

## 12 Watts

- High power density
- 2:1 Input range
- DIP24 Industry standard package
- Single and dual outputs
- -40 to +85°C Operation
- Remote on/off
- 5 Year warranty



The GCH12 series of power dense, high efficiency DC/DC converters come in both single and dual outputs in a DIP24 pin package. Inputs are available in 12, 24 & 48V versions with 2:1 range and outputs from 2.5 to 15V single and dual. The units operate from -40 to +85°C. All models have a FIDUS 5 year warranty.

Dimensions:

1.25 x 0.8 x 0.40" (31.8 x 20.3 x 10.2mm)

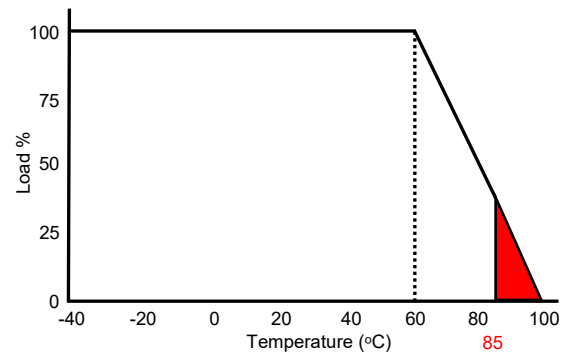
## Models & Ratings

Model Number	Input Voltage	Output Voltage	Output Current	Input Current		Maximum Capacitive Load	Efficiency
				No Load	Full Load		
GCH121202	9-18V	2.5V	3500mA	15mA	889mA	2000uF	85%
GCH121203		3.3V	3500mA	15mA	1146mA	2000uF	87%
GCH121205		5V	2400mA	15mA	1163mA	2000uF	89%
GCH121212		12V	1000mA	15mA	1149mA	430uF	90%
GCH121215		15V	800mA	15mA	1149mA	300uF	90%
GCH121212D		±12V	±500mA	15mA	1149mA	±200uF	90%
GCH121215D		±15V	±400mA	15mA	1136mA	±120uF	91%
GCH122402	18-36V	2.5V	3500mA	15mA	445mA	2000uF	85%
GCH122403		3.3V	3500mA	15mA	573mA	2000uF	87%
GCH122405 <sup>(1)</sup>		5V	2400mA	15mA	581mA	2000uF	89%
GCH122412		12V	1000mA	15mA	575mA	430uF	90%
GCH12215		15V	800mA	15mA	575mA	300uF	90%
GCH122412D		±12V	±500mA	15mA	575mA	±200uF	90%
GCH122415D		±15V	±400mA	15mA	562mA	±120uF	91%
GCH124802	36-75V	2.5V	3500mA	15mA	225mA	2000uF	84%
GCH124803		3.3V	3500mA	15mA	283mA	2000uF	88%
GCH124805		5V	2400mA	15mA	291mA	2000uF	89%
GCH124812		12V	1000mA	15mA	294mA	430uF	88%
GCH124815		15V	800mA	15mA	291mA	300uF	89%
GCH124812D		±12V	±500mA	15mA	294mA	±200uF	88%
GCH124815D		±15V	±400mA	15mA	291mA	±120uF	89%

## Notes

1. High stock items
2. Under no load conditions the unit may not meet all specifications
3. Do not operate continuously in the red area of derating curve

## Derating curve



Input	
Parameter	Rating
Input voltage range	See table
Input reflected ripple current	20mA pk-pk through 12uH inductor
Input surge (100mS max)	12V Models 36V DC Max. 24V Models 50VDC Max. 48V Models 100VDC Max.
Input filter	Pi type

Output					
Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Output voltage	2.5		15	VDC	See Model & Ratings table
Set point accuracy			±1.2	%	
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			85	mV pk-pk	All models measured with 1uF ceramic capacitor. 20 MHz bandwidth
Overvoltage protection	2.5 and 3.3V output 3.9V. 12V output 15V. ±12V output ±15V.	5V output 6.2V. 15V output 18V. ±15V output ±18V		VDC	
Transient response			±3	% Deviation	For a 25% load change, recovery to within 3% within 250uS typically.
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 12 & 3. Off idle current :5mA typical.				

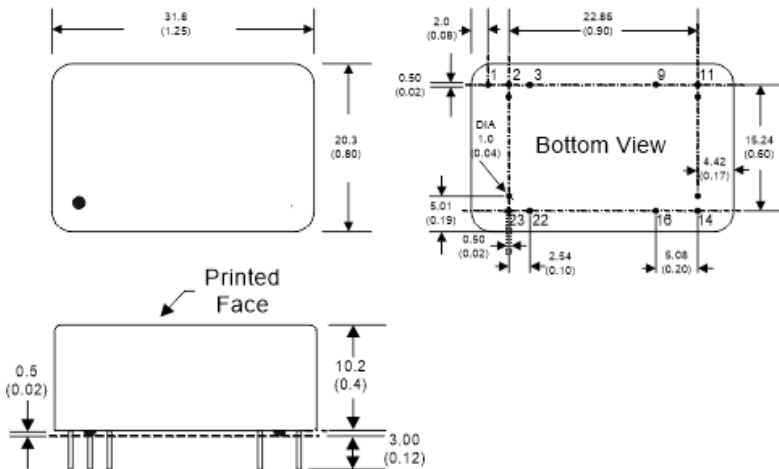
General					
Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	84		91	%	See Model & Ratings table
Isolation			1600	VDC	Input to output
Isolation resistance			1000	M Ohm	
Isolation capacitance			1200	pF	
Switching frequency	250		330	KHz	
Power density			37.5	W/In <sup>3</sup>	
MTBF		>460		KHrs	As per MIL-HDBK-217F, 25°C GB

Environmental					
Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating temperature	-40		85	°C	Derates from 100% load at 60°C to 40% load at 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	EN55022	Class A	See application notes
Radiated	EN55022	Class A	

EMC: Immunity				
	Standard	Test level	Criteria	Notes & Conditions
ESD	EN61000-4-2	3	B	
EFT/Burst	EN61000-4-4	3	A	
Surges	EN61000-4-5	Installation class 3	A	An external capacitor required 330uF/100V
Conducted	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	1A/m	A	

## Mechanical Details



Pin Connections		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	N.P	0V
11	N.C	-Vout
14	+Vout	+Vout
16	-Vout	0V
22	+Vin	+Vin
23	+Vin	+Vin

### Notes

1. All dimensions shown in millimetres (inches)
2. Pin diameter  $0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )
3. Case tolerance  $\pm 0.5$  ( $\pm 0.002$ )

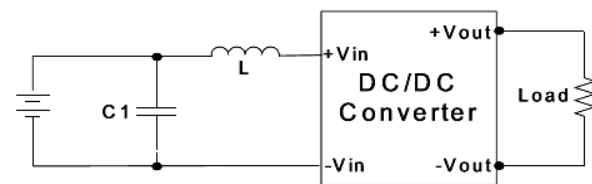
## Physical

Parameter	Rating
Case material	Nickel coated copper
Pin material	0.5mm Brass solder coated
Potting material	Epoxy (UL94V-0)
Weight	18g
Dimensions	1.25 x 0.8 x 0.4"
Soldering temperature	1.5mm from case, 10s and 260°C max.

## Application notes

### EMI Filter

The input filter components C1 and L1 can 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	L
GCH1212XX	100uF, 100V	12uH
GCH1224XX	100uF, 100V	12uH
GCH1248XX	100uF, 100V	12uH