

HCJ30 Series

30 Watts

- Market leading 1" x 1" power dense package
- Efficiency up to 92%
- 2:1 Input range
- Single and dual outputs
- 1600VDC Isolation
- Remote on/off
- 5 Year warranty



The HCJ30 series of high power dense DC/DC converters come in both single and dual outputs. Inputs are available in 12, 24 & 48V versions with 2:1 range and outputs from 3.3 to 15V single and dual. The DC/DC converters are very high efficiency of up to 92% and come complete with remote on/off as standard. The units operate from -40 to +100°C. All models have a FiDUS 5 year warranty.

Dimensions:

1.00 x 1.00 x 0.41" (25.4 x 25.4 x 10.4mm)

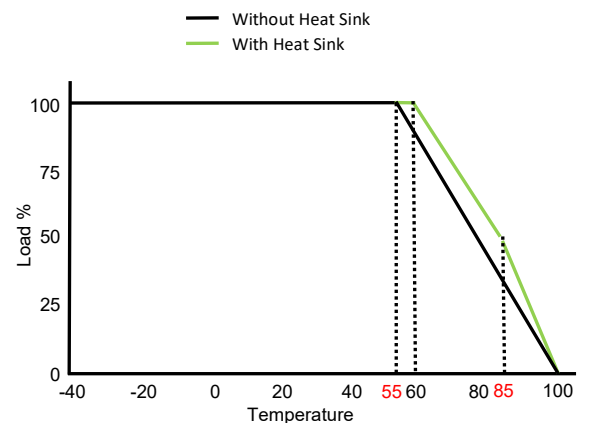
Models & Ratings

Model Number	Input Voltage	Output Voltage	Output Current	Input Current		Maximum Capacitive Load	Efficiency
				No Load	Full Load		
HCJ301203	9-18V	3.3V	7000mA	10mA	2212.64mA	10000uF	87%
HCJ301205		5V	6000mA	10mA	2808.99mA	7200uF	89%
HCJ301212		12V	2500mA	12mA	2808.99mA	1200uF	89%
HCJ301215		15V	2000mA	12mA	2777.78mA	1000uF	90%
HCJ301212D		±12V	±1250mA	12mA	2808.99mA	±750uF	89%
HCJ301215D		±15V	±1000mA	14mA	2777.78mA	±500uF	90%
HCJ302403	18-36V	3.3V	7000mA	10mA	1106.32mA	10000uF	87%
HCJ302405		5V	6000mA	10mA	1388.89mA	7200uF	90%
HCJ302412		12V	2500mA	10mA	1388.89mA	1200uF	90%
HCJ302415		15V	2000mA	10mA	1373.63mA	1000uF	91%
HCJ302412D		±12V	±1250mA	10mA	1388.89mA	±750uF	90%
HCJ302415D		±15V	±1000mA	10mA	1373.63mA	±500uF	91%
HCJ304803	36-75V	3.3V	7000mA	8mA	540.73mA	10000uF	89%
HCJ304805		5V	6000mA	8mA	686.81mA	7200uF	91%
HCJ304812		12V	2500mA	8mA	686.81mA	1200uF	91%
HCJ304815		15V	2000mA	8mA	679.35mA	1000uF	92%
HCJ304812D		±12V	±1250mA	8mA	686.81mA	±750uF	91%
HCJ304815D		±15V	±1000mA	8mA	679.35mA	±500uF	92%

Notes

1. For Heat Sink add 'SK' to the model number
2. Under no load conditions the unit may not meet all specifications

Derating curve



Input	
Parameter	Rating
Input voltage range	See table
Input reflected ripple current	30mA pk-pk through 12uH inductor and 47uF source capacitor.
Input surge (100mS max)	12V Models 25VDC Max. 24V Models 50VDC Max. 48V Models 100VDC Max.
Input filter	Pi type

Output

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Output voltage	3.3		15	VDC	See Model & Ratings table
Set point accuracy			±1	%	
Line regulation			±0.5	%	Low line to High line
Load regulation			±0.5	%	Single outputs. 0 to 100% load change
			±1		Dual outputs. 0 to 100% load change
Cross regulation			±5	%	On dual output models when one load is varied by 25 to 100% and the other is 100% load.
Ripple & Noise	75mV pk-pk for single outputs. 60mV pk-pk for dual outputs.			mV pk-pk	All models measured with 10uF capacitor. 20 MHz bandwidth
Overvoltage protection	3.3V output 3.9V. 5V output 6.2V. 12V output 15V. 15V output 18V. ±12V output ±15V. ±15V output ±18V			VDC	
Transient response	±3		±5	% Deviation	For a 25% load change, recovery to within 3% within 250uS typically. ±5% for 3.3V model
Short circuit protection					Continuous with automatic recovery
Maximum capacitive load					See Model and Ratings table
Remote on/off	ON:3 to 12Vdc or open circuit. OFF <1.2Vdc or short circuit pins 2 & 3. Off idle current :2mA typical.				

General

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	87		92	%	See Model & Ratings table
Isolation			1600	VDC	Input to output
Isolation resistance	1000			M Ohm	
Isolation capacitance			2000	pF	
Switching frequency	270kHz for 3V and 5V output models. 330kHz for all other models.			KHz	
Power density			73.2	W/In ³	
MTBF		>370		KHrs	As per MIL-HDBK-217F, 25°C GB

Environmental

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating temperature	-40		100	°C	Max. 55/60°C at 100% load. 50% load at 80/85°C
Storage temperature	-55		125	°C	
Case temperature			105	°C	
Cooling					Convection cooled
Humidity			95	% RH	Non-condensing
Temperature coefficient			±0.02	%/°C	

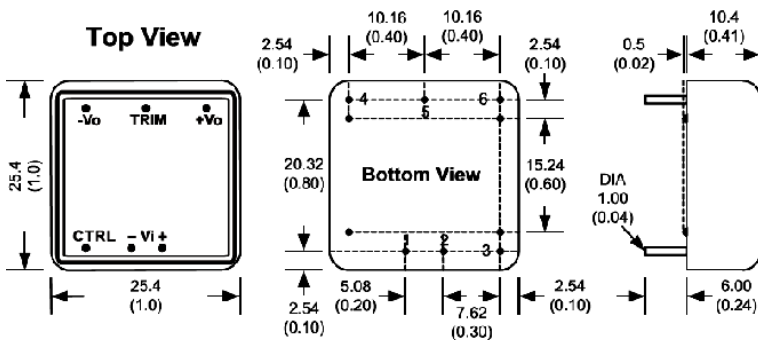
EMC: Emissions

	Standard	Test level	Notes & Conditions
Conducted	EN55032	Class A	See application notes
Radiated	EN55032	Class A	

EMC: Immunity

	Standard	Test level	Criteria	Notes & Conditions
ESD	EN61000-4-2	3	A	8kV air discharge, 6kV contact discharge
Radiated	EN61000-4-3	3	A	80~1000 MHz, 10V/m, 80% AM (1kHz)
EFT/Burst	EN61000-4-4	3	A	Components required see p3. Power line : 2kV
Surges	EN61000-4-5	2	A	Components required see p3 . 1.2/50 µs Open Circuit Voltage, 8/20 µs Short Circuit Current, DC Port, Line to line : 1.0kV
Conducted	EN61000-4-6	10Vrms	A	0.15 ~ 80 MHz, 10Vrms, 80% AM (1kHz)
Magnetic fields	EN61000-4-8	1A/m	A	50Hz, 1A/m

Mechanical Details

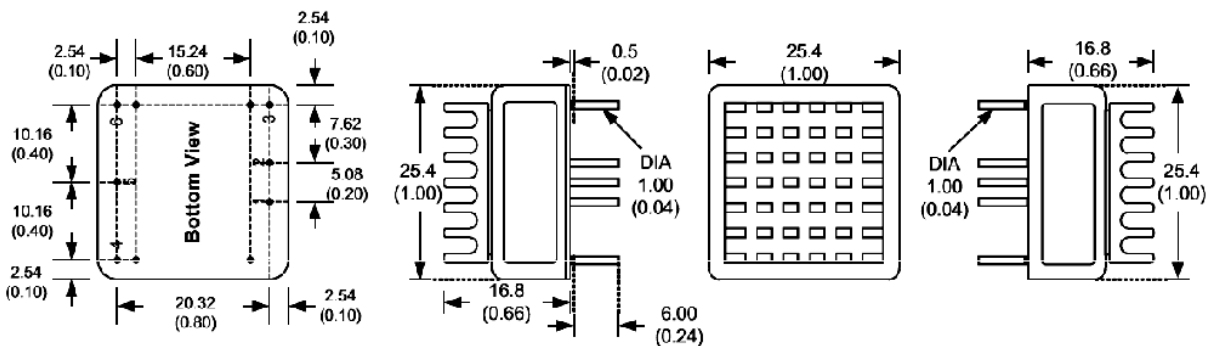


Pin Connections		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	+Vout	+Vout
5	Trim	0V
6	-Vout	-Vout

Notes

1. All dimensions shown in millimetres (inches)
2. Pin diameter 1.0 ±0.05 (0.04 ±0.002)
3. Case tolerance ±0.5 (±0.002)

With Heat Sink



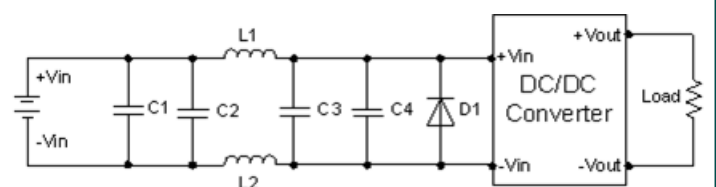
Physical

Parameter	Rating
Case material	Copper
Pin material	1.0mm Brass solder coated
Potting material	Epoxy (UL94V-0)
Weight	19g
Dimensions	1.00 x 1.00 x 0.41"
Soldering temperature	1.5mm from case, 10s and 260°C max.

Application notes

EMI Filter

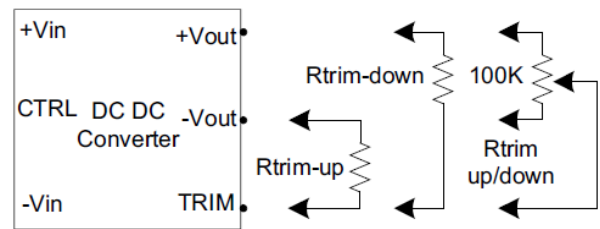
The input filter components must be fitted to help meet conducted emission requirements for the system. They should be mounted as close as possible to the module. Lead lengths should be minimized and where possible avoid running input and output tracks under the module as part of good design practice for best EMC performance. If the module is embedded in a system running from a AC/DC converter, this will have its own additional immunity protection and EMI filtering that will impact the overall system EMI performance.



Model number	C1	C2	L1&2	C3	C4	D1
HCJ3012XX	330uF, 100V	470uF, 100V	1uH	330uF, 100V	470uF, 100V	None
HCJ3024XX	330uF, 100V	None	None	None	None	TVS, 58V, 3KW
HCJ3048XX	330uF, 100V	None	None	None	None	TVS, 120V, 3KW

Trim Tables

Output voltage trim function allows the user to increase or decrease the output voltage set point. The module may be connected with an external resistor (Rtrim) between TRIM pin and either +Vout or -Vout. By adjusting Rtrim, the output voltage can be changed by $\pm 10\%$ of nominal the output voltage.



HCJ30XX03

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	3.267	3.234	3.201	3.168	3.135	3.102	3.069	3.036	3.003	2.970	Volts
Rtrim-down	817.535	362.230	215.448	142.957	99.747	71.057	50.622	35.326	23.448	13.957	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	3.333	3.366	3.399	3.432	3.465	3.498	3.531	3.564	3.597	3.630	Volts
Rtrim-up	567.584	263.172	158.473	105.497	73.508	52.096	36.760	25.235	16.257	9.066	KOhms

HCJ30XX05

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	4.950	4.900	4.850	4.800	4.750	4.700	4.650	4.600	4.550	4.500	Volts
Rtrim-down	117.886	61.634	38.388	25.688	17.684	12.179	8.159	5.096	2.683	0.735	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	5.050	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500	Volts
Rtrim-up	616.020	221.402	131.336	91.426	68.900	54.432	44.353	36.930	31.235	26.727	KOhms

HCJ30XX12

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800	Volts
Rtrim-down	345.033	164.830	98.862	64.647	43.707	29.571	19.386	11.699	5.692	0.867	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200	Volts
Rtrim-up	1015.590	448.881	280.558	199.789	152.361	121.162	99.078	82.625	69.892	59.745	KOhms

HCJ30XX15

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500	Volts
Rtrim-down	174.366	91.104	91.104	37.706	25.796	17.598	11.611	7.047	3.453	0.548	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	15.150	15.300	15.300	15.600	15.750	15.900	16.050	16.200	16.350	16.500	Volts
Rtrim-up	661.510	231.250	231.250	91.042	66.818	51.270	40.445	32.475	26.362	21.524	KOhms