15/20 Watts
JCM Series



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

Specification

Input

Input Voltage Range	• 12 V (9-18 VDC) 24 V (18-36 VDC) 48 V (36-75 VDC)
Input Current	• See table
Input Filter	• Pi network
Input Reflected Ripple Current	• 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	• 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	• See table
Output Trim	• ±10% max on single output
Minimum Load	• No minimum load required
Initial Set Accuracy	• ±1% max
Start Up Delay	• 20 ms typical
Line Regulation	• JCM15: ±0.2% max, JCM20: ±0.5%
Load Regulation	• ±0.5% max single, ±1.0% max dual
Cross Regulation	• ±5% on dual output models (see note 2)
Transient Response	• <3% max deviation, recovery to within 1% in 250 µs for a 25% load change
Ripple & Noise	• 100 mV pk-pk, 20 MHz bandwidth, (see note 3)
Overvoltage Protection	• 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	• 150% of full load typical
Short Circuit Protection	• Trip & restart (hiccup) with auto recovery
Maximum Capacitive Load	• See table
Temperature Coefficient	• ±0.02/°C max
Remote On/Off	• On >3.0 VDC or open circuit Off <1.2 VDC or short circuit pins 2 & 3

General

Efficiency	• See table
Isolation	• 1600 VDC Input to Output 1600 VDC Input to Case 1600 VDC Output to Case
Isolation Capacitance	• JCM15: 1200 pF max, JCM20: 1000 pF max
Switching Frequency	• JCM15: 375 kHz typical, JCM20: 330 kHz typical
Power Density	• JCM15: 38.4 W/in^3, JCM20: 51.3 W/in^3
MTBF	• >560 kHrs to MIL-STD-217F at 25 °C, GB

Environmental

Operating Temperature	• -40 °C to +105 °C, derate from 100% load at +65 °C to no load at +105 °C for JCM15 and 100% load at +55 °C to no load at 105 °C for JCM20
Case Temperature	• +105 °C max
Storage Temperature	• -40 °C to +125 °C
Humidity	• Up to 90%, non-condensing
Cooling	• Natural convection

EMC

Emissions	• EN55022 class A conducted & radiated with external components, see application note
ESD Immunity	• EN61000-4-2, 6 kV contact discharge, 8 kV air discharge, Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m, Perf Criteria A
EFT/Burst	• EN61000-4-4, level 2, Perf Criteria A*
Surge	• EN61000-4-5, level 2, Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 Vrms, Perf Criteria A
Magnetic Field	• EN61000-4-8, 1 A/m, Perf Criteria A

**External input capacitor required, 220 µF/100 V.*

Models and Ratings

Input Voltage	Output Voltage	Output Current	Input Current[1] No Load	Input Current[1] Full Load	Maximum Capacitive Load	Efficiency	Model Number
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†^
	±15.0 V	±0.500 A	20 mA	1437 mA	±100 µF	89%	JCM1512D15†^
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†^
	±15.0 V	±0.500 A	15 mA	710 mA	±100 µF	89%	JCM1524D15†^
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†^
	±15.0 V	±0.500 A	10 mA	359 mA	±100 µF	88%	JCM1548D15†^
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†^

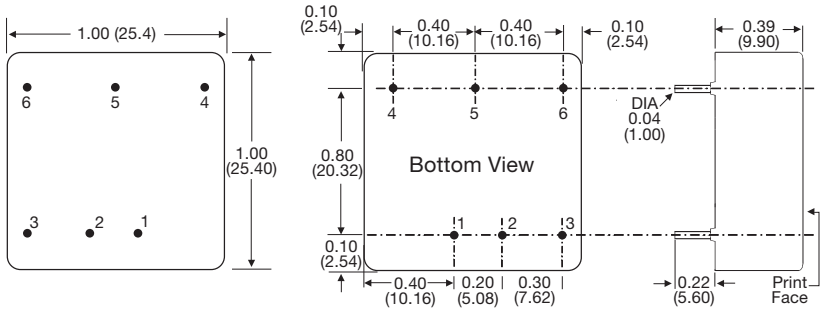
Notes

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



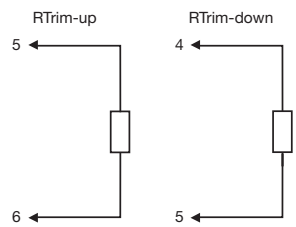
Pin Connections					
Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	+Vout	+Vout
2	-Vin	-Vin	5	Trim	Com
3	Remote On/Off	Remote On/Off	6	-Vout	-Vout

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

