

Features

Unregulated Converters

- 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 (pending), IEC/EN60950-1 certified

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.

Selection Guide

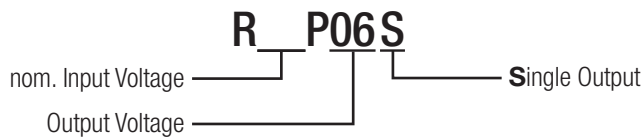
Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
R05P06S	5	6	167	76	1000
R12P06S	12	6	167	81	1000
R15P06S	15	6	167	79	1000
R24P06S	24	6	167	80	1000

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



RxxP06S

1 Watt
SIP7 Single
Output for GaN
Application



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

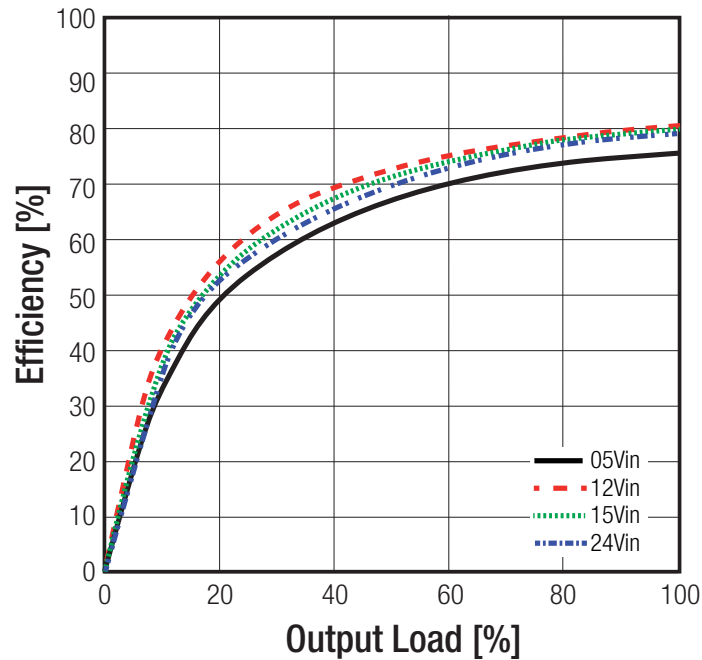
Specifications (measured @ $t_a = 25^\circ\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS					
Parameter	Condition		Min.	Typ.	Max.
Internal Input Filter			Capacitor		
Input Voltage Range	nom. $V_{in} =$	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. $V_{in} =$	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

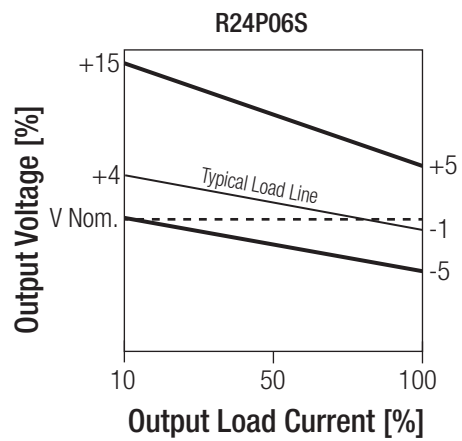
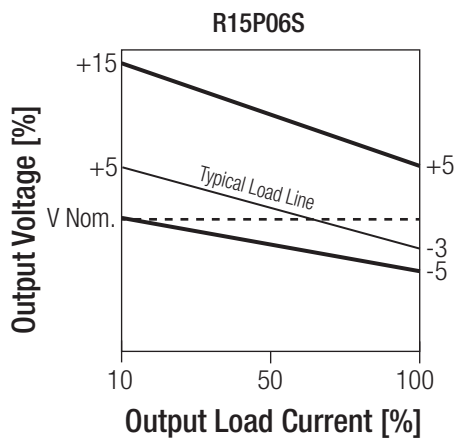
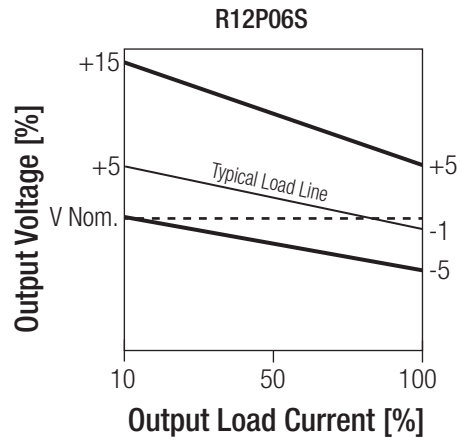
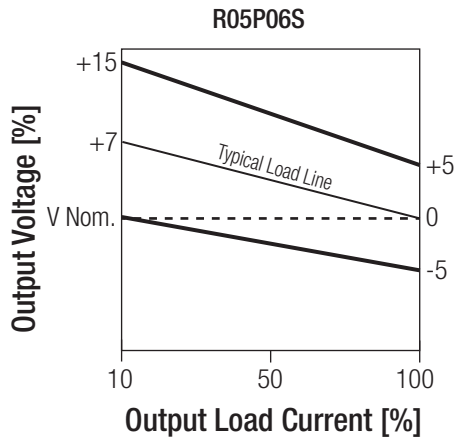


REGULATIONS			
Parameter	Condition		Value
Output Accuracy			$\pm 5.0\%$ max.
Line Regulation	low line to high line, full load		1.2% typ. / 1% of V_{in}
Load Regulation	10% to 100% load	nom. $V_{in} =$ 5VDC, 12VDC 15VDC 24VDC	6.0% typ. / 15.0% max. 5.0% typ. / 15.0% max. 4.0% typ. / 15.0% max.

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Specifications (measured @ $t_a = 25^\circ\text{C}$, nom. V_{in} , 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

Notes:

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

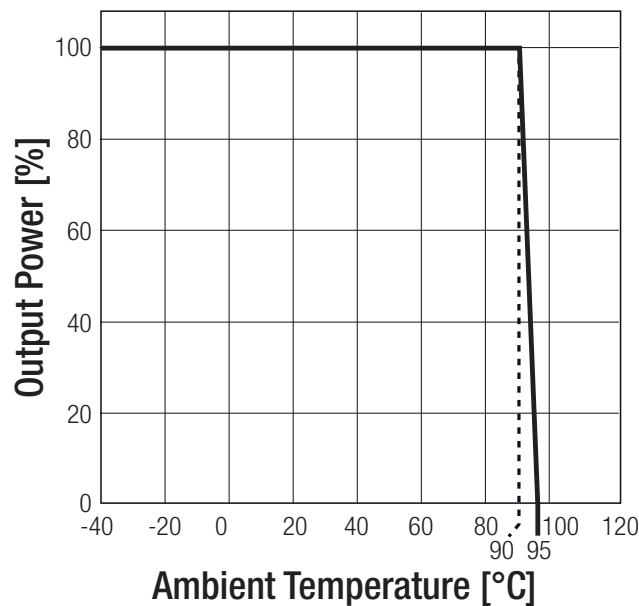
Note5: An input fuse is required if the mains supply is not over-current protected. Recommended fuse: T1A slow blow type

Specifications (measured @ $t_a = 25^\circ\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

ENVIRONMENTAL		
Parameter	Condition	Value
Operating Temperature Range	without derating @ natural convection 0.1m/s (see graph)	-40°C to +90°C
Maximum Case Temperature		+105°C
Temperature Coefficient		$\pm 0.02\%/^\circ\text{C}$
Thermal Impedance	0.1m/s, horizontal	30°C/W
Operating Humidity	non-condensing	5% - 95% RH max.
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 0.1 m/s)

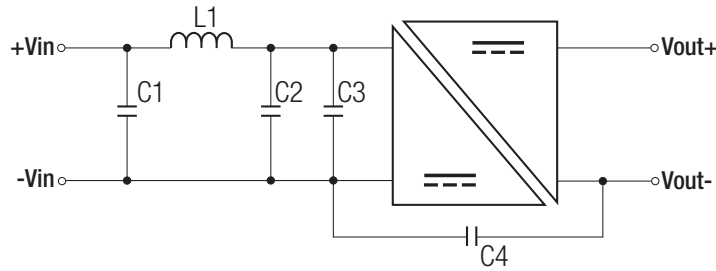


SAFETY AND CERTIFICATIONS		
Certificate Type	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety (LVD)	LVD1602031	EN60950-1, 2nd Edition 2006, +A2:2013 IEC60950-1, 2nd Edition 2005 + A2:2013
Audio/Video, information and communication technology equipment - Part1: Safety requirements (CB Scheme)	pending	IEC62368-1, 2nd Edition 2014
Audio/Video, information and communication technology equipment - Part1: Safety requirements	pending	IEC62368-1, 2nd Edition 2014 EN62368-1, 2nd Edition 2014
Audio/Video, information and communication technology equipment - Part1: Safety requirements	pending	UL62368-1, 2nd Edition 2014 CSA CAN No. 62368-1-14, 2014
RoHs 2+		RoHS 10/10, 2011/65/EU + AM-2015/863
EMI Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	with external components (see filter suggestions)	EN55022, Class B

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Specifications (measured @ $t_a = 25^\circ\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

EMC Filtering Suggestions according to EN55022



Component List Class A

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

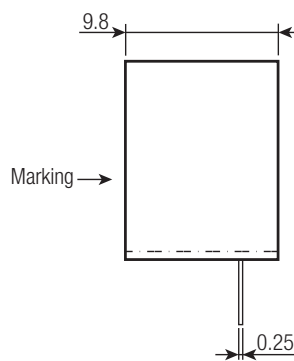
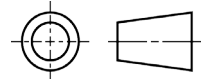
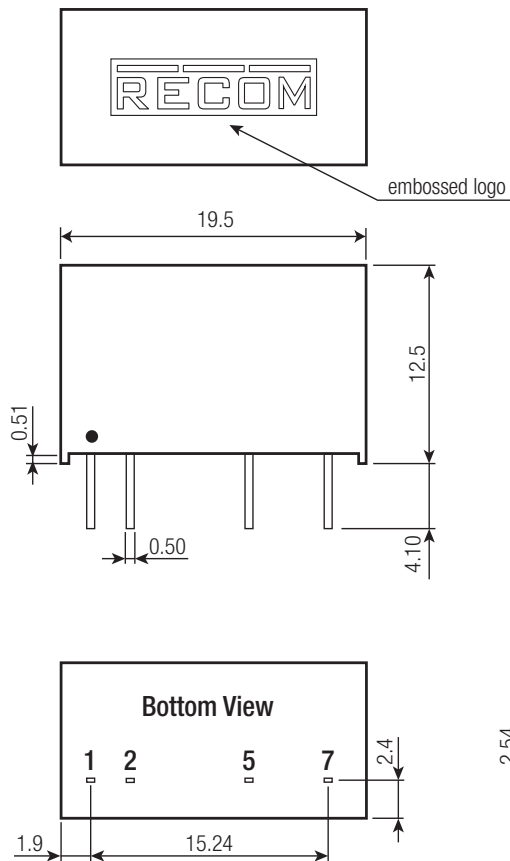
Component List Class B

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

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Potting PCB	non-conductive black plastic, (UL94V-0) epoxy, (UL94V-0) FR4, (UL94V-0)
Package Dimension (LxWxH)		19.5 x 9.8 x 12.5mm
Package Weight		4.3g typ.

Dimension Drawing (mm)

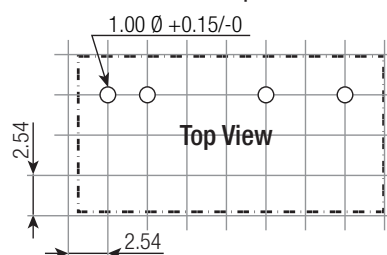


Pin Connection

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

Tolerance: xx.x= $\pm 0.5\text{mm}$
 xx.xx= $\pm 0.25\text{mm}$
 Pin dimension: $\pm 0.1\text{mm}$

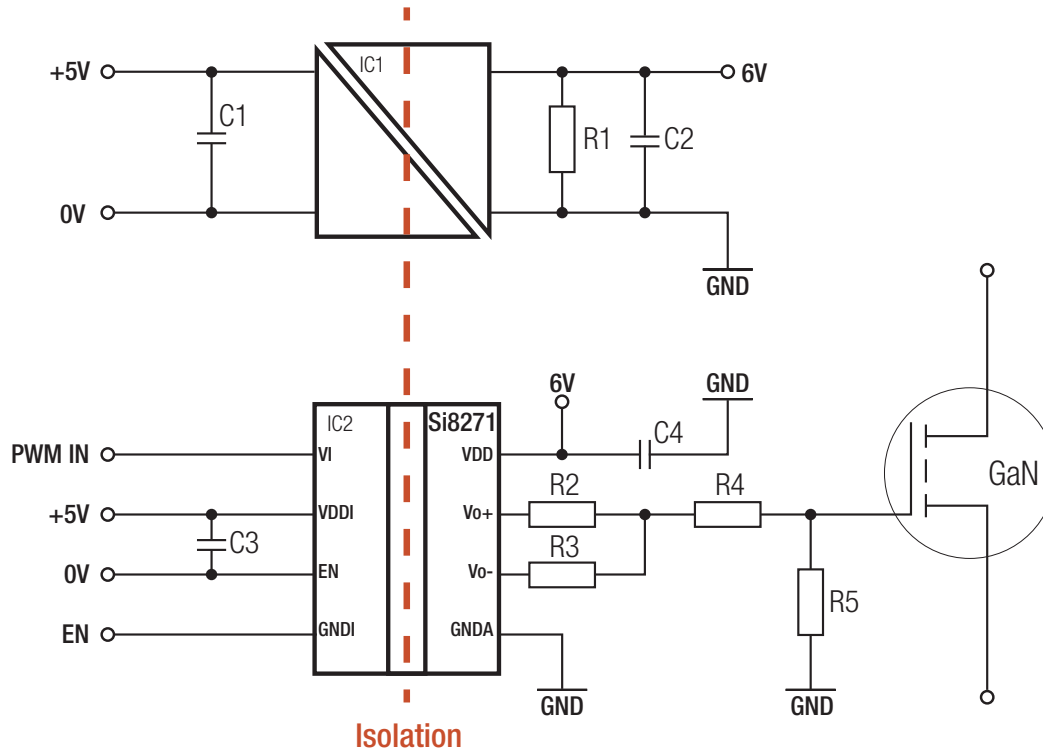
Recommended Footprint Details



Specifications (measured @ $t_a = 25^\circ\text{C}$, nom. V_{in} , 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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