



TECH POWER
ELECTRONICS GROUP



SWITCHY®



INDUCTIVE POWER.

AGILE // PRAGMATIC // SINCERE

Driven by innovation, reliable and always focused on solutions – this is how the group-wide expertise within the TECH POWER ELECTRONICS GROUP can be summed up. The six companies SCHWA-MEDICO Transformatoren GmbH, SCHNEEFUSS + ROHDE GmbH, MANFRED SCHMELZER GmbH, MS BALTI Trafo OÜ, MCT Transformatoren GmbH and TECH POWER ELECTRONICS together form a strong alliance capable of shaping the worldwide market with their transformers and industrial products. We are a company with clear values, a commitment to quality, synchronous workflows, lean structures, and a strategy of long-term growth for the entire group.

SWITCHY® 2 W

- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac, 47~440 Hz or 115~375 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption < 160 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards:
EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF : 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

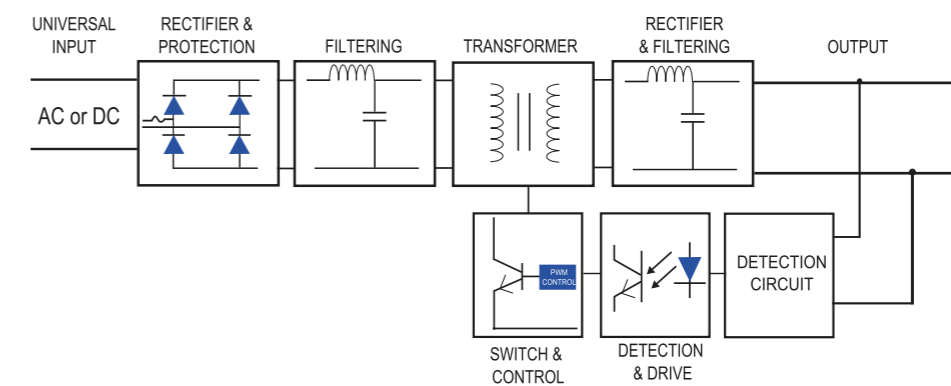
ELECTRICAL SPECIFICATIONS

Model	SWO2103	SWO2105	SWO2109	SWO2112	SWO2115	SWO2124
DC voltage	3.3 V	5 V	9 V	12 V	15 V	24 V
Rated current	650 mA	400 mA	250 mA	200 mA	150 mA	100 mA
Peak current (2)	700 mA max	600 mA max	450 mA max	300 mA max	250 mA max	150 mA max
Rated power (6)	2.145 W	2 W	2.25 W	2.4 W	2.25 W	2.4 W
Ripple & noise	90 mV	90 mV	80 mV	80 mV	100 mV	95 mV
Voltage tolerance (6)	±5 %	±5 %	±5 %	±2 %	±2 %	±2 %
No load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	10 ms	10 ms	10 ms	15 ms	20 ms	20 ms
Hold up time (3)	10 ms	15 ms	20 ms	25 ms	25 ms	30 ms
Voltage range	85 V~265 Vac or 115 V~375 Vdc					
Frequency range	47 Hz~440 Hz					
Efficiency (1)	58 %	67 %	76 %	76 %	76 %	77 %
Ac current (typ): 115 V 230 V	< 60 mA < 40 mA					
Inrush current (typ) Cold start	< 15 A/230 Vac					
No load power consumption (5)	< 110 mW	< 156 mW	< 95 mW	< 96 mW	< 110 mW	< 131 mW
Over current	< 800 mA	< 650 mA	< 500 mA	< 350 mA	< 280 mA	< 170 mA
Over temperature	Thermal shutdown 142 °C detected by PWM control					

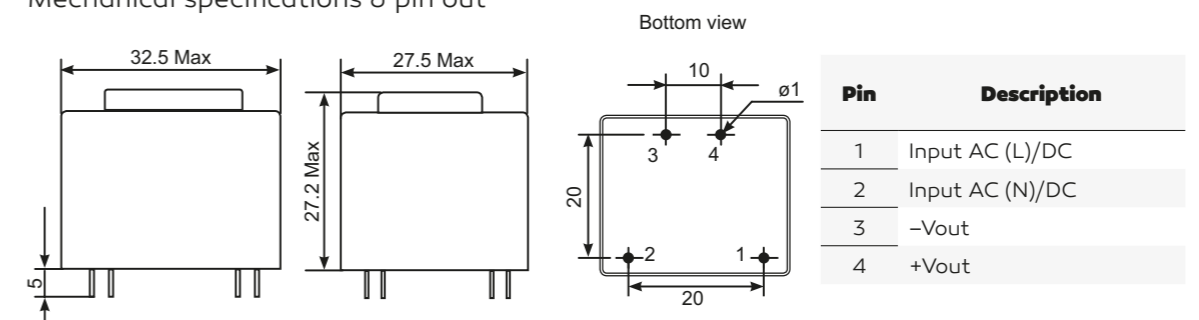
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 305 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Weight: < 40 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 2 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5,000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 5 W

- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac 47-440 Hz or 120~370 Vdc
- High efficiency
- Low ripple and noise
- No load power consumption < 300 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards:
EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF : 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

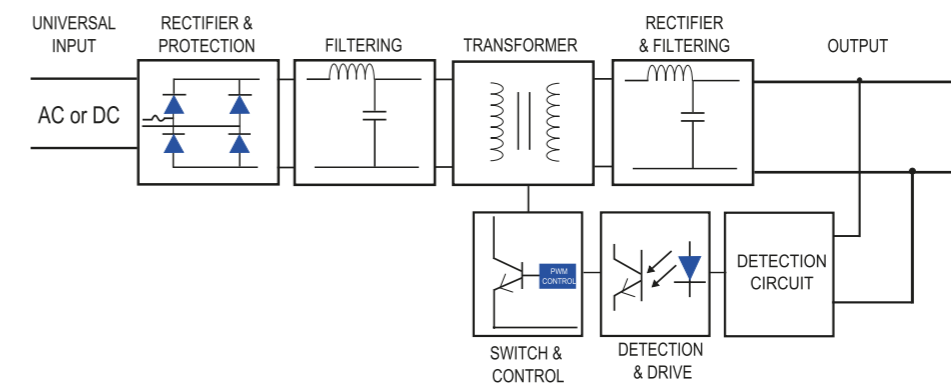
ELECTRICAL SPECIFICATIONS

Model	SW05103	SW05105	SW05109	SW05112	SW05115	SW05124
DC voltage	3.3 V	5 V	9 V	12 V	15 V	24 V
Rated current	1.25 A	1 A	0.55 A	0.45 A	0.34 A	0.21 A
Peak current (2)	1.8 A max	1.6 A max	0.8 A max	0.6 A max	0.5 A max	0.25 A max
Rated power (6)	4.125 W	5 W	5 W	5 W	5 W	5 W
Ripple & noise	90 mV	100 mV	90 mV	70 mV	120 mV	70 mV
Voltage tolerance (6)	±5 %	±5 %	±5 %	±2 %	±2 %	±2 %
No load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	3.7 ms	6 ms	11 ms	19 ms	19 ms	30 ms
Hold up time (3)	6.7 ms	9 ms	17 ms	29 ms	32 ms	47 ms
Voltage range	85 V~265 Vac or 120 V~370 Vdc					
Frequency range	47 Hz~440 Hz					
Efficiency (1)	69 %	73 %	77 %	79 %	77 %	78 %
Ac current (typ): 115 V 230 V	< 120 mA < 80 mA					
Inrush current (typ) Cold start	< 20 A/230 Vac					
No load power consumption (5)	< 120 mW	< 230 mW	< 160 mW	< 160 mW	< 170 mW	< 190 mW
Over current	2.4 A	1.75 A	1 A	0.7 A	0.55 mA	0.3 mA
Over temperature	Thermal shutdown 142 °C detected by PWM control					

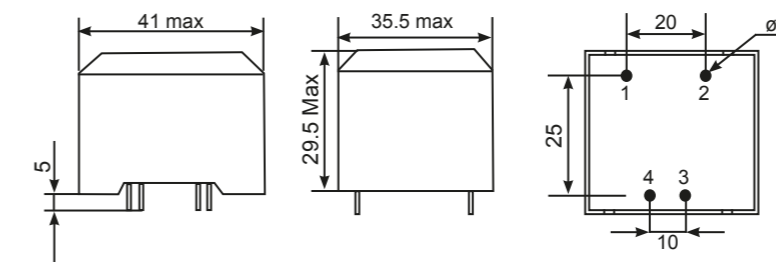
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	-Vout
4	+Vout

Bottom view

Weight: 60 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 2 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5,000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 5 W SUPER COMPACT

- AC/DC power module for PCB mounting
- Universal input 85V~265 Vac (on request 305 Vac) or 120~370 Vdc
- High efficiency
- Low ripple and noise
- No load power consumption < 300 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards:
EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF > 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Series
- d** Number of outputs
- e** Output voltage (V)

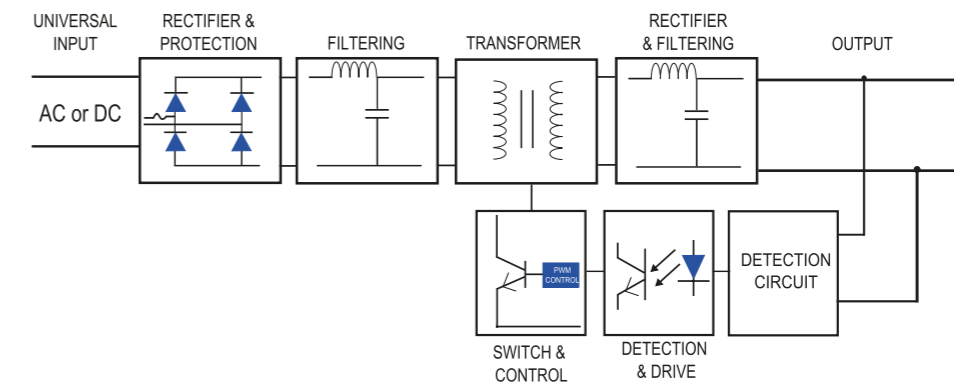
ELECTRICAL SPECIFICATIONS

Model	SW05S105	SW05S109	SW05S112	SW05S115	SW05S124
DC voltage	5V	9V	12V	15V	24V
Rated current	1 A	0.55 A	0.45 A	0.34 A	0.21 A
Peak current (2)	1.6 A max	0.8 A max	0.6 A max	0.5 A max	0.25 A max
Rated power (6)	5W	5W	5W	5W	5W
Ripple & noise	100 mV	90 mV	70 mV	120 mV	70 mV
Output					
Voltage tolerance (6)	±5 %	±5 %	±2 %	±2 %	±2 %
No load regulation	±1 %	±1 %	±1 %	±1 %	±1 %
Load regulation	±1 %	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	6 ms	11 ms	19 ms	19 ms	30 ms
Hold up time (3)	9 ms	17 ms	29 ms	32 ms	47 ms
Input					
Voltage range	85 V~265 Vac (on request 305 Vac) or 120 V~370 Vdc				
Frequency range	47 Hz~440 Hz				
Efficiency (1)	73 %	77 %	79 %	77 %	78 %
Ac current (typ): 115V 230V			< 150 mA < 90 mA		
Inrush current (typ) Cold start			< 20 A/230 Vac		
No load power consumption (5)	< 230 mW	< 160 mW	< 160 mW	< 170 mW	< 190 mW
Protection					
Over current	1.75 A	1 A	0.7 A	0.55 A	0.3 A
Over temperature	Thermal shutdown 150 °C detected by PWM control				

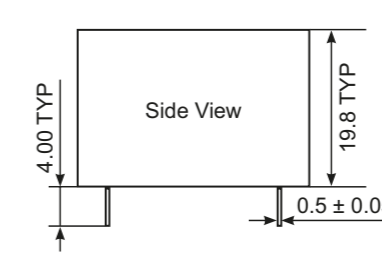
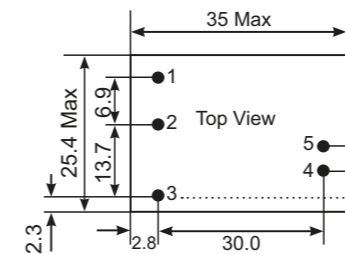
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 305 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -40 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Line
2	Neutral
3	NC
4	+Vout
5	-Vout

Weight: 40 g

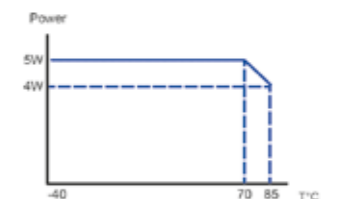
Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 0.8 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf Criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5,000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-40 °C to +70 °C -40 °C to +85 °C with derating (see graph)
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft



SWITCHY® 5 W HIGH VOLTAGE

- AC/DC power module for PCB mounting
- Universal input 185V~530 Vac, 47~440 Hz or 260~750 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption < 150 mW – compliant IEC62301
- Protection for short circuit and overload
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Series
- d** Number of outputs
- e** Output voltage (V)

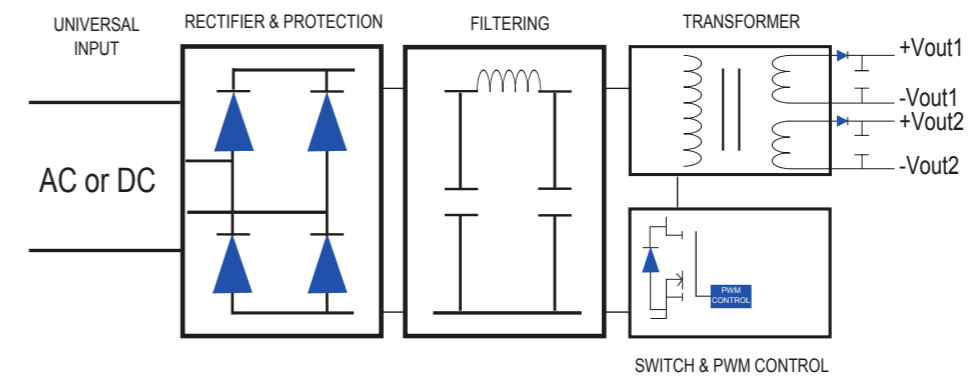
ELECTRICAL SPECIFICATIONS

Model	SW05H205	SW05H212	SW05H216	SW05H224	
DC voltage	2 x 5V	2 x 12V	2 x 16V	2 x 24V	
Rated current	0.5 A	0.21 A	0.156 A	0.106 A	
Peak current (2)	750 mA max	260 mA max	200 mA max	137 mA max	
Rated power (6)	5 W	5 W	5 W	5 W	
Ripple & noise	130 mV	110 mV	100 mV	110 mV	
Voltage tolerance (6)	±3 %	±3 %	±3 %	±3 %	
No load regulation	±4 %	±4 %	±4 %	±4 %	
Load regulation	±1 %	±1 %	±1 %	±1 %	
Setup time (4)/ Falling time	< 15 ms	< 15 ms	< 15 ms	< 15 ms	
Hold up time (3)	> 10 ms	> 10 ms	> 10 ms	> 10 ms	
Voltage range	185 V~530 Vac or 260~750 Vdc				
Frequency range	47 Hz~440 Hz				
Efficiency (1)	77 %	80 %	82 %	84 %	
Ac current (typ): 185 V 400 V		< 115 mA < 53 mA			
Inrush current (typ) Cold start		<10 A/230 Vac			
Protection	Over current	Yes	Yes	Yes	Yes

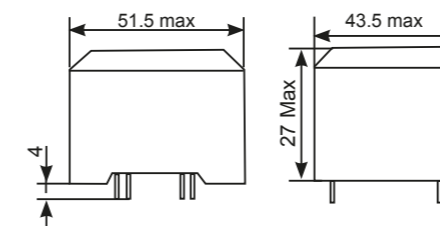
Note:
All parameters not specially mentioned are measured at 400 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage 400 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (4) On the temperature range -25 °C to +70 °C.
- (5) 50 Hz tested.
- (6) see recommended filter.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	+Vout1
4	-Vout1
5	-Vout2
6	+Vout2

Weight: < 85 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

For a common ground connect the pins 4 & 5 together

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC; Output 1 / Output 2: 1 kVAC
Insulation resistance	Input/Output: 100 M ohms / 500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22) (6)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 Perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf Criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5,000 ms, Perf Criteria A, B, B

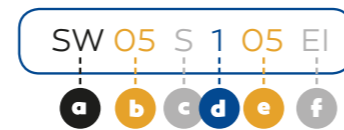
ENVIRONMENT

Working temperature	-25 °C to +70 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 5 W – PIN OUT COMPATIBLE EI30

- Pin out compatible to standard EI30 – size transformer
- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac (on request 305 Vac) or 120~370 Vdc
- High efficiency
- Low ripple and noise
- No load power consumption < 300 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 3.75 kVac input / output dielectric
- No external components required
- Warranted 2 years
- MTBF > 300,000 hours at +25 °C

Part number



- a** SWITCHY®
- b** Power (W)
- c** Series
- d** Number of outputs
- e** Output voltage (V)
- f** Optional

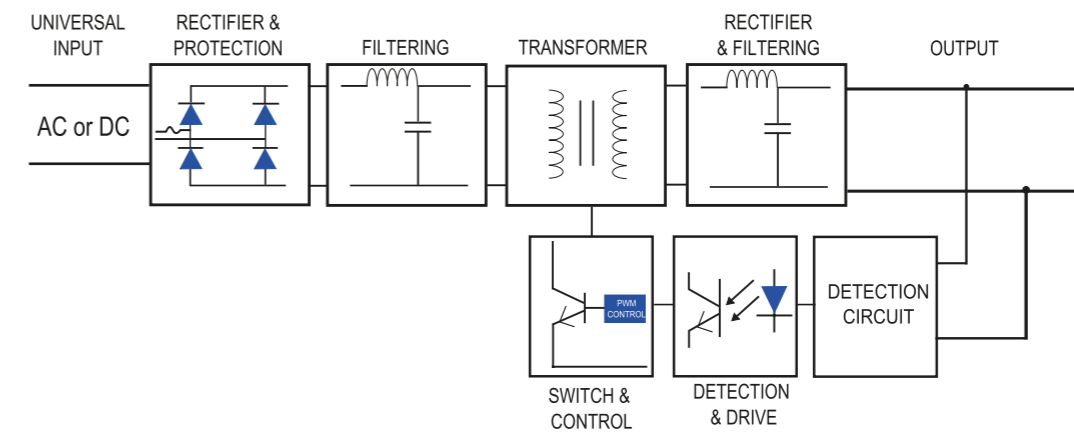
ELECTRICAL SPECIFICATIONS

Model	SW05S105EI	SW05S109EI	SW05S112EI	SW05S115EI	SW05S124EI
DC voltage	5V	9V	12V	15V	24V
Rated current	1A	0.55A	0.45A	0.34A	0.21A
Peak current (2)	1.6 A max	0.8 A max	0.6 A max	0.5 A max	0.25 A max
Rated power (6)	5W	5W	5W	5W	5W
Ripple & noise	100 mV	90 mV	70 mV	120 mV	70 mV
Voltage tolerance (6)	±5 %	±5 %	±2 %	±2 %	±2 %
No load regulation	±1 %	±1 %	±1 %	±1 %	±1 %
Load regulation	±1 %	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	6 ms	11 ms	19 ms	19 ms	30 ms
Hold up time (3)	9 ms	17 ms	29 ms	32 ms	47 ms
Voltage range	85 V~265 Vac (on request 305 Vac) or 120 V~370 Vdc				
Frequency range	47 Hz~440 Hz				
Efficiency (1)	73 %	77 %	79 %	77 %	78 %
Ac current (typ): 115V 230V			< 150 mA < 90 mA		
Inrush current (typ) Cold start	< 20 A/230 Vac				
No load power consumption (5)	< 230 mW	< 160 mW	< 160 mW	< 170 mW	< 190 mW
Over current	1.75 A	1 A	0.7 A	0.55 A	0.3 A
Over temperature	Thermal shutdown 150 °C detected by PWM control				

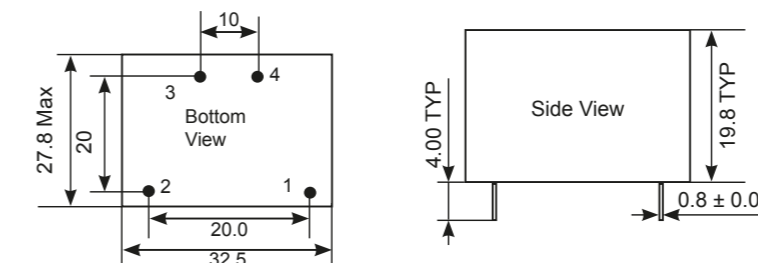
Note:
All parameters not specially mentioned are measured at 230Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 305 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -40 °C to +70 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC/DC (L)
2	Input AC/DC (N)
3	+Vout
4	-Vout

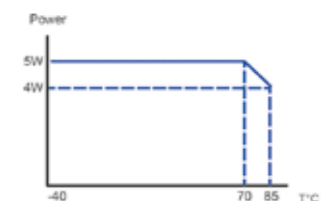
Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16 Include 2Y-caps between P/S and GWT @ 75 °C
Withstand voltage	Input / Output: 3.75 kVAC
Insulation resistance	Input / Output: 100M ohms / 500VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-25 °C to +70 °C -40 °C to +85 °C with derating (see graph)
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft



SWITCHY® 10 W

- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac, 47~440 Hz or 120~370 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption at 230 Vac < 200 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

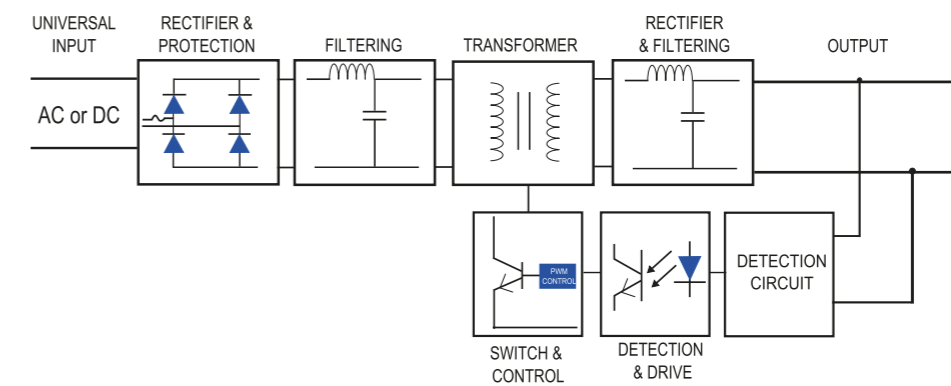
ELECTRICAL SPECIFICATIONS

Model	SW10109	SW10112	SW10115	SW10124
DC voltage	9V	12V	15V	24V
Rated current	1.11 A	0.83 A	0.67 A	0.42 A
Peak current (2)	1.4 A	1 A	0.85 A	0.55 A
Rated power (6)	10 W	10 W	10 W	10 W
Ripple & noise	130 mV	120 mV	130 mV	120 mV
Output				
Voltage tolerance (6)	±2 %	±2 %	±2 %	±2 %
No load regulation	±4 %	±4 %	±4 %	±4 %
Load regulation	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	4.6 ms/4.8 ms	6.3 ms/8 ms	12.2 ms/8.8 ms	37.2 ms/25 ms
Hold up time (3)	15.2 ms	20.4 ms	19.6 ms	34 ms
Input				
Voltage range	85 V~265 Vac or 120~370 Vdc			
Frequency range	47 Hz~440 Hz			
Efficiency (1)	79 %	82 %	83 %	84 %
Ac current (typ): 115 V 230 V		< 220 mA < 130 mA		
Inrush current (typ) Cold start		< 20 A/230 Vac		
No load power consumption (5)	130 mW	150 mW	170 mW	200 mW
Protection				
Over current	2.1 A	1.5 A	1.3 A	0.85 A
Over temperature	Thermal shutdown 140 °C detected by PWM control			

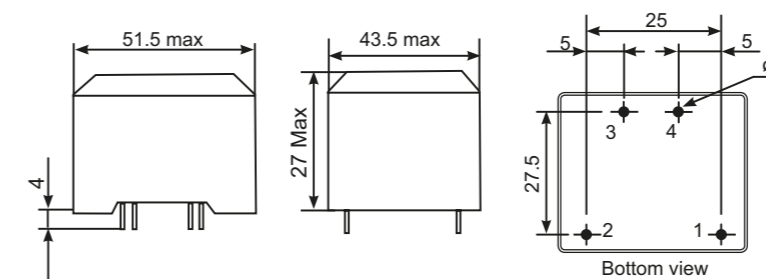
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	-Vout
4	+Vout

Weight: 85 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5,000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 10 W DUAL OUTPUT

- AC/DC power module for PCB mounting
- Universal input 85V~265 Vac, 47~440 Hz or 120~370 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption at 230 Vac < 200 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

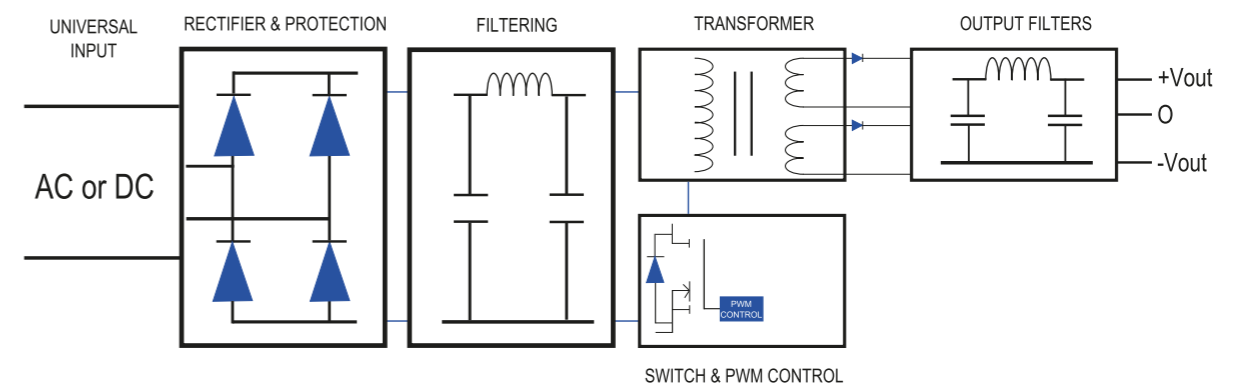
ELECTRICAL SPECIFICATIONS

Model	SW10209	SW10212	SW10215	SW10224
DC voltage	2 x 9V	2 x 12V	2 x 15V	2 x 24V
Rated current	2 x 0.56 A	2 x 0.42 A	2 x 0.33 A	2 x 0.21 A
Peak current (2)	0.7 A	0.5 A	0.4 A	0.3 A
Rated power (6)	10 W	10 W	10 W	10 W
Ripple & noise	130 mV	120 mV	130 mV	120 mV
Output				
Voltage tolerance (6)	±2 %	±2 %	±2 %	±2 %
No load regulation	±4 %	±4 %	±4 %	±4 %
Load regulation	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	8.2 ms/6.7 ms	8 ms/12 ms	8 ms/12 ms	28 ms/22 ms
Hold up time (3)	117 ms	125 ms	124 ms	136 ms
Input				
Voltage range	85 V~265 Vac or 120~370 Vdc			
Frequency range	47 Hz~440 Hz			
Efficiency (1)	81 %	82 %	83 %	84 %
Ac current (typ): 115 V 230 V		< 220 mA < 130 mA		
Inrush current (typ) Cold start		< 20 A/230 Vac		
No load power consumption (5)	130 mW	150 mW	170 mW	200 mW
Protection				
Over current	2.1 A	1.5 A	1.3 A	0.85 A
Over temperature	Thermal shutdown 140 °C detected by PWM control			

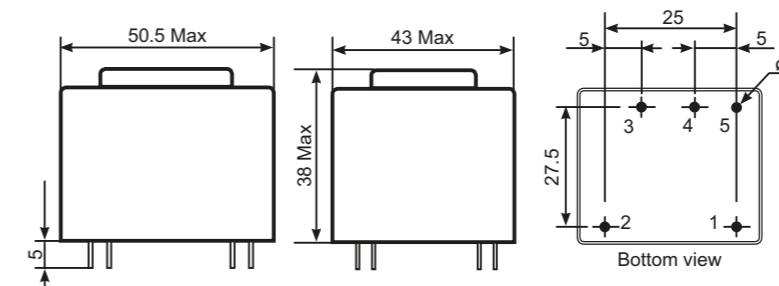
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	0V
4	-Vout
5	+Vout

Weight: < 130 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5000 ms, perf criteria A, B, B

ENVIRONMENT

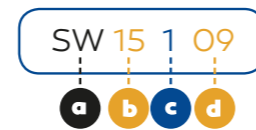
Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 15 W

- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac, 47~440 Hz or 120~370 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption at 230 Vac < 190 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

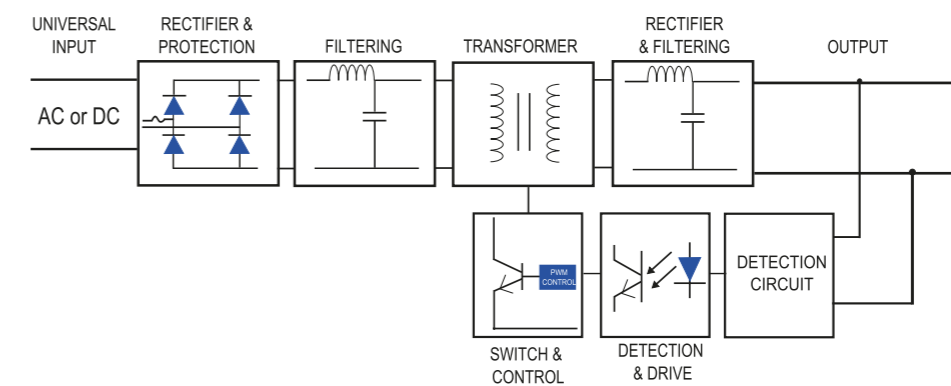
ELECTRICAL SPECIFICATIONS

Model	SW15109	SW15112	SW15115	SW15124
DC voltage	9V	12V	15V	24V
Rated current	1.67 A	1.25 A	1 A	0.625 A
Peak current (2)	2.1 A	1.56 A	1.25 A	0.78 A
Rated power (6)	15 W	15 W	15 W	15 W
Ripple & noise	140 mV	160 mV	150 mV	130 mV
Output				
Voltage tolerance (6)	±2 %	±2 %	±2 %	±2 %
No load regulation	±4 %	±4 %	±4 %	±4 %
Load regulation	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	6 ms/4.8 ms	6.6 ms/5.6 ms	10 ms/9 ms	34 ms/19.2 ms
Hold up time (3)	30.6 ms	31.2 ms	35.4 ms	47.6 ms
Input				
Voltage range	85 V~265 Vac or 120~370 Vdc			
Frequency range	47 Hz~440 Hz			
Efficiency (1)	82 %	83 %	84 %	85 %
Ac current (typ): 115 V 230 V		< 380 mA < 170 mA		
Inrush current (typ) Cold start		< 20 A/230 Vac		
No load power consumption (5)	140 mW	170 mW	190 mW	130 mW
Protection				
Over current	2.1 A	1.5 A	1.3 A	0.85 A
Over temperature	Thermal shutdown 140 °C detected by PWM control			

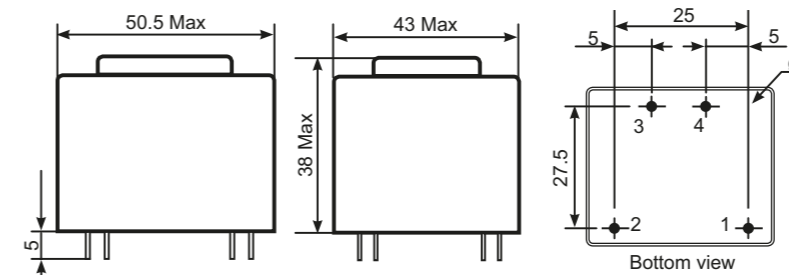
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac which is the worst case.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	-Vout
4	+Vout

Weight: 130 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5000 ms, perf criteria A, B, B

ENVIRONMENT

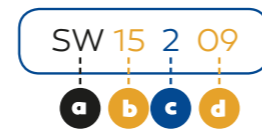
Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 15 W DUAL OUTPUT

- AC/DC power module for PCB mounting
- Universal input 85 V~265 Vac, 47~440 Hz or 120~370 Vdc
- High efficiency
- Low ripple and noise
- Standby power consumption at 230 Vac < 210 mW – compliant IEC62301
- Protection for short circuit, overload and over temperature
- EMC and safety standards: EN61000, EN60950 and multi-certificates
- 4 kVac input/output dielectric
- No external components required
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Number of outputs
- d** Output voltage (V)

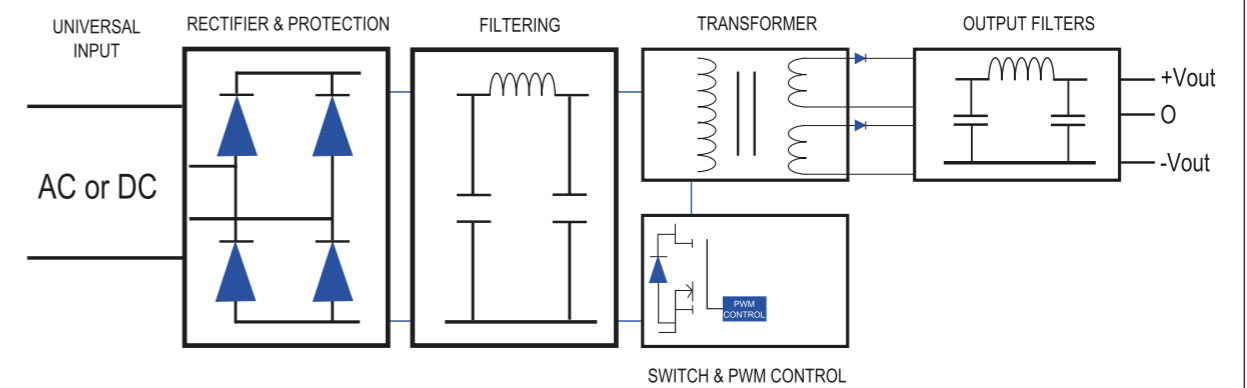
ELECTRICAL SPECIFICATIONS

Model	SW15209	SW15212	SW15215	SW15224
DC voltage	2 x 9V	2 x 12V	2 x 15V	2 x 24V
Rated current	2 x 0.83 A	2 x 0.625 A	2 x 0.5 A	2 x 0.31 A
Peak current (2)	1.1 A	0.81 A	0.65 A	0.40 A
Rated power (6)	15 W	15 W	15 W	15 W
Ripple & noise	170 mV	170 mV	150 mV	170 mV
Output				
Voltage tolerance (6)	±2 %	±2 %	±2 %	±2 %
No load regulation	±4 %	±4 %	±4 %	±4 %
Load regulation	±1 %	±1 %	±1 %	±1 %
Setup time (4)/ Falling time	4 ms/4.4 ms	8.8 ms/4.4 ms	17 ms/4.4 ms	42 ms/8 ms
Hold up time (3)	27 ms	29 ms	28 ms	33 ms
Input				
Voltage range	85 V~265 Vac or 120~370 Vdc			
Frequency range	47 Hz~440 Hz			
Efficiency (1)	81 %	82 %	83 %	84 %
Ac current (typ): 115 V 230 V		< 380 mA < 170 mA		
Inrush current (typ) Cold start		< 20 A/230 Vac		
No load power consumption (5)	160 mW	180 mW	195 mW	210 mW
Protection				
Over current	1.6 A	1.2 A	0.95 A	0.6 A
Over temperature	Thermal shutdown 140 °C detected by PWM control			

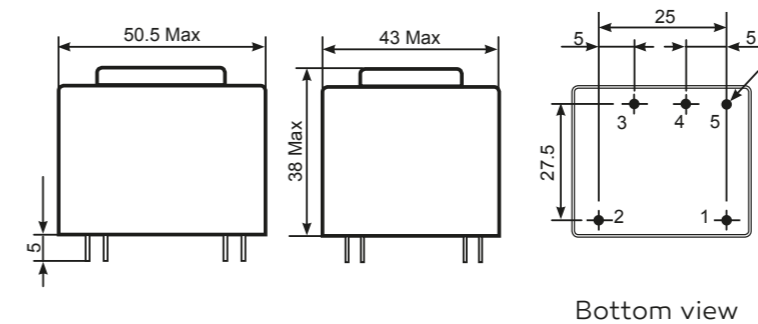
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac.
- (2) The switchy® can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to reach 0V when input voltage (at 85 Vac) is removed.
- (4) Time for the output to reach 90 % of its nominal value when input voltage is applied.
- (5) Value measured at 230 Vac which is the worst case.
- (6) On the temperature range -25 °C to +85 °C.

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	Input AC (L)/DC
2	Input AC (N)/DC
3	0V
4	-Vout
5	+Vout

Weight: 130 g

Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.3 mm

SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input/Output: 4 kVAC
Insulation resistance	Input/Output: 100 M ohms/500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level B (CISPR22)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, level 3 perf criteria A
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5000 ms, perf criteria A, B, B

ENVIRONMENT

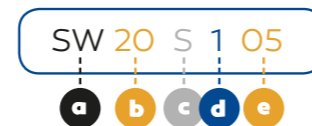
Working temperature	-25 °C to +85 °C
Cooling	Convection-cooled
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft

SWITCHY® 20 W

- AC/DC power module for PCB mounting
- Universal input 85V~265 Vac, 47~63 Hz or 100~380 Vdc
- High efficiency
- Low ripple and noise
- Protection for short circuit
- Insulation class II
- EMC and safety standards:
EN61000, EN60950 and multi-certificates
- 3 kVac input/output dielectric
- Warranted 2 years
- MTBF: 300,000 hours at +25 °C



Part number



- a** SWITCHY®
- b** Power (W)
- c** Series
- d** Number of outputs
- e** Output voltage (V)

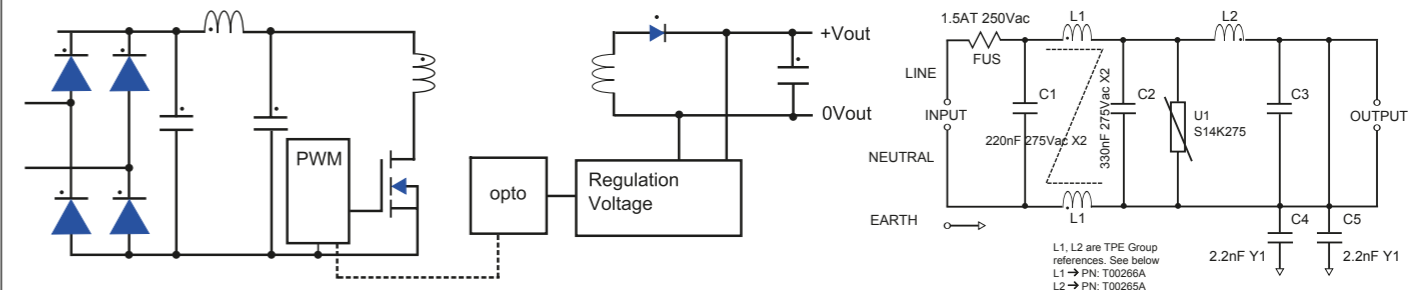
ELECTRICAL SPECIFICATIONS

Model	SW20S105	SW20S109	SW20S112	SW20S115	SW20S124	SW20S148
DC voltage	5 V	9 V	12 V	15 V	24 V	48 V
Rated current	4 A	2.22 A	1.66 A	1.33 A	0.83 A	0.42 A
Over power (2)	110 %~130 %	110 %~130 %	110 %~130 %	110 %~130 %	110 %~130 %	110 %~130 %
Rated power (6)	20 W	20 W	20 W	20 W	20 W	20 W
Ripple & noise	< 100 mVpp	< 100 mVpp	< 100 mVpp	< 100 mVpp	< 100 mVpp	< 100 mVpp
Voltage tolerance	±3 %	±3 %	±3 %	±3 %	±3 %	±3 %
No load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Load regulation	±1 %	±1 %	±1 %	±1 %	±1 %	±1 %
Setup time	< 1 s					
Hold up time (3)	> 20 ms					
Voltage range	85V~265 Vac 47 - 63Hz or 120~380 Vdc					
Frequency range	47 Hz~63 Hz					
Efficiency (1)	> 81 %	> 83 %	> 85 %	> 86 %	> 87 %	> 87 %
Ac current (typ):						
100 Vdc				< 0.3 Adc		
380 Vdc				< 0.04 Adc		
85 Vac				< 0.6 Aeff		
230 Vac				< 0.25 Aeff		
Inrush current (typ)	< 60 Apeak					
Cold start						
Leakage current 50 Hz (primary to secondary)	< 250 µA					
Over temperature	Yes permanently					

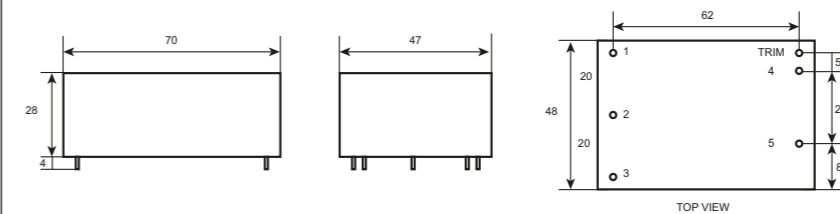
Note:
All parameters not specially mentioned are measured at 230 Vac input, full load, 25 °C ambient temperature and humidity < 75 %.
The output ripple was measured with a 1 µF electrolytic and a 0,1 µF ceramic capacitor at nominal current.

- (1) Average value at full load on the input voltage range 85 Vac to 265 Vac and 100 Vdc to 380 Vdc.
- (2) The converter can not deliver continuously over current. Permanent over current would cause permanent damages to the device.
- (3) Time for the output to be out of specification starting from power failure.
- (4) On the temperature range -20 °C to +60 °C and derating curves from power mains.
- (5) With EMC filter for rugged conditions (external filter).

Functional block diagram



Mechanical specifications & pin out



Pin	Description
1	NC
2	Input AC (N)/DC
3	Input AC (N)/DC
4	-Vout
5	+Vout
TRIM	TRIM

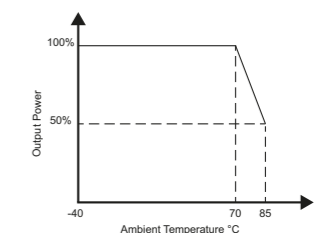
Unit: mm unless otherwise specified, all tolerances are ±0.5 – PCB drilling diameter: ø 1.6 mm

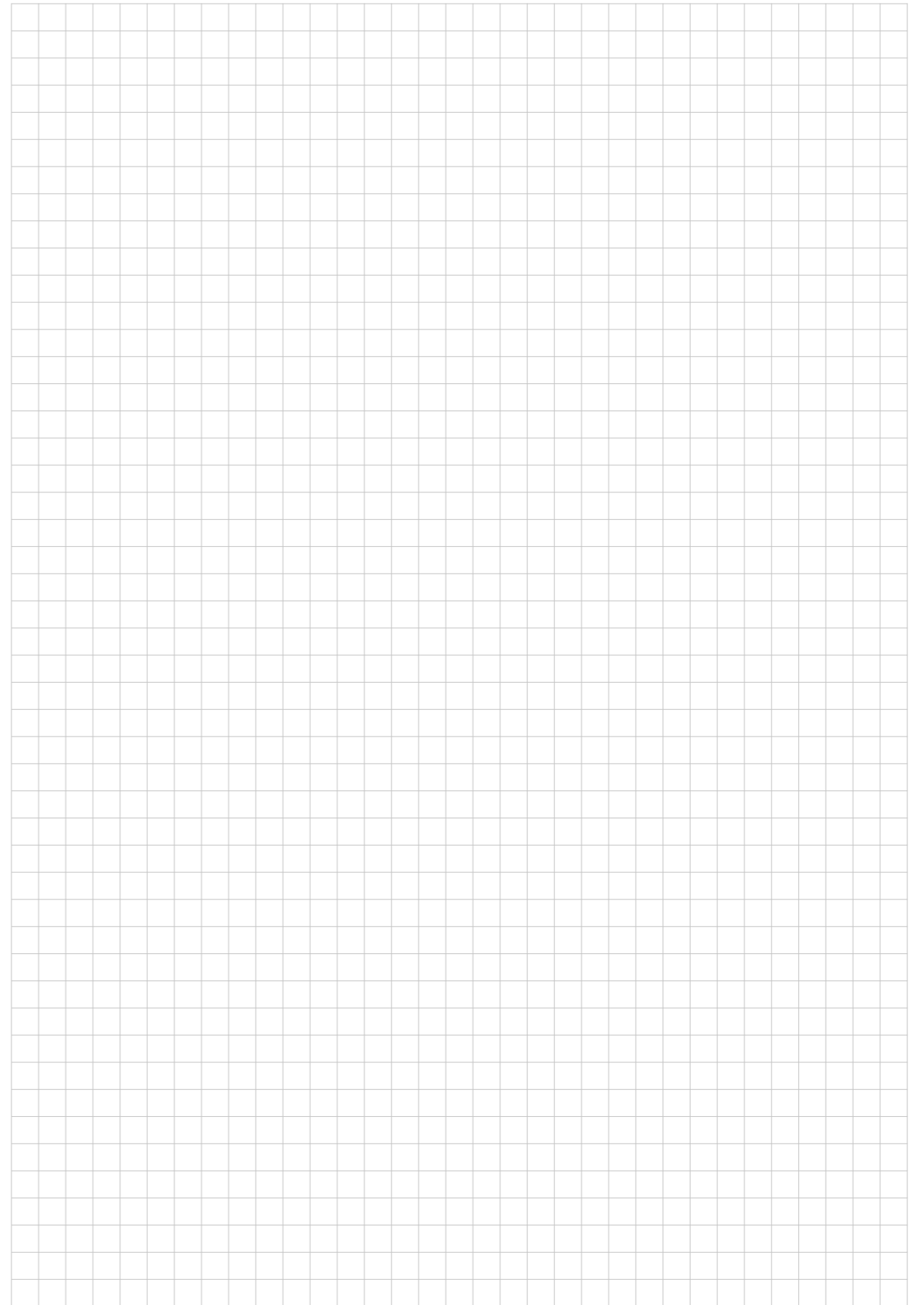
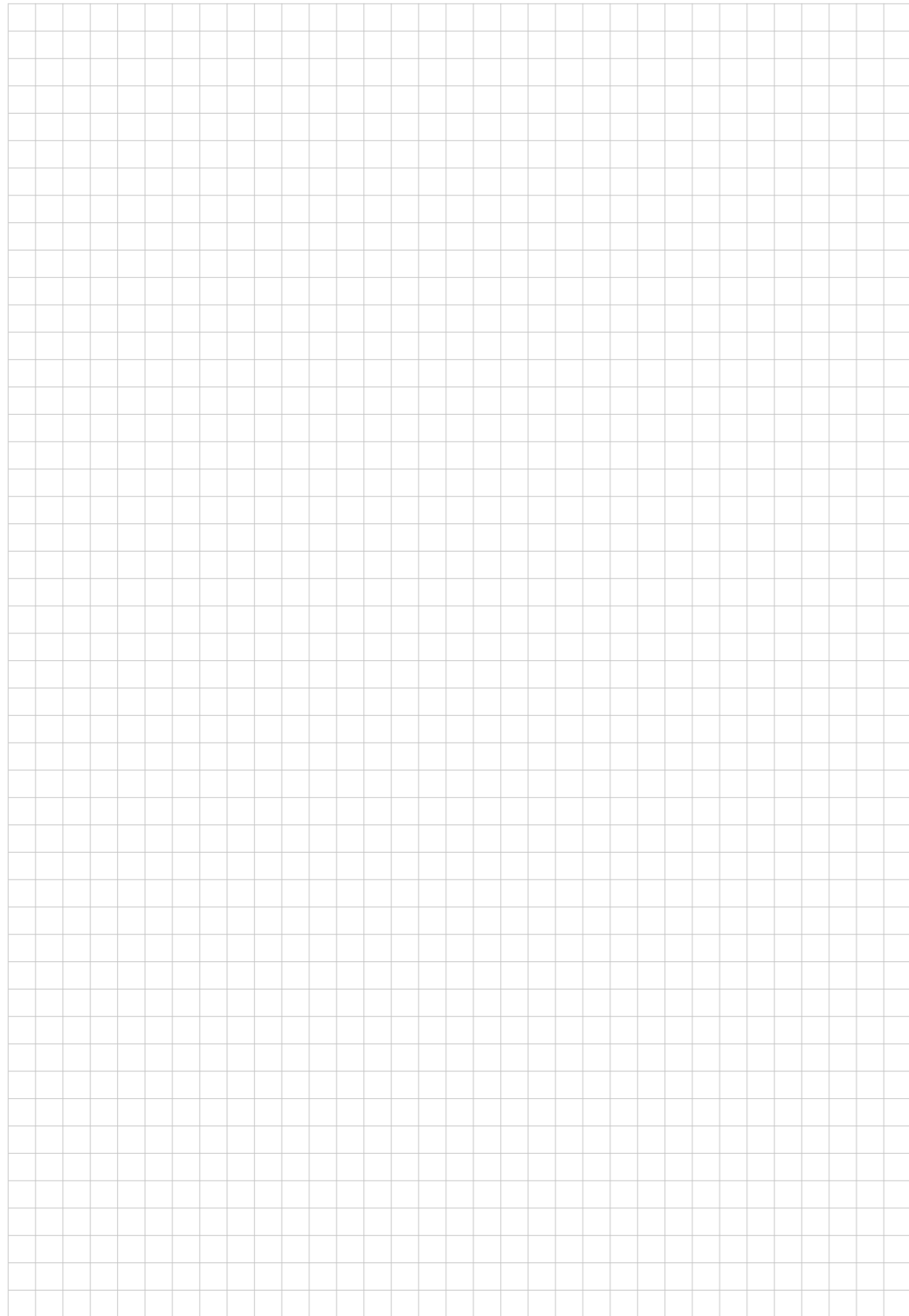
SAFETY & EMC

Safety standards	EN60950, UL60950, EN60335, EN61558-2-16
Withstand voltage	Input / Output: 3 kVAC
Insulation resistance	Input / Output: 100 M ohms / 500 VDC
EMI conduction & radiation	EN55014-1, EN55014-2, IEC62301, EN55022 level A (CISPR22) level B (5)
Harmonic current	EN61000-3-2, 3
EMS immunity	EN61000-4-2, level 3 perf criteria A
	EN61000-4-3, 10 V/m 80 % mod perf criteria A
	EN61000-4-4, 2 KV 5 KHz in typical configuration
	EN61000-4-5, installation class 3 perf criteria A
	EN61000-4-6, 10 Vrms perf criteria A
	EN61000-4-8, 10 A/m perf criteria A
	EN61000-4-11, 30 % for 10 ms, 60 % for 100 ms, 100 % for 5000 ms, perf criteria A, B, B

ENVIRONMENT

Working temperature	-40 °C to +85 °C (see derating curve)
Cooling	Natural cooling
Working humidity	95 % rel Hmax non condensing
Storage temperature and humidity	-45 °C to +85 °C, 95 % rel Hmax
Operating altitude	3,048 m, 10,000 ft







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● Development & manufacture
○ Production



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