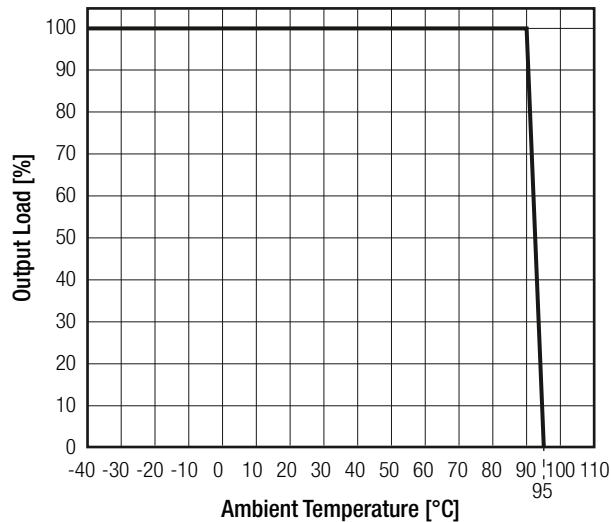
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

| Parameter | Condition | | Value |
|-----------------------------|---|-------|------------------------------|
| Operating Temperature Range | full load @ natural convection 0.1m/s (see graph) | | -40°C to +90°C |
| Maximum Case Temperature | | | +105°C |
| Temperature Coefficient | | | ±0.02%/K |
| Thermal Impedance | 0.1m/s, horizontal | | 30K/W |
| Operating Humidity | non-condensing | | 5% - 95% RH max. |
| Operating Altitude | | | 3000m |
| Pollution Degree | | | PD2 |
| MTBF | according to MIL-HDBK-217F, G.B. | +25°C | 2000 x 10 ³ hours |
| | | +90°C | 700 x 10 ³ hours |

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

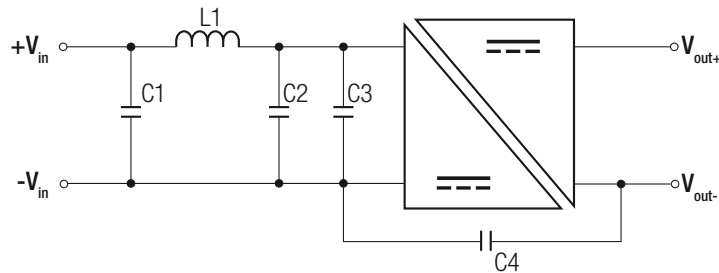
| Certificate Type | Report / File Number | Standard |
|--|----------------------|---|
| Information Technology Equipment, General Requirements for Safety | E224736-A56-UL | UL60950-1, 2nd Edition, 2014 CAN/CAS-C22.2 No. 60950-1-07, 2nd Edition, 2014 |
| Information Technology Equipment, General Requirements for Safety (LVD) | 1602031 | EN60950-1, 2nd Edition 2006, +A2:2013 IEC60950-1, 2nd Edition 2005 + A2:2013 |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements (CB Scheme) | ATTCB106076 | IEC62368-1:2014, 2nd Edition |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements | | EN62368-1:2014 + A11:2017 |
| Audio/Video, information and communication technology equipment - Part1: Safety requirements | E224736-A56-UL | UL62368-1, 2nd Edition, 2014 CSA CAN No. 62368-1-14, 2nd Edition |
| EAC | RU-AT.49.09571 | TP TC 004/2011 |
| RoHS 2+ | | RoHS 10/10, 2011/65/EU + AM-2015/863 |

| EMI Compliance | Condition | Standard / Criterion |
|---|--|----------------------|
| Electromagnetic compatibility of multimedia equipment - Emission requirements | with external components (see filter suggestions) | EN55032, Class B |

continued on next page

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

EMC Filtering Suggestion according to EN55032 Class A and Class B



Component List Class A

| MODEL | C1 | C2 | C3 | C4 | L1 |
|---------|-----|-----------|------------|-----|-----|
| R05P06S | N/A | 22µF MLCC | N/A | N/A | N/A |
| R12P06S | | 10µF MLCC | 4.7µF MLCC | | |
| R15P06S | | | | | |
| R24P06S | | | | | |

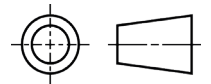
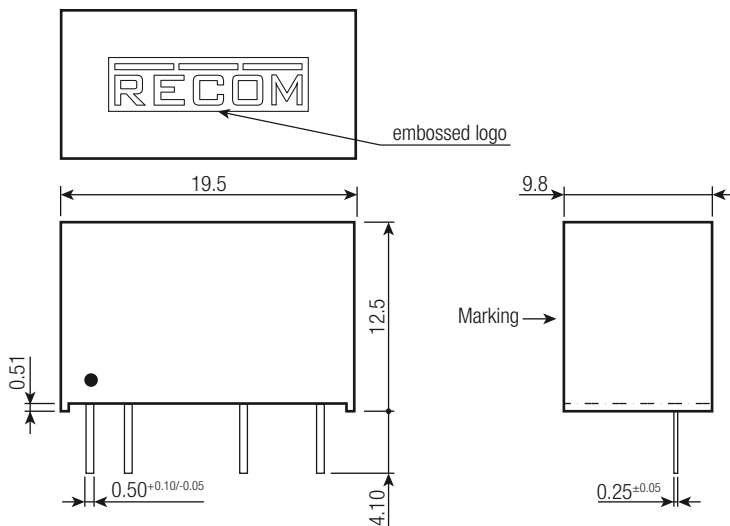
Component List Class B

| MODEL | C1 | C2 | C3 | C4 | L1 |
|---------|-----------|-----------|-----|------------|--|
| R05P06S | 10µF MLCC | 10µF MLCC | N/A | 1nF / 10kV | 470µH, 0.44A, 0.969W Würth: 744776247 |
| R12P06S | | | | | |
| R15P06S | | | | | |
| R24P06S | | | | | |

DIMENSION and PHYSICAL CHARACTERISTICS

| Parameter | Type | Value |
|-------------------|------------------------|--|
| Material | case potting PCB | non-conductive black plastic, (UL94 V-0) epoxy, (UL94 V-0) FR4, (UL94 V-0) |
| Dimension (LxWxH) | | 19.5 x 9.8 x 12.5mm |
| Weight | | 4.3g typ. |

Dimension Drawing (mm)



Pin Connection

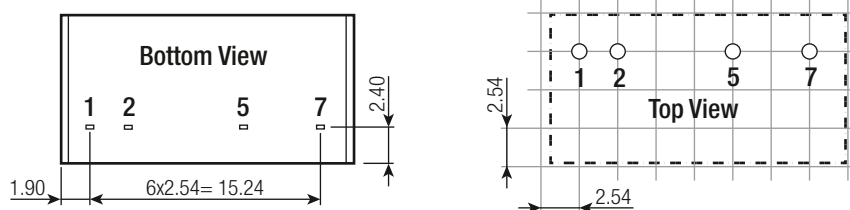
| Pin # | Single |
|-------|--------|
| 1 | +Vin |
| 2 | -Vin |
| 5 | -Vout |
| 7 | +Vout |

Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm

Pin dimension: ±0.1mm

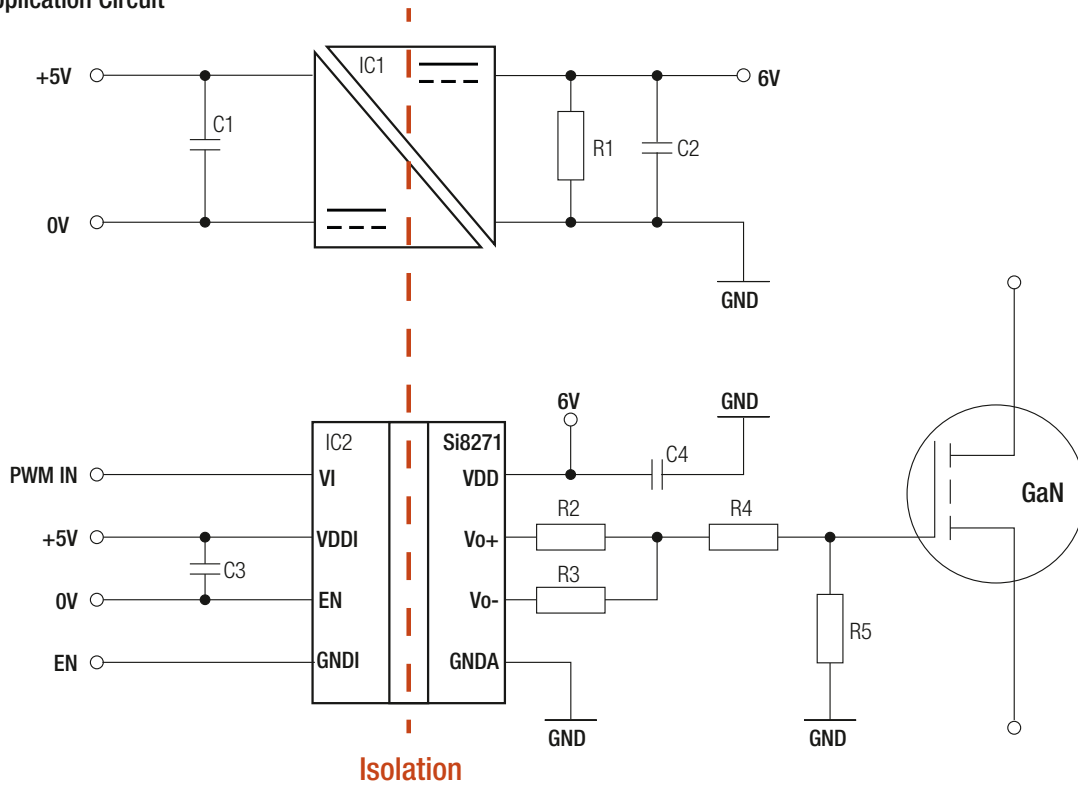
Recommended Footprint Details



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

INSTALLATION and APPLICATION

Typical GaN Application Circuit



PACKAGING INFORMATION

| Parameter | Type | Value |
|-----------------------------|----------------|------------------------|
| Packaging Dimension (LxWxH) | tube | 530.0 x 21.0 x 18.0 mm |
| Packaging Quantity | | 25pcs |
| Storage Temperature Range | | -55°C to +125°C |
| Storage Humidity | non-condensing | 95% RH max. |

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