

4 Watts

- 2:1 Input range
- DIP24 Industry standard package
- Single and dual outputs
- 1600-3500VDC isolation
- -40 to +100°C Operation
- Plastic case optional
- 5 Year warranty



The GCB04 series of low cost DC/DC converters come in both single and dual outputs in a DIP 24 pin package. Inputs are available in 5, 12, 24 & 48V versions with a 2:1 range and outputs from 3.3 to 24V single and dual. The units operate from -40 to +100°C. All models have a FIDUS 5 year warranty.

Dimensions:

1.25 x 0.8 x 0.4" (31.75 x 20.32 x 10.16mm)

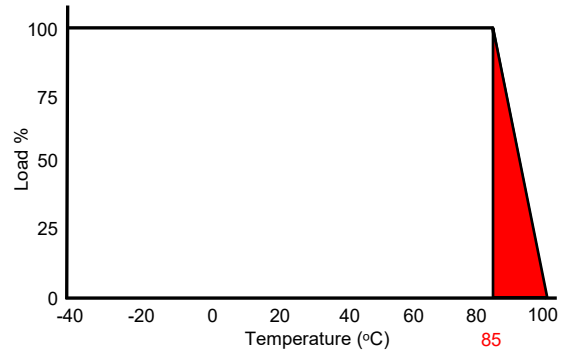
Models & Ratings

Model Number ⁽¹⁾⁽²⁾	Input Voltage	Output Voltage	Output Current	Input Current		Maximum Capacitive Load	Efficiency
				No Load	Full Load		
GCB041203	9-18V	3.3V	1200mA	30mA	445mA	680uF	74%
GCB041205		5V	800mA	30mA	427mA	1000uF	78%
GCB041209		9V	444mA	30mA	416mA	470uF	80%
GCB041212		12V	333mA	30mA	406mA	100uF	82%
GCB041215		15V	266mA	30mA	401mA	100uF	83%
GCB041224		24V	166mA	30mA	406mA	22uF	82%
GCB041203D		±3.3V	±600mA	30mA	438mA	±680uF	76%
GCB041205D		±5V	±400mA	30mA	427mA	±470uF	78%
GCB041209D		±9V	±220mA	30mA	416mA	±220uF	80%
GCB041212D		±12V	±166mA	30mA	427mA	±47uF	78%
GCB041215D		±15V	±133mA	30mA	416mA	±150uF	80%
GCB041224D		±24V	±83mA	30mA	416mA	±10uF	80%
GCB042403	18-36V	3.3V	1200mA	20mA	216mA	1000uF	77%
GCB042405		5V	800mA	20mA	208mA	1000uF	80%
GCB042409		9V	444mA	20mA	203mA	470uF	82%
GCB042412		12V	333mA	20mA	198mA	330uF	84%
GCB042415		15V	266mA	20mA	203mA	330uF	82%
GCB042424		24V	166mA	20mA	200mA	1000uF	83%
GCB042403D		±3.3V	±600mA	20mA	216mA	±1000uF	77%
GCB042405D		±5V	±400mA	20mA	208mA	±330uF	80%
GCB042409D		±9V	±220mA	20mA	200mA	±220uF	83%
GCB042412D		±12V	±166mA	20mA	200mA	±68uF	83%
GCB042415D		±15V	±133mA	20mA	203mA	±220uF	82%
GCB042424D		±24V	±83mA	20mA	210mA	±47uF	79%
GCB044803	36-72V	3.3V	1200mA	15mA	108mA	1000uF	76%
GCB044805		5V	800mA	15mA	104mA	1000uF	80%
GCB044809		9V	444mA	15mA	100mA	470uF	83%
GCB044812		12V	333mA	15mA	99mA	330uF	84%
GCB044815		15V	266mA	15mA	102mA	68uF	81%
GCB044824		24V	166mA	15mA	98mA	68uF	85%
GCB044803D		±3.3V	±600mA	15mA	109mA	±1000uF	76%
GCB044805D		±5V	±400mA	15mA	104mA	±470uF	80%
GCB044809D		±9V	±220mA	15mA	100mA	±220uF	83%
GCB044812D		±12V	±166mA	15mA	100mA	±220uF	83%
GCB044815D		±15V	±133mA	15mA	100mA	±47uF	83%
GCB044824D		±24V	±83mA	15mA	105mA	±100uF	79%

Notes

1. Add 'P' to model number for plastic case
2. Add 'H' to model number for 3500VDC isolation.
3. 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	35mA pk-pk through 12uH inductor
Input surge (100mS max)	12V Models 24VDC Max. 24V Models 40VDC Max. 48V Models 80VDC Max.
Input filter	PI Type

Notes

1. Do not operate continuously in the red area of the derating curve

Output					
Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Output voltage	3.3		24	VDC	See Model & Ratings table
Set point accuracy			±1	%	
Line regulation			±0.5	%	Low line to High line
Load regulation			±1.5	%	3.3 and ±3.3V outputs
			±0.5		All other outputs
Cross regulation			±5	%	When one output is at 100% and other 25-100% load change
Ripple & Noise			60	mV pk-pk	Measured with 1uF ceramic capacitor
Short circuit protection					Continuous with automatic recovery
Transient response			3	%	Recovery within 1% in 250us / 5% in 300us for 3.3V and ±3.3V units

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	±8kV air, ±5kV contact,
Radiated	EN61000-4-3	3	A	10V/m 80% AM (1KHz) 80-2700MHz
EFT	EN61000-4-4	3	B	±2KV (100V and 240V 50Hz)
Surges	EN61000-4-5	Installation class 2	A	L/N ±1KV (100V and 240V 50Hz), L,N/ PE 0.5KV. 220uF / 100V input capacitor required
Conducted	EN61000-4-6	10Vrms	B	80% AM (1KHz)
Magnetic Fields	EN61000-4-8	1A/m	B	50/60Hz 1 min

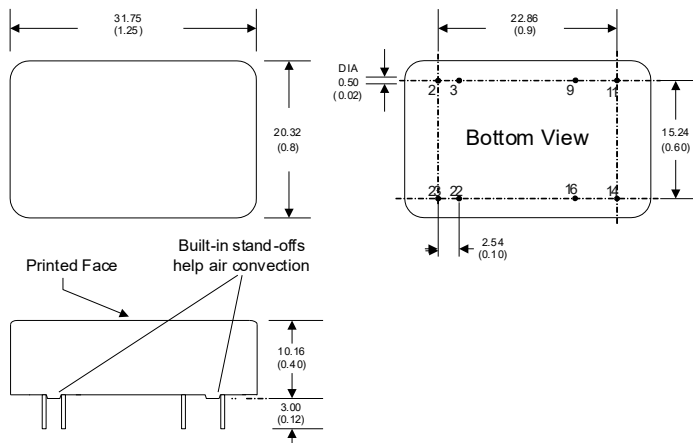
General

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	73		85	%	See Model & Ratings table
Isolation	1600		3500	VDC	Input to output
Isolation resistance			1000	M Ohm	
Isolation capacitance		500		pF	
Switching frequency		266		KHz	
Power density			10	W/In ³	
MTBF		>1.121		KHrs	As per MIL-HDBK-217F, 25°C GB

Environmental

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating temperature	-40		100	°C	Full power to 85°C, derating to 0% at 100°C.
Storage temperature	-40		125	°C	
Case temperature			100	°C	
Cooling					Convection cooled
Humidity			95	% RH	Non-condensing
Temperature coefficient			±0.02	%/°C	

Mechanical Details



Pin Connections

Pin	Single	Dual
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

- All dimensions shown in millimetres (inches)
- Pin diameter 0.5 ±0.05 (0.02 ±0.002)
- Case tolerance ±0.5 (±0.002)

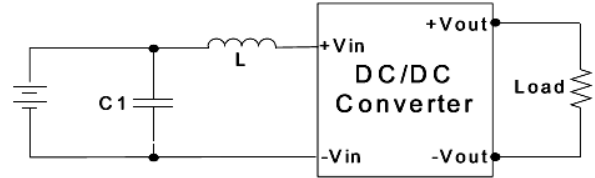
Physical

Parameter	Rating
Case material	Nickel coated copper (standard) Non-conductive black plastic (UL94V-0)
Pin material	0.5mm Brass solder coated
Potting material	Epoxy (UL94V-0)
Weight	17g Metal case. 13.5g Plastic case
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 L 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.



C1	L
100 μ F, 100V	12 μ H