

12W

DC-DC
converters

The 12W JCG12 series is housed in a DIP24 PCB mount metal case. Featuring a 2:1 input voltage range of 9 to 18VDC, 18 to 36VDC or 36 to 75VDC with regulated single outputs of 2.5, 3.3, 5, 12 & 15VDC and dual outputs ± 12 & ± 15 VDC.

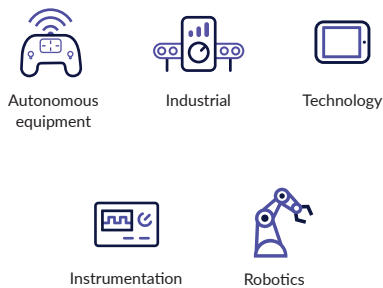
The JCG12 has 1.6kVDC isolation between input and output. Remote on/off is standard as are over voltage, overload & short circuit protection, an optional heatsink can be specified. Operating temperature range is from -40°C to +100°C, with derating above +60°C.



Features

- ▶ Regulated single & dual outputs
- ▶ 2:1 input range
- ▶ Single outputs 2.5 to 15VDC
- ▶ Dual outputs ± 12 & ± 15 VDC
- ▶ DIP24 package, metal case option
- ▶ 1.6kVDC isolation
- ▶ Remote On/Off
- ▶ -40°C to +100°C operating temperature
- ▶ Full power to +60°C
- ▶ 3 year warranty

Applications



Dimensions

31.75 x 20.32 x 10.16 mm (1.2" x 0.8" x 0.4")

Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current ⁽¹⁾		Maximum capacitive load	Efficiency
				No load	Full load		
JCG1212S2V5	9-18VDC	2.5VDC	3.5A	15mA	0.89A	2000 μ F	85%
JCG1212S3V3		3.3VDC	3.5A	15mA	1.15A	2000 μ F	87%
JCG1212S05		5.0VDC	2.4A	15mA	1.16A	2000 μ F	89%
JCG1212S12		12.0VDC	1.0A	15mA	1.15A	430 μ F	90%
JCG1212S15		15.0VDC	0.8A	15mA	1.15A	300 μ F	90%
JCG1212D12 ⁽²⁾		± 12.0 VDC	± 0.5 A	15mA	1.15A	± 200 μ F	90%
JCG1212D15 ⁽²⁾		± 15.0 VDC	± 0.4 A	15mA	1.14A	± 120 μ F	91%

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Notes:

1. Input current measured at nominal input voltage.
2. When one output is set to 100% load & the other varies between 25% & 100% load.
3. Measured with 1 μ F ceramic capacitor across output rails.

Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current ⁽¹⁾		Maximum capacitive load	Efficiency
				No load	Full load		
JCG1224S2V5	18-36 VDC	2.5VDC	3.5A	15mA	0.45A	2000μF	85%
JCG1224S3V3		3.3VDC	3.5A	15mA	0.57A	2000μF	87%
JCG1224S05		5.0VDC	2.4A	15mA	0.58A	2000μF	89%
JCG1224S12		12.0VDC	1.0A	15mA	0.58A	430μF	90%
JCG1224S15		15.0VDC	0.8A	15mA	0.58A	300μF	90%
JCG1224D12 ⁽²⁾		±12.0VDC	±0.5A	15mA	0.58A	±200μF	90%
JCG1224D15 ⁽²⁾		±15.0VDC	±0.4A	15mA	0.56A	±120μF	91%
JCG1248S2V5	36-75 VDC	±15.0VDC	3.5A	15mA	0.23A	2000μF	84%
JCG1248S3V3		2.5VDC	3.5A	15mA	0.28A	2000μF	88%
JCG1248S05		3.3VDC	2.4A	15mA	0.29A	2000μF	89%
JCG1248S12		5.0VDC	1.0A	15mA	0.29A	430μF	88%
JCG1248S15		12.0VDC	0.8A	15mA	0.29A	300μF	89%
JCG1248D12 ⁽²⁾		15.0VDC	±0.5A	15mA	0.29A	±200μF	88%
JCG1248D15 ⁽²⁾		±12.0VDC	±0.4A	15mA	0.29A	±120μF	89%

Notes:

1. Input current measured at nominal input voltage.
2. When one output is set to 100% load & the other varies between 25% & 100% load.
3. Measured with 1μF ceramic capacitor across output rails.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	9		18	VDC	12VDC nominal
	18		36		24VDC nominal
	36		75		48VDC nominal
Input current	See models & ratings table				
Input filter	Pi network				
Input reflected ripple current		20		mA	Through 12μH inductor
Input surge		36		VDC	12VDC models (for 1000ms)
		50			24VDC models (for 1000ms)
		100			48VDC models (for 1000ms)
Undervoltage lockout	None				12VDC models
Input reverse voltage protection	None				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models & ratings table				
Minimum load	0			%	No minimum load required
Initial set accuracy			±1.2	%	
Start up delay			20	ms	
Line regulation			±0.5	%	
Load regulation			±0.5	%	Single output
			±1		Dual outputs
Cross regulation		±5		%	On dual outputs, when one output is set to 100% load & the other varies between 25% & 100% load.
Transient response		<3		%	Deviation, recovery to within 1% in 250 µs for a 25% load change
Ripple & noise		85		mV	Measured with 20MHz bandwidth
Overload protection		>150		%	Full load
Overvoltage protection		3.9		V	2.5/3.3V models
		6.2			5V models
		15			12V models
		18			15V models
		±15			±12V models
		±18			±15V models
Short circuit protection	Trip & restart (hiccup mode), auto recovery				
Maximum capacitive load	See models & ratings table				
Temperature coefficient			±0.02	%/ °C	
Remote on/off	ON >3VDC or open circuit				
	OFF <1.2VDC or short circuit pin 1,2 & 3				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	See models & ratings table				
Isolation: input to output		1600		VDC	Functional insulation
Isolation: input to case		1600		VDC	
Isolation: output to case		1600		VDC	
Isolation capacitance			2000	µF	
Power density		1.8 (30.0)		W/cm³ (W/in³)	
Switching frequency		300		kHz	
Power density		1.1 (18.75)		W/cm³ (W/in³)	
Mean time between failure		>1.0		Mhrs	MIL-HDBK-217F, +25°C GB
Solder profile	Max 260°C 10s max, 1.5 from case				
Pin material	Solder coated brass				
Case material	Copper, nickel coated				
Base material	UL94V-0 rated plastic				
Potting material	UL94V-0 rated epoxy				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+100	°C	Derate from 100% load at +60°C to no load at +100°C
Storage temperature	-40		+125	°C	
Case temperature			+100	°C	
Cooling	Convection cooled				
Operating humidity			95	%	Non condensing

Safety approvals

Safety agency	Standard	Notes & conditions
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

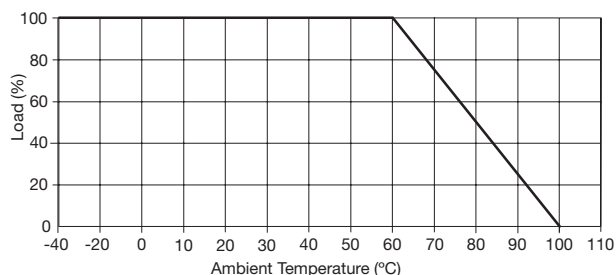
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	Class A	With external components, see application note
Radiated	EN55022	Class A	

Immunity - EMC

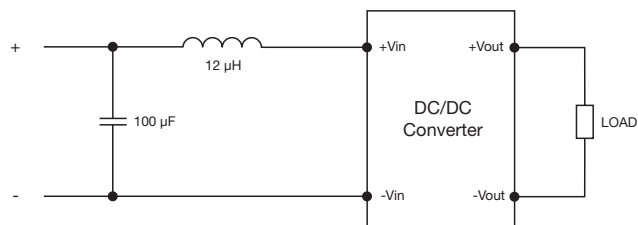
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	3	A	8kV air, 6kV contact
EFT/Burst	EN61000-4-4	3	A	A 330 μ F, 100V capacitor is required across input terminals to meet performance criteria A.
Surge	EN61000-4-5	Inst. class 3	A	A 330 μ F, 100V capacitor is required across input terminals to meet performance criteria A.
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	1A/m	A	

Application notes

Derating curve



Input filter

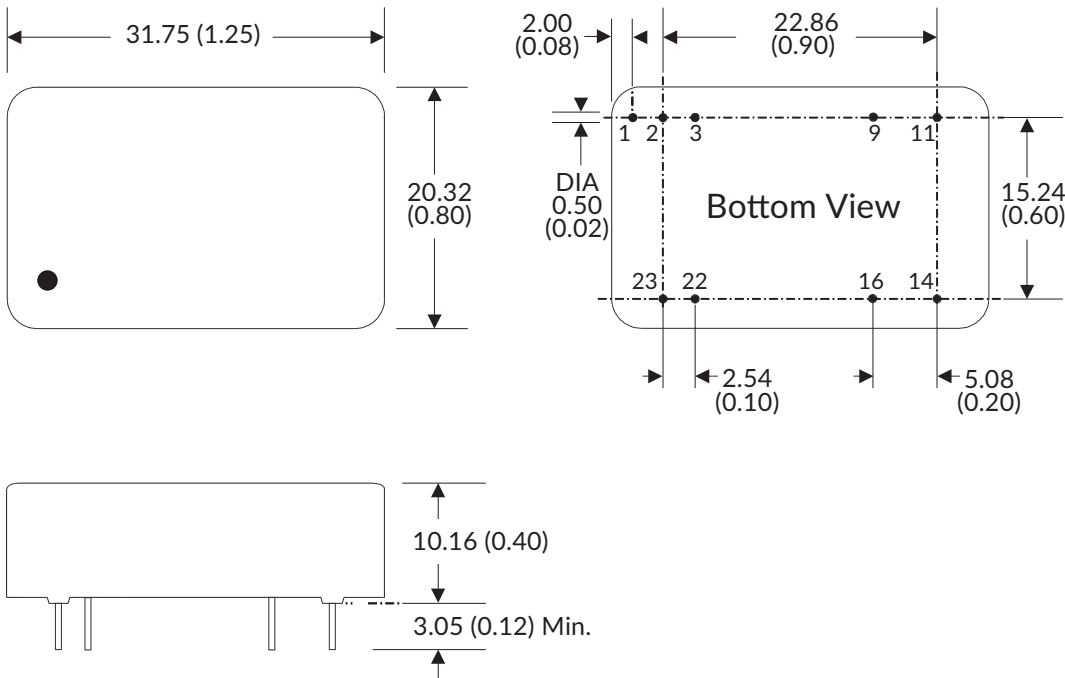


Remote on/off

Standard ROF logic is positive

Output On >3.0VDC or open circuit, Output Off <1.2VDC or short circuit pins 1, 2 & 3

Mechanical details



Pin connections		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	Not Connected	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

Notes:

1. All dimensions are in (mm (inches)).
2. Weight: 18g (0.04lbs) approx
3. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)