

15/20 Watts

JCM Series



- Very High Power Density
- 2:1 Input Range
- Operating Temperature $-40\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$
- Single & Dual Outputs
- 1600 VDC Isolation
- High Efficiency – up to 89%
- 3 Year Warranty

Specification

Input

Input Voltage Range	<ul style="list-style-type: none"> • 12 V (9-18 VDC) • 24 V (18-36 VDC) • 48 V (36-75 VDC)
Input Current	<ul style="list-style-type: none"> • See table
Input Filter	<ul style="list-style-type: none"> • Pi network
Input Reflected Ripple Current	<ul style="list-style-type: none"> • JCM15: 20 mA pk-pk, JCM20: 30 mA pk-pk through 12 μH inductor and 47 μF capacitor, 5 Hz to 20 MHz
Input Surge	<ul style="list-style-type: none"> • 12 V models: 36 VDC for 100 ms • 24 V models: 50 VDC for 100 ms • 48 V models: 100 VDC for 100 ms

Output

Output Voltage	<ul style="list-style-type: none"> • See table
Output Trim	<ul style="list-style-type: none"> • $\pm 10\%$ max on single output
Minimum Load	<ul style="list-style-type: none"> • No minimum load required
Initial Set Accuracy	<ul style="list-style-type: none"> • $\pm 1\%$ max
Start Up Delay	<ul style="list-style-type: none"> • 20 ms typical
Line Regulation	<ul style="list-style-type: none"> • JCM15: $\pm 0.2\%$ max, JCM20: $\pm 0.5\%$
Load Regulation	<ul style="list-style-type: none"> • $\pm 0.5\%$ max single, $\pm 1.0\%$ max dual
Cross Regulation	<ul style="list-style-type: none"> • $\pm 5\%$ on dual output models (see note 2)
Transient Response	<ul style="list-style-type: none"> • $< 3\%$ max deviation, recovery to within 1% in 250 μs for a 25% load change
Ripple & Noise	<ul style="list-style-type: none"> • 100 mV pk-pk, 20 MHz bandwidth, (see note 3)
Overvoltage Protection	<ul style="list-style-type: none"> • 3.3 V models: 3.9 V typical • 5 V models: 6.2 V typical • 12 V models: 15 V typical • 15 V models: 18 V typical • ± 5 V models: ± 6.2 V typical • ± 12 V models: ± 15 V typical • ± 15 V models: ± 18 V typical
Overload Protection	<ul style="list-style-type: none"> • 150% of full load typical
Short Circuit Protection	<ul style="list-style-type: none"> • Trip & restart (hiccup) with auto recovery
Maximum Capacitive Load	<ul style="list-style-type: none"> • See table
Temperature Coefficient	<ul style="list-style-type: none"> • $\pm 0.02/^{\circ}\text{C}$ max
Remote On/Off	<ul style="list-style-type: none"> • On > 3.0 VDC or open circuit • Off < 1.2 VDC or short circuit pins 2 & 3

General

Efficiency	<ul style="list-style-type: none"> • See table
Isolation	<ul style="list-style-type: none"> • 1600 VDC Input to Output • 1600 VDC Input to Case • 1600 VDC Output to Case
Isolation Capacitance	<ul style="list-style-type: none"> • JCM15: 1200 pF max, JCM20: 1000 pF max
Switching Frequency	<ul style="list-style-type: none"> • JCM15: 375 kHz typical, JCM20: 330 kHz typical
Power Density	<ul style="list-style-type: none"> • JCM15: 38.4 W/in³, JCM20: 51.3 W/in³
MTBF	<ul style="list-style-type: none"> • > 560 kHrs to MIL-STD-217F at 25 $^{\circ}\text{C}$, GB

Environmental

Operating Temperature	<ul style="list-style-type: none"> • $-40\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$, derate from 100% load at $+65\text{ }^{\circ}\text{C}$ to no load at $+105\text{ }^{\circ}\text{C}$ for JCM15 and 100% load at $+55\text{ }^{\circ}\text{C}$ to no load at $105\text{ }^{\circ}\text{C}$ for JCM20
Case Temperature	<ul style="list-style-type: none"> • $+105\text{ }^{\circ}\text{C}$ max
Storage Temperature	<ul style="list-style-type: none"> • $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$
Humidity	<ul style="list-style-type: none"> • Up to 90%, non-condensing
Cooling	<ul style="list-style-type: none"> • Natural convection

EMC

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

*External input capacitor required, 220 $\mu\text{F}/100\text{ V}$.

Input Voltage	Output Voltage	Output Current	Input Current ⁽¹⁾		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-18 V	3.3 V	4.000 A	20 mA	1310 mA	1000 µF	85%	JCM1512S3V3†^
	5.0 V	3.000 A	20 mA	1471 mA	1000 µF	86%	JCM1512S05†^
	12.0 V	1.300 A	20 mA	1494 mA	330 µF	88%	JCM1512S12†^
	15.0 V	1.000 A	20 mA	1420 mA	220 µF	89%	JCM1512S15†^
	±5.0 V	±1.500 A	20 mA	1488 mA	±470 µF	85%	JCM1512D05†^
	±12.0 V	±0.625 A	20 mA	1420 mA	±220 µF	89%	JCM1512D12†^
18-36 V	3.3 V	4.000 A	15 mA	647 mA	1000 µF	86%	JCM1524S3V3†^
	5.0 V	3.000 A	15 mA	727 mA	1000 µF	87%	JCM1524S05†^
	12.0 V	1.300 A	15 mA	747 mA	330 µF	88%	JCM1524S12†^
	15.0 V	1.000 A	15 mA	710 mA	220 µF	89%	JCM1524S15†^
	±5.0 V	±1.500 A	15 mA	744 mA	±470 µF	85%	JCM1524D05†^
	±12.0 V	±0.625 A	15 mA	718 mA	±220 µF	88%	JCM1524D12†^
36-75 V	3.3 V	4.000 A	10 mA	327 mA	1000 µF	85%	JCM1548S3V3†^
	5.0 V	3.000 A	10 mA	368 mA	1000 µF	86%	JCM1548S05†^
	12.0 V	1.300 A	10 mA	374 mA	330 µF	88%	JCM1548S12†^
	15.0 V	1.000 A	10 mA	359 mA	220 µF	88%	JCM1548S15†^
	±5.0 V	±1.500 A	10 mA	377 mA	±470 µF	84%	JCM1548D05†^
	±12.0 V	±0.625 A	10 mA	363 mA	±220 µF	87%	JCM1548D12†^
9-18 V	3.3 V	4.500 A	60 mA	1439 mA	7000 µF	86%	JCM2012S3V3†^
	5.0 V	4.000 A	60 mA	1852 mA	5000 µF	90%	JCM2012S05†^
	12.0 V	1.670 A	30 mA	1873 mA	850 µF	89%	JCM2012S12†^
	15.0 V	1.330 A	30 mA	1873 mA	700 µF	89%	JCM2012S15†^
	±12.0 V	±0.833 A	30 mA	1873 mA	±470 µF	89%	JCM2012D12†^
	±15.0 V	±0.667 A	30 mA	1873 mA	±330 µF	89%	JCM2012D15†^
18-36 V	3.3 V	4.500 A	35 mA	720 mA	7000 µF	86%	JCM2024S3V3†^
	5.0 V	4.000 A	35 mA	936 mA	5000 µF	89%	JCM2024S05†^
	12.0 V	1.670 A	25 mA	936 mA	850 µF	89%	JCM2024S12†^
	15.0 V	1.330 A	25 mA	936 mA	700 µF	89%	JCM2024S15†^
	±12.0 V	±0.833 A	30 mA	936 mA	±470 µF	89%	JCM2024D12†^
	±15.0 V	±0.667 A	30 mA	936 mA	±330 µF	89%	JCM2024D15†^
36-75 V	3.3 V	4.500 A	25 mA	360 mA	7000 µF	86%	JCM2048S3V3†^
	5.0 V	4.000 A	25 mA	468 mA	5000 µF	89%	JCM2048S05†^
	12.0 V	1.670 A	15 mA	468 mA	850 µF	89%	JCM2048S12†^
	15.0 V	1.330 A	15 mA	468 mA	700 µF	90%	JCM2048S15†^
	±12.0 V	±0.833 A	20 mA	468 mA	±470 µF	89%	JCM2048D12†^
	±15.0 V	±0.667 A	20 mA	468 mA	±330 µF	89%	JCM2048D15†^

Notes

1. Input current specified at nominal input.
 2. Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
 3. Measured with 1 µF ceramic capacitor in parallel with a 10 µF electrolytic across output rails on single output models or 1 µF ceramic capacitor only on dual output models.
- † Available from Farnell & element14. See pages 284-290. ^ Available from Newark. See pages 291-296

Mechanical Details

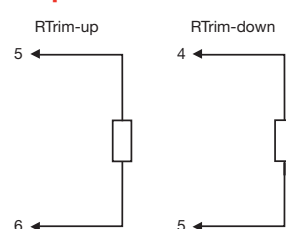
Pin Connections					
Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	+Vout	+Vout
2	-Vin	-Vin	5	Trim	Com
3	Remote On/Off	Remote On/Off	6	-Vout	-Vout

Notes

1. All dimensions are in inches (mm).
2. Weight: 0.04 lbs (20 g) approx.
3. Pin diameter: 0.004 ±0.002 (1.0 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Application Notes

Output Trim



Trim Resistor Values		
Model Number	Trim up 10%	Trim down 10%
JCM-S3V3	8 kΩ	12 kΩ
JCM-S05	10 kΩ	5 kΩ
JCM-S12	20 kΩ	7 kΩ
JCM-S15	20 kΩ	6 kΩ

Approximate values.

Output can be externally trimmed by using the method above. (Single output models only). For variable trimming, use 100 kΩ potentiometer

Input Filter

