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JCK50 Series

DC-DC Converter

XP Power

50 Watts

- Regulated Single Output
- 2:1 Input Range
- 2" x 1" Package
- 1600 VDC Isolation
- Operating Temperature -40 °C to +95 °C
- Remote On/Off
- High Power Density
- Optional Heatsink
- Six-sided Metal Case
- 3 Year Warranty



Dimensions:

JCK50:
2.00 x 1.00 x 0.45" (50.8 x 25.4 x 11.5 mm)

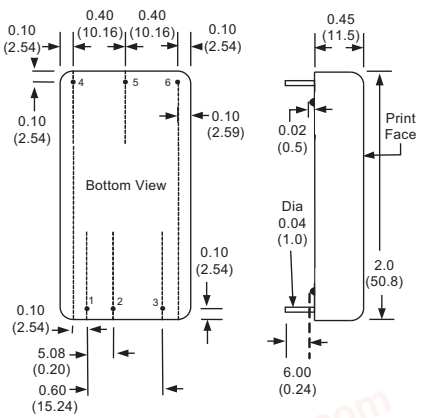
Models & Ratings

Input voltage	Output voltage	Output current	Input current[1,2]		Overvoltage Protection	Maximum capacitive load[3]	Efficiency	Model number[4]
			No load	Full load				
9-18 V	3V3	10.00 A	110 mA	3.06 A	3.9 V	26000 µF	90%	JCK5012S3V3
	5 V	10.00 A	200 mA	4.68 A	6.2 V	17000 µF	89%	JCK5012S05
	12 V	4.17 A	60 mA	4.68 A	15.0 V	3300 µF	89%	JCK5012S12
	15 V	3.33 A	60 mA	4.68 A	18.0 V	2200 µF	89%	JCK5012S15
18-36 V	3V3	10.00 A	70 mA	1.51 A	3.9 V	26000 µF	91%	JCK5024S3V3
	5 V	10.00 A	90 mA	2.29 A	6.2 V	17000 µF	91%	JCK5024S05
	12 V	4.17 A	40 mA	2.29 A	15.0 V	3300 µF	91%	JCK5024S12
	15 V	3.33 A	40 mA	2.29 A	18.0 V	2200 µF	91%	JCK5024S15
36-75 V	3V3	10.00 A	50 mA	0.76 A	3.9 V	26000 µF	91%	JCK5048S3V3
	5 V	10.00 A	60 mA	1.13 A	6.2 V	17000 µF	92%	JCK5048S05
	12 V	4.17 A	40 mA	1.14 A	15.0 V	3300 µF	91%	JCK5048S12
	15 V	3.33 A	40 mA	1.17 A	18.0 V	2200 µF	92%	JCK5048S15

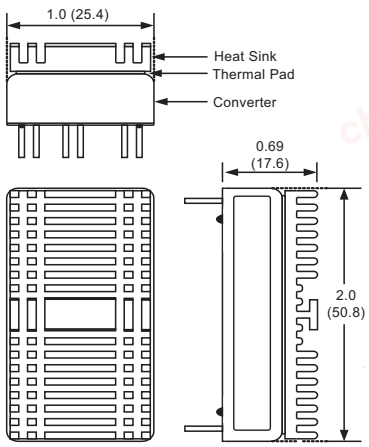
Notes

1. *Input currents measured at nominal input voltage.*
2. *Input current is typically 5.0 mA at nominal input voltage when output is turned off using remote on/off.*
3. *Maximum capacitive load is per output.*
4. *Add suffix "-HK" for optional heatsink.*

Mechanical Details



Optional Heatsink (–HK)



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

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.1 lbs (45.0g) approx.
3. Tolerance: X.XX±0.01 (X.X±0.25)
   X.XXX±0.005 (X.XX±0.13)
4. Pin Tolerance: ±0.002 (±0.05)

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Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	9		18	VDC	12 V nominal
	18		36		24 V nominal
	36		75		48 V nominal
Input Filter	Internal Pi type				
Input Surge			25	VDC for 100 ms	12 V models
			50		24 V models
			100		48 V models
Remote On/Off	ON: Logic high (3.0-12 V) or open circuit OFF: Logic low (<1.2 V) or short pin 2 to pin 3				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		15	VDC	See Models and Ratings table
Initial Set Accuracy			±1.0	%	At full load
Output Trim			±10	%	See Application Notes
Minimum Load				A	No minimum load required
Line Regulation			±0.5	%	From minimum to maximum input at full load
Load Regulation			±0.5	%	From 0 to full load
Transient Response			±3.0	% deviation	Recovery within 1% in less than 250 µs for a 25% load change.
Ripple & Noise			100	mV pk-pk	20 MHz bandwidth. Measured using 1µF MLCC
Overload Protection	120		140	%	
Short Circuit Protection					Continuous Trip & Restart (Hiccup mode), with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		91		%	See Models and Ratings table
Isolation: Input to Output	1600			VDC	60 s
Isolation: Input & Output to Case	1600			VDC	60 s
Isolation Resistance	10^9			Ω	At 500 VDC
Isolation Capacitance			2000	pF	
Switching Frequency		250/270		kHz	12 V input models / other models
Power Density			62.5	W/in^3	
Mean Time Between Failure		220		kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.1 (45.0)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+95	°C	See Derating Curve.
Storage Temperature	-40		+125	°C	
Case Temperature			+110	°C	
Thermal Protection		115		°C	Measured at centre of case
Humidity			95	%RH	Non-condensing
Cooling					Natural convection
Thermal Impedance to Air	9.5/8.5			°C/W	No heatsink / with heatsink

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55022	Class A	

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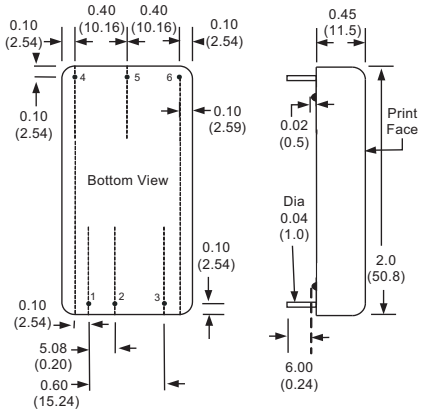
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±8 kV air discharge, ±6 kV contact	A	
Radiated	EN61000-4-3	10 V/m	A	
EFT/Burst	EN61000-4-4	±2 kV	A	With external capacitor, suggested part is CHEMI-CON KY 220 µF/100V
Surge	EN61000-4-5	±1 kV	A	With external capacitor, suggested part is CHEMI-CON KY 220 µF/100V
Conducted	EN61000-4-6	10 V rms	A	

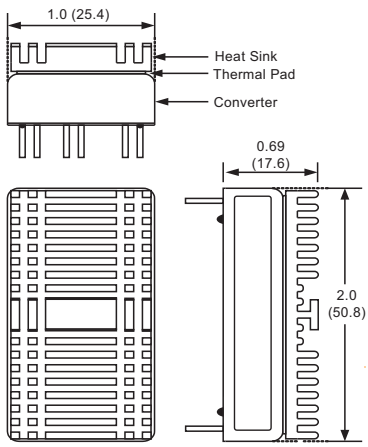
Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL60950-1, UL62368-1	
CSA	CAN/CSA C22.2 No.60950-1	

Mechanical Details



Optional Heatsink (–HK)



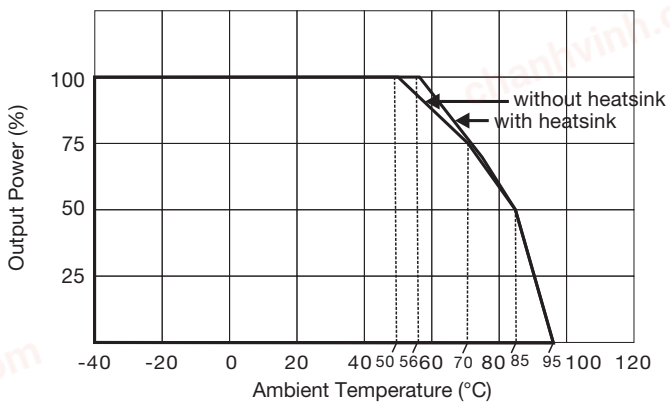
Pin Connections	
Pin	Single
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4	+Vout
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Notes

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2. Weight: 0.1 lbs (45.0g) approx.
3. Tolerance: X.XX±0.01 (X.X±0.25)
   X.XXX±0.005 (X.XX±0.13)
4. Pin Tolerance: ±0.002 (±0.05)

Application Notes

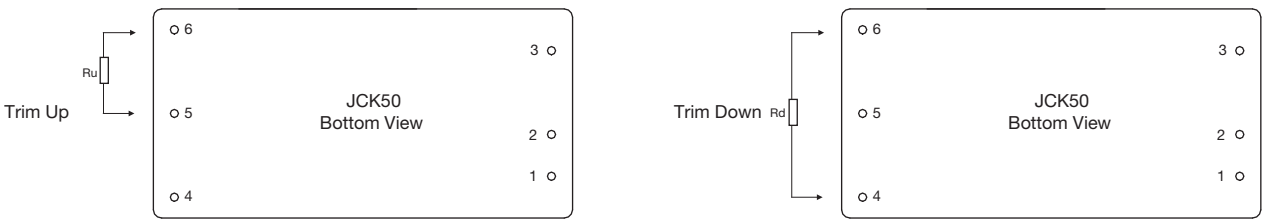
Derating Curve



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Application Notes

External Output Trimming



Trim Down Resistor Values (Rd)

Models	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx0.99	Voutx0.98	Voutx0.97	Voutx0.96	Voutx0.95	Voutx0.94	Voutx0.93	Voutx0.92	Voutx0.91	Voutx0.90
3V3	315.932 kΩ	172.257 kΩ	112.528 kΩ	79.806 kΩ	59.153 kΩ	44.930 kΩ	34.539 kΩ	26.616 kΩ	20.374 kΩ	15.330 kΩ
5V	230.566 kΩ	106.182 kΩ	64.301 kΩ	43.281 kΩ	30.643 kΩ	22.207 kΩ	16.177 kΩ	11.651 kΩ	8.129 kΩ	5.310 kΩ
12V	327.351 kΩ	142.100 kΩ	83.928 kΩ	55.470 kΩ	38.591 kΩ	27.418 kΩ	19.477 kΩ	13.542 kΩ	8.939 kΩ	5.264 kΩ
15V	433.811 kΩ	174.916 kΩ	100.946 kΩ	65.907 kΩ	45.468 kΩ	32.077 kΩ	29.96 k	15.596 kΩ	10.165 kΩ	5.842 kΩ

Trim Down Resistor Values (Ru)

Models	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx1.01	Voutx1.02	Voutx1.03	Voutx1.04	Voutx1.05	Voutx1.06	Voutx1.07	Voutx1.08	Voutx1.09	Voutx1.10
3V3	544.612 kΩ	184.034 kΩ	103.305 kΩ	67.715 kΩ	47.676 kΩ	34.824 kΩ	25.880 kΩ	19.297 kΩ	14.249 kΩ	10.255 kΩ
5V	244.527 kΩ	113.776 kΩ	70.631 kΩ	49.142 kΩ	36.274 kΩ	27.707 kΩ	21.592 kΩ	17.010 kΩ	13.447 kΩ	10.598 kΩ
12V	371.425 kΩ	183.645 kΩ	117.623 kΩ	83.929 kΩ	63.489 kΩ	49.767 kΩ	39.919 kΩ	32.508 kΩ	26.728 kΩ	22.094 kΩ
15V	347.293 kΩ	178.523 kΩ	115.235 kΩ	82.084 kΩ	61.683 kΩ	47.863 kΩ	37.863 kΩ	30.336 kΩ	24.430 kΩ	19.682 kΩ