

# 12/15 Watts

## JCG Series



- High Power Density
- 2:1 Input Range
- Operating Temperature  $-40\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$
- Single & Dual Outputs
- Remote On/Off
- 1600 VDC Isolation
- 3 Year Warranty

### Specification

#### Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 12 V (9-18 VDC)</li> <li>• 24 V (18-36 VDC)</li> <li>• 48 V (36-75 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Input Reflected Ripple Current	<ul style="list-style-type: none"> <li>• 20 mA pk-pk through 12 <math>\mu\text{H}</math> inductor</li> </ul>
Input Surge	<ul style="list-style-type: none"> <li>• 12 V models 36 VDC for 1000 ms</li> <li>• 24 V models 50 VDC for 1000 ms</li> <li>• 48 V models 100 VDC for 1000 ms</li> </ul>
Undervoltage Lockout	<ul style="list-style-type: none"> <li>• None</li> </ul>
Input Reverse Voltage Protection	<ul style="list-style-type: none"> <li>• None</li> </ul>

#### Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>
Initial Set Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 1.2\%</math> max for JCG12, <math>\pm 1.0\%</math> for JCG15</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• 20 ms max</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max single, <math>\pm 1.0\%</math> max dual</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> on dual output models (see note 2)</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• <math>&lt; 3\%</math> deviation, recovery to within 1% in 250 <math>\mu\text{s}</math> for a 25% load change</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 85 mV pk-pk, 20 MHz bandwidth for JCG12,</li> <li>• 60 mV pk-pk, 20 MHz bandwidth for JCG15 (see note 3)</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• <math>&gt; 150\%</math> of full load</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• 2.5/3.3 V models: 3.9 V typical</li> <li>• 5 V models: 6.2 V typical</li> <li>• 12 V models: 15.0 V typical</li> <li>• 15 V models: 18.0 V typical</li> <li>• <math>\pm 12</math> V models: <math>\pm 15.0</math> V typical</li> <li>• <math>\pm 15</math> V models: <math>\pm 18.0</math> V typical</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup) with auto recovery</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• <math>\pm 0.02/^{\circ}\text{C}</math> max</li> </ul>
Remote On/Off	<ul style="list-style-type: none"> <li>• ON <math>&gt; 3.0</math> VDC or open circuit</li> <li>• OFF <math>&lt; 1.2</math> VDC or short circuit pin 1, 2 &amp; 3</li> </ul>

#### General

Efficiency	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Isolation Voltage	<ul style="list-style-type: none"> <li>• 1600 VDC Input to Output</li> <li>• 1600 VDC Input to Case</li> <li>• 1600 VDC Output to Case</li> </ul>
Isolation Capacitance	<ul style="list-style-type: none"> <li>• 2000 <math>\mu\text{F}</math> max</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 330 kHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>• 30 W/in<sup>3</sup> for JCG12, 37.5 W/in<sup>3</sup> for JCG15</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• <math>&gt; 1.0</math> Mhrs to MIL-HDBK-217F at 25 <math>^{\circ}\text{C}</math>, GB</li> </ul>

#### Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+100\text{ }^{\circ}\text{C}</math>, derate from 100% load at <math>+60\text{ }^{\circ}\text{C}</math> to no load at <math>+100\text{ }^{\circ}\text{C}</math></li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• <math>+100\text{ }^{\circ}\text{C}</math> max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+125\text{ }^{\circ}\text{C}</math></li> </ul>
Humidity	<ul style="list-style-type: none"> <li>• Up to 95%, non-condensing</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Natural convection</li> </ul>

#### EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022 Class A conducted and radiated with external components - see application note</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, level 3, Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 3, Perf Criteria A*</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, installation class 3, Perf Criteria A*</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 10 Vrms, Perf Criteria A</li> </ul>
Magnetic Field	<ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m, Perf Criteria A</li> </ul>

\* A 330  $\mu\text{F}$ , 100 V capacitor is required across input terminals to meet performance criteria A.

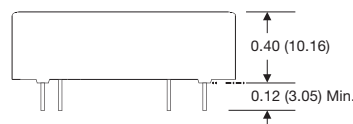
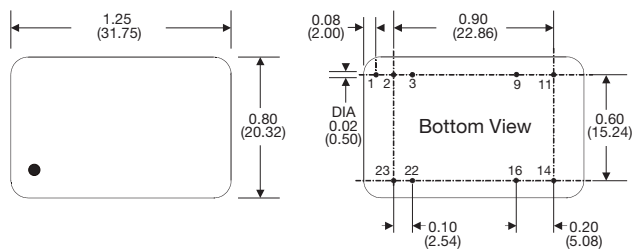
**Models and Ratings**

Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Max. Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-18 V	2.5 V	3.5 A	15 mA	0.89 A	2000 µF	85%	JCG1212S2V5
	3.3 V	3.5 A	15 mA	1.15 A	2000 µF	87%	JCG1212S3V3
	5.0 V	2.4 A	15 mA	1.16 A	2000 µF	89%	JCG1212S05
	12.0 V	1.0 A	15 mA	1.15 A	430 µF	90%	JCG1212S12
	15.0 V	0.8 A	15 mA	1.15 A	300 µF	90%	JCG1212S15
	±12.0 V	±0.5 A	15 mA	1.15 A	±200 µF	90%	JCG1212D12
	±15.0 V	±0.4 A	15 mA	1.14 A	±120 µF	91%	JCG1212D15
18-36 V	2.5 V	3.5 A	15 mA	0.45 A	2000 µF	85%	JCG1224S2V5
	3.3 V	3.5 A	15 mA	0.57 A	2000 µF	87%	JCG1224S3V3
	5.0 V	2.4 A	15 mA	0.58 A	2000 µF	89%	JCG1224S05
	12.0 V	1.0 A	15 mA	0.58 A	430 µF	90%	JCG1224S12
	15.0 V	0.8 A	15 mA	0.58 A	300 µF	90%	JCG1224S15
	±12.0 V	±0.5 A	15 mA	0.58 A	±200 µF	90%	JCG1224D12
	±15.0 V	±0.4 A	15 mA	0.56 A	±120 µF	91%	JCG1224D15
36-75 V	2.5 V	3.5 A	15 mA	0.23 A	2000 µF	84%	JCG1248S2V5
	3.3 V	3.5 A	15 mA	0.28 A	2000 µF	88%	JCG1248S3V3
	5.0 V	2.4 A	15 mA	0.29 A	2000 µF	89%	JCG1248S05
	12.0 V	1.0 A	15 mA	0.29 A	430 µF	88%	JCG1248S12
	15.0 V	0.8 A	15 mA	0.29 A	300 µF	89%	JCG1248S15
	±12.0 V	±0.5 A	15 mA	0.29 A	±200 µF	88%	JCG1248D12
	±15.0 V	±0.4 A	15 mA	0.29 A	±120 µF	89%	JCG1248D15
9-18 V	3.3 V	4.0 A	15 mA	1309 mA	4700 µF	86%	JCG1512S3V3
	5.1 V	3.0 A	15 mA	1465 mA	3300 µF	89%	JCG1512S05
	12.0 V	1.25 A	15 mA	1436 mA	600 µF	89%	JCG1512S12
	15.0 V	1.0 A	15 mA	1420 mA	400 µF	90%	JCG1512S15
	±5.0 V	±1.5 A	15 mA	1488 mA	±1500 µF	86%	JCG1512D05
	±12.0 V	±0.625 A	15 mA	1420 mA	±288 µF	90%	JCG1512D12
	±15.0 V	±0.5 A	15 mA	1420 mA	±200 µF	90%	JCG1512D15
18-36 V	3.3 V	4.0 A	10 mA	647 mA	4700 µF	87%	JCG1524S3V3
	5.1 V	3.0 A	10 mA	732 mA	3300 µF	89%	JCG1524S05
	12.0 V	1.25 A	10 mA	710 mA	600 µF	90%	JCG1524S12
	15.0 V	1.0 A	10 mA	702 mA	400 µF	91%	JCG1524S15
	±5.0 V	±1.5 A	10 mA	744 mA	±1500 µF	86%	JCG1524D05
	±12.0 V	±0.625 A	10 mA	710 mA	±288 µF	90%	JCG1524D12
	±15.0 V	±0.5 A	10 mA	710 mA	±200 µF	90%	JCG1524D15
36-75 V	3.3 V	4.0 A	5 mA	327 mA	4700 µF	86%	JCG1548S3V3
	5.1 V	3.0 A	5 mA	370 mA	3300 µF	88%	JCG1548S05
	12.0 V	1.25 A	5 mA	359 mA	600 µF	89%	JCG1548S12
	15.0 V	1.0 A	5 mA	359 mA	400 µF	89%	JCG1548S15
	±5.0 V	±1.5 A	5 mA	372 mA	±1500 µF	86%	JCG1548D05
	±12.0 V	±0.625 A	5 mA	359 mA	±288 µF	89%	JCG1548D12
	±15.0 V	±0.5 A	5 mA	355 mA	±200 µF	90%	JCG1548D15

**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 µF ceramic capacitor across output rails.

**Mechanical Details**



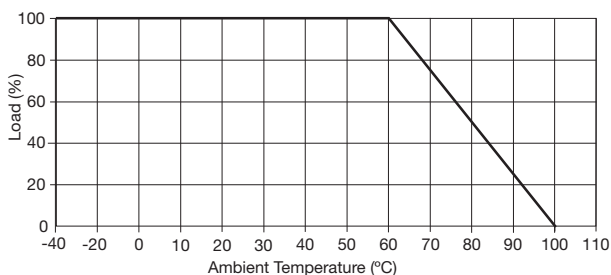
Pin	Pin Connections	
	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	Not Connected	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

**Notes**

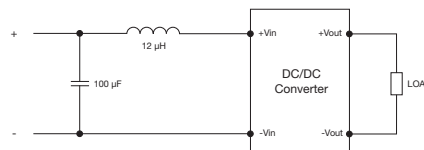
1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (18 g) approx
3. Pin diameter: 0.02 ±0.002 (0.5 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Package: 24 pin DIL nickel-coated copper

**Application Notes**

**Derating Curve**



**Input Filter**



**Remote On/Off**

Standard ROF logic is positive  
 Output On >3.0 VDC or open circuit  
 Output Off <1.2 VDC or short circuit pins 1, 2 & 3