

Technical information

Last changed on: 13.09.2016

APS series

Small High Voltage Print Module for PCB mounting

- 1 channel
- 100 V – 1 kV versions available
- patented resonance converter technology
- controlled by analog set voltage
- analog monitor voltage
- low ripple and noise, low EMI
- RoHS compliant



Document history

Version	Date	Major changes
1.0	17.12.2015	Initial version
2.0	13.09.2016	Relayouted documentation

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1 General description

The APS High Voltage Power Module series is a very small DC/DC power converter, which can be mounted and soldered on printed circuit boards (PCB). The output voltage is controllable with an analog control voltage. Therefore a potentiometer or fixed resistor can be used. The patented resonance converter technology and moulded metal box shielding guarantee lowest electromagnetic interference and low ripple and noise of the output voltage.

Customized versions can be produced on request.

2 Technical Data

SPECIFICATIONS	APS 0.5 W	APS 1W
Polarity	Factory fixed, positive or negative	
Ripple and noise	typ. < 10 mV _{p-p} / max. < 30 mV _{p-p} [f > 10 Hz] < 5 mV _{p-p} [f > 2 kHz]	
Stability [$\Delta V_{out} / \Delta V_{in}$]	< $1 \cdot 10^{-3} \cdot V_{nom}$	
Stability - [$\Delta V_{out} / \Delta R_{load}$]	< $2 \cdot 10^{-3} \cdot V_{nom}$	
Temperatur coefficient	< 50 ppm/K	
Supply voltage ⁽¹⁾	4.5 – 5.5 V	11.5 – 15.5 V
Supply current	$V_{OUT} = 0: I_{IN} < 5 \text{ mA}$ $V_{OUT} = V_{NOM}: \text{no load}: I_{IN} < 25 \text{ mA}$ $V_{OUT} = V_{NOM}: \text{max. load}: I_{IN} < 180 \text{ mA}$	$V_{OUT} = 0: I_{IN} < 5 \text{ mA}$ $V_{OUT} = V_{NOM}: \text{no load}: I_{IN} < 18 \text{ mA}$ $V_{OUT} = V_{NOM}: \text{max. load}: I_{IN} < 150 \text{ mA}$
Set / Monitor voltage	$0 \leq V_{OUT} \leq V_{NO} \pm 1,5\% \Rightarrow 0 \leq V_{MON} \leq 2.5 \text{ V}$	$0 \leq V_{OUT} \leq V_{NOM} \pm 1,5\% \Rightarrow 0 \leq V_{MON} \leq 5 \text{ V}$
Signal /ON	/ON: = 0 (LOW or open) $\Rightarrow V_{OUT}$ according setting $5,5 \text{ V} \geq V_{/ON} > 2,5 \text{ V (HIGH)} \Rightarrow V_{OUT} = 0!$	
Protection	Overload and short circuit protected	
HV connector	pin	
Case	Metal box steel, moulded	
Dimensions – L/W/H	40 / 16 / 11mm	
Reference voltage V_{REF} (internal)	2,5 V $\pm 1\%$	5 V $\pm 1\%$
Control V_{SET}	with R_{SET} connected between V_{SET} and GND: $R_{SET} = V_{OUT} \cdot 10 \text{ k}\Omega / (V_{NOM} - V_{OUT})$	
	with V_{SET} ($R_i \ll 10 \text{ k}\Omega$): $0 \leq V_{SET} \leq 2,5 \text{ V} \Rightarrow 0 \leq V_{OUT} \leq V_{OUT} \pm 1,5\%$ NOTE: Output voltage is internally not limited! At $V_{SET} > 2,5 \text{ V} \Rightarrow V_{OUT} > V_{NOM}$ is possible! Do not use $V_{SET} > 2,5 \text{ V}!$	with V_{SET} ($R_i \ll 10 \text{ k}\Omega$): $0 \leq V_{SET} \leq 5 \text{ V} \Rightarrow 0 \leq V_{OUT} \leq V_{OUT} \pm 1,5\%$ NOTE: Output voltage is internally not limited! At $V_{SET} > 5 \text{ V} \Rightarrow V_{OUT} > V_{NOM}$ is possible. Do not use $V_{SET} > 5 \text{ V}!$
Operating temperature	0 - 40 °C	
Storage temperature	-20 – 60 °C	

¹⁾ Blocking circuit is recommended for ripple rejection to input line with 22 μF // 100 nF near pin IN

Table 1: Technical data: Specifications

CONFIGURATIONS	V _{nom}	I _{nom} ⁽¹⁾	P _{nom}
APx 01 505 5	100 V	5 mA	0.5 W
APx 02 255 5	200 V	2.5 mA	0.5 W
APx 04 125 5	400 V	1.2 mA	0.5 W
APx 06 804 5	600 V	0.8 mA	0.5 W
APx 08 604 5	800 V	0.6 mA	0.5 W
APx 10 504 5	1 kV	0.5 mA	0.5 W
APx 01 106 12	100 V	10 mA	1W
APx 02 505 12	200 V	5 mA	1W
APx 04 255 12	400 V	2,5 mA	1W
APx 06 165 12	600 V	1,6 mA	1 W
APx 08 125 12	800 V	1,2 mA	1 W
APx 10 105 12	1 kV	1 mA	1 W

¹⁾ I_{out} is limited to approx. 1.5 * I_{nom}

Table 2: Technical data: Configurations

OPTIONS / ORDER INFO	INFO	EXAMPLE
POLARITY	Positive: x = p , negative x = n	APp 02 255 5

Table 3: Technical data: Options and order information

3 Dimensional drawing

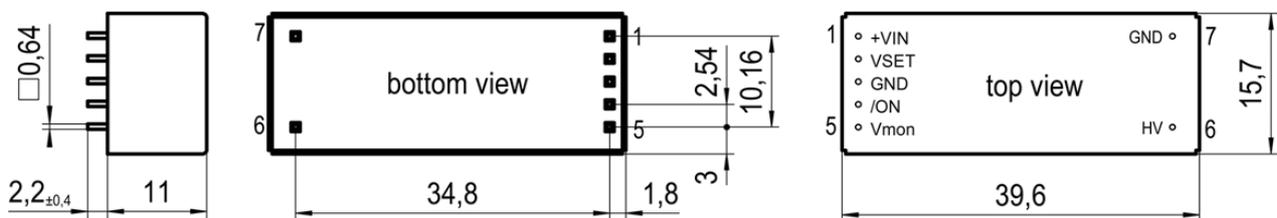


Figure 1: dimensional drawing APS | top view

Contact: 0.63 mm * 0.63 mm

Length: 2.2 +/- 0.4 mm

4 PIN assignment

PIN		DESCRIPTION
1	+VIN	Voltage IN
2	VSET	Set voltage
3/7	GND	Ground
4	/ON	Inhibit
5	VMON	Monitor voltage
6	HV	High voltage output

Table 4: Technical data: options and order information

5 Control principle

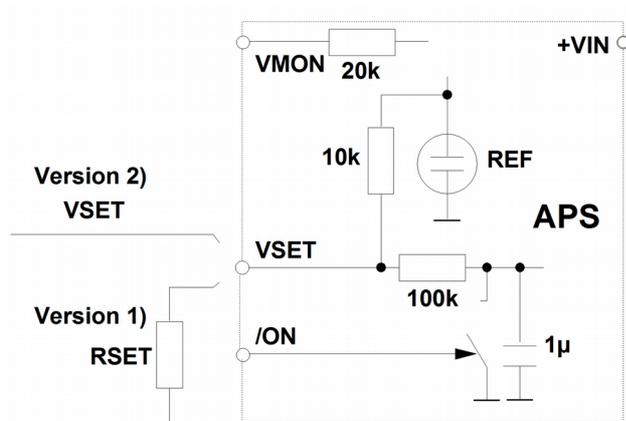


Figure 1: control principle of APS HV supply series

6 Warranty & Service

This device is made with high care and quality assurance methods. The factory warranty is up to 12 months, starting from date of issue (invoice). Within this period a 5 years warranty extension can be ordered at additional charge. Please contact iseg sales department.

ATTENTION



Repair and maintenance may only be performed by trained and authorized personnel.

For repair please follow the RMA instructions on our website: www.iseg-hv.com/en/support/rma

7 Manufacturer's contact

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