osi1609 Series

8–40 kV, 4 W/15 W/30 W, automatic crossover voltage/current regulation



Product introduction

The osi1609 series is a PCB-mount high-voltage module integrating multiple functions. It can replace many existing power modules while offering better performance, higher reliability, easier system integration and lower cost.

Product features

- Voltage range 8–40 kV
- Available output power 4 W, 15 W and 30 W
- Automatic crossover voltage/current regulation
- Voltage and current monitor signals
- Arc and short-circuit protection
- Precision +5 V reference output
- Universal standard interface

Specifications

Parameter	Specification
Input voltage	4 W models: 12 VDC. 15 W and 30 W models: 24 VDC.
Input voltage range	4 W: 11–30 VDC. 15 W and 30 W: 23–30 VDC. A 4 W supply operating at 24 VDC is not derated or damaged.
Input current (typical)	Disabled: 10 mA at 24 VDC. Full output, no load: 160 mA at 24 VDC; 300 mA at 12 VDC. Full output, full load: 4 W: 330 mA at 24 VDC or 640 mA at 12 VDC; 15 W: 850 mA at 24 VDC; 30 W: 1590 mA at 24 VDC.
Voltage regulation	Line <0.01%; load <0.01%.
Current regulation	Line <0.01%; load <0.01%.
Stability	After a 0.5-hour warm-up: less than 0.01% per 8 hours; less than 0.02% per day.
Accuracy	2% for all programming and monitoring, except current sensor 10%.
Temperature coefficient	Voltage and current: better than 100 ppm/°C; 25 ppm/°C optional.
Ambient temperature	Operating: −40°C to 65°C. Storage: −55°C to 105°C.
Humidity	10–90%, non-condensing.
Cooling	Natural convection. At full power a 30 W supply may require additional cooling to maintain case temperature below 65°C. Methods include forced air, a heatsink or metal enclosure. Case temperature must remain below 65°C.
Dimensions	8–12 kV: 38.1 mm wide × 25.03 mm high × 93.98 mm deep. 15–20 kV: 38.1 × 25.03 × 119.38 mm. 25–40 kV: 40.84 × 28.87 × 176.78 mm.
Weight	8–12 kV: approximately 0.17 kg. 15–20 kV: approximately 2 kg. 25–40 kV: approximately 3 kg.

Model selection (customizable)

Output (kV)	Output (mA)	Positive polarity	Negative polarity
8	3.75	osi1609P8-30	osi1609N8-30
10	3	osi1609P10-30	osi1609N10-30
20	1.5	osi1609P20-30	osi1609N20-30
30	1	osi1609P30-30	osi1609N30-30
40	0.75	osi1609P40-30	osi1609N40-30

DB9 connector signal definitions

Pin	Signal	Description
1	Power ground return	+12 VDC or +24 VDC power return / HV return
2	Positive power input	+12 VDC or +24 VDC input
3	Current sensor	See current-sensor description and table
4	Enable input	Low (<0.7 V, Isink 1 mA): HV OFF; high (open or >2 V): HV ON
5	Signal ground	Signal ground
6	Remote adjustment	Positive supplies: 0 to +4.64 VDC = 0–100% rated voltage; Zin >1 MΩ. Negative supplies: +5 VDC to 0.36 V = 0–100% rated voltage; Zin >100 kΩ.
7	+5 V reference output	+5 VDC ±1%, 25 ppm/°C; Zout = 475 Ω
8	HV ground return	HV ground return
9	E output monitor	1000:1; voltage monitor polarity matches supply polarity. Accuracy ±2%, 100 ppm/°C. Calibrate with a voltmeter having 10 MΩ input resistance.

Power supply pin definitions

Pin	Signal	Description
1	Power ground return	+12 VDC or +24 VDC power return / HV return
1A	Special resistance	Connect the unique identification resistor to ground
2	Positive power input	+12 VDC or +24 VDC input
2A	Remote output	+5 VDC, 1 mA = overtemperature fault
3	Current sensor	See current-sensor description and table
3A	Current monitor	0 to 4.64 VDC = 0–100% rated output; Zout <10 kΩ
4	Enable input	Low (<0.7 V, Isink 1 mA): HV OFF; high (open or >2 V): HV ON
4A	Voltage monitor	0 to 4.64 VDC = 0–100% rated output; Zout <10 kΩ
5	Signal ground	Signal ground
5A	Current programming	0 to 4.64 VDC = 0–100% rated output; Zin >47 kΩ. Leave open to preset current limit of 103% rated output current.
6	Remote adjustment	Positive supplies: 0 to +4.64 VDC = 0–100% rated voltage; Zin >1 MΩ. Negative supplies: +5 VDC to 0.36 V = 0–100% rated voltage; Zin >100 kΩ. Leave open if programming through pin 6A (voltage programming).
6A	Voltage programming	0 to 4.64 VDC = 0–100% rated voltage; Zin >100 kΩ. Leave open if programming through pin 6 (remote adjustment).
7	+5 V reference output	+5 VDC ±1%, 25 ppm/°C; Zout = 475 Ω
8	HV ground return	HV ground return
9	E output monitor	1000:1; voltage monitor polarity matches supply polarity. Accuracy ±2%, 100 ppm/°C. Calibrate with a voltmeter having 10 MΩ input resistance.