

# DC/DC Converters



DCP02



Behind the scenes of the DCP02

*Burr-Brown Corporation offers the world's smallest and most reliable isolated DC/DC Converters with a wide variety of input and output voltages. The introduction of the ground-breaking DCP01 1 Watt converter heralded the beginning of DC/DC converters available in standard semiconductor packaging—power as a component! Available in both 14-pin PDIP and surface mount, these products are ideal for high volume tape and reel assembly processes.*

*The newly released DCP02 family of 2 Watt converters sets a new industry standard by offering an unmatched combination of reliability, power density and small package size—SO-28.*

*All of this is made possible by Burr-Brown Corporation's unique manufacturing process known as "Integrated Lead-Frame Technology". This removes the need for substrates and unreliable solder joints within the device package, bringing high volume semiconductor manufacturing techniques to the Isolated Power market together with inherent, proven high reliability.*

*Burr-Brown Corporation is committed to the further development of its DC/DC Converter range, with higher power and application specific products, combining the manufacturing and silicon design expertise of the Company to produce reliable, cost effective and high performance products.*

## Burr-Brown DC/DC Converters

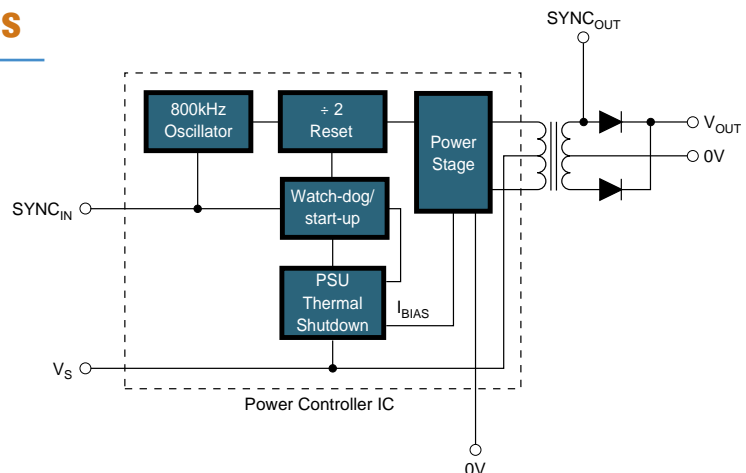
All Burr-Brown DC/DC Converters have a number of common features.

These are provided to ensure that all products have the facilities to meet customer's requirements, are protected against fault conditions, are reliable and will work in most conditions.

- $-40^{\circ}$  to  $+85^{\circ}\text{C}$  operation with no de-rating
- Thermal shutdown
- Short circuit protection
- Remote shutdown
- Through hole and surface mount packages
- Integrated lead-frame technology provides for excellent thermal properties

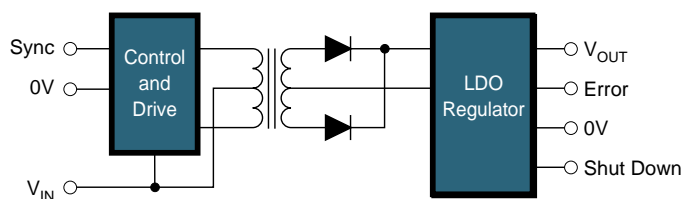
## Unregulated DC/DC Converters

- Efficiency up to 89%, reducing heat dissipation
- Power Density up to  $106\text{W}/\text{in}^3$ , saving space
- Plastic DIL or SO-28 packages, for low cost manufacturing
- External synchronization minimizing noise
- Isolation and EMC approvals



## Regulated DC/DC Converters

- High Accuracy:  $\pm 2\%$  for logic and precision applications
- Low Noise:  $30\mu\text{Vrms}$ , reducing the need for filtering in noise sensitive systems
- Minimal number of external components to reduce board cost and size
- 3.3V and 5V output voltages



## Custom Products

The standard products in this brochure represent a sample of Burr-Brown's capability. Customer specific requirements can be accommodated by the development of custom products.

Examples of this may be higher isolation voltages, new output voltages or multiple outputs. Call today to discuss your needs.

Note: Minimum business requirements could apply.

## Low Power DC/DC Converters Selection Guide

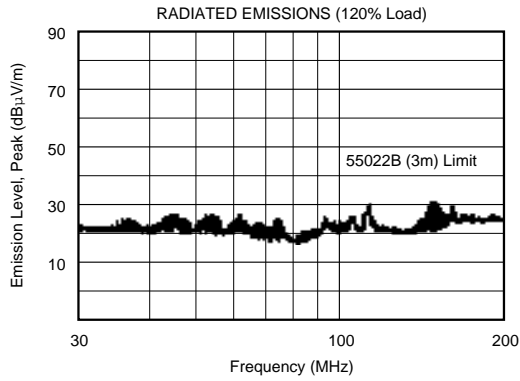
Product	V <sub>IN</sub> /V	V <sub>OUT</sub> /V	Power/W	Isolation/ kVrms	Efficiency/ % (max)	Load Reg/% (typ)	Packages
<b>Unregulated DC/DC Converters</b>							
DCP010505	5	5	1	1	72	25	P, P-U
DCP010505D	5	±5	1	1	71	25	P, P-U
DCP010512	5	12	1	1	76	17	P, P-U
DCP010512D	5	±12	1	1	77	20	P, P-U
DCP010515	5	15	1	1	80	20	P, P-U
DCP010515D	5	±15	1	1	77	16	P, P-U
DCP011512D	15	±12	1	1	77	20	P, P-U
DCP011515D	15	±15	1	1	75	20	P, P-U
DCP012405	24	5	1	1	66	17	P, P-U
DCP012415D	24	±15	1	1	77	22	P, P-U
DCV010505	5	5	1	1.5	72	25	P, P-U
DCV010505D	5	±5	1	1.5	66	25	P, P-U
DCV010512	5	12	1	1.5	72	17	P, P-U
DCV010512D	5	±12	1	1.5	72	20	P, P-U
DCV010515	5	15	1	1.5	73	20	P, P-U
DCV010515D	5	±15	1	1.5	75	16	P, P-U
DCV011512D	15	±12	1	1.5	76	20	P, P-U
DCV011515D	15	±15	1	1.5	76	20	P, P-U
DCV012405	24	5	1	1.5	65	17	P, P-U
DCV012415D	25	±15	1	1.5	76	22	P, P-U
DCP020505	5	5	2	1	80	14	P, U
DCP020515D	5	±15	2	1	85	11	P, U
DCP021205	12	5	2	1	83	7	P, U
DCP021212D	12	±12	2	1	80	7	P, U
DCP022405	24	5	2	1	81	6	P, U
DCP022415D	24	±15	2	1	79	6	P, U
DCP020503	5	3.3	2	1	74	19	P, U
DCP020507	5	7	2	1	81	14	P, U
DCP020509	5	9	2	1	82	12	P, U
DCP021212	12	12	2	1	87	7	P, U
DCP022405D	24	±5	2	1	81	6	P, U
<b>Regulated DC/DC Converters</b>							
DCR010505	5	5	1	1	60	1	P, U
DCR010503	5	3.3	1	1	60	1	P, U
DCR011205	12	5	1	1	60	1	P, U
DCR011203	12	3.3	1	1	60	1	P, U
DCR012405	24	5	1	1	60	1	P, U
DCR012403	24	3.3	1	1	60	1	P, U
DCR020505	5	5	2	1	60	1	P, U
DCR021205	12	5	2	1	60	1	P, U
DCR022405	24	5	2	1	60	1	P, U

P = Plastic DIL

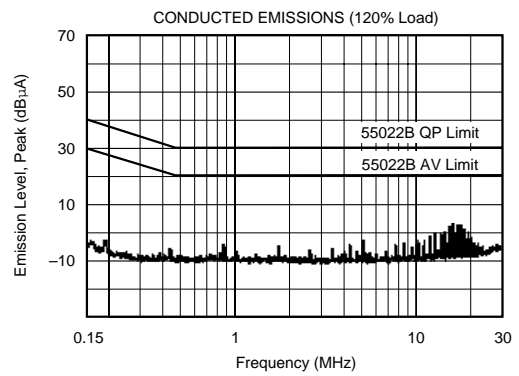
P-U = Plastic Gullwing

U = SOIC-28

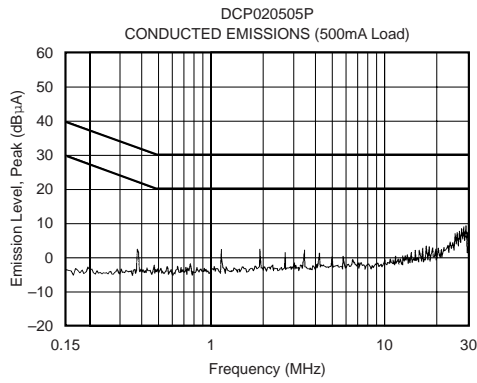
**DCP010505BP Radiated Emissions (250µA Load)**



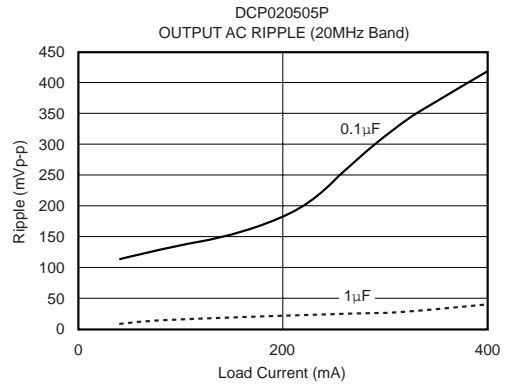
**DCP010505BP Conducted Emissions (250µA Load)**



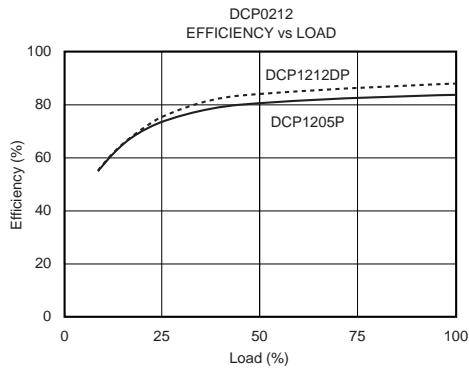
**DCP020505P Conducted Emissions (500µA Load)**



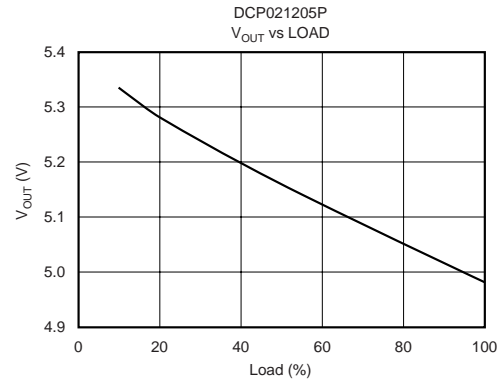
**DCP020505P Output AC Ripple (20MHz Band)**



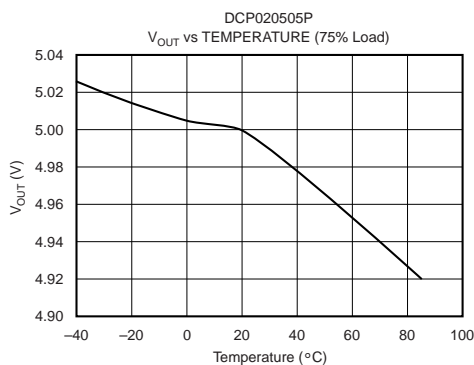
**DCP0212 Efficiency vs Load**



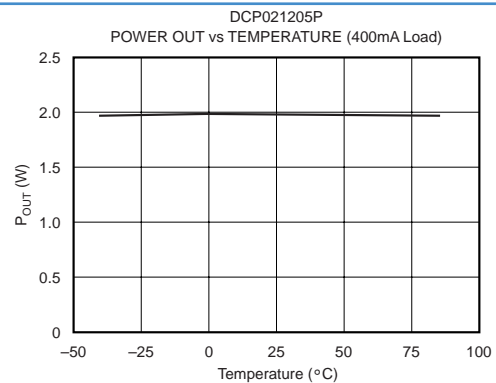
**DCP021205P V<sub>OUT</sub> vs Load**



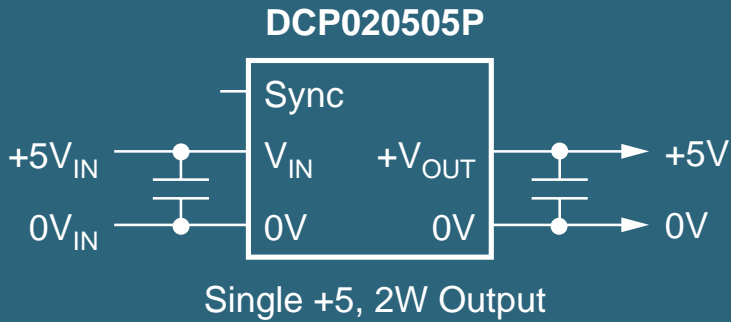
**DCP020505P V<sub>OUT</sub> vs Temp (75% Load)**



**DCP021205P Power<sub>OUT</sub> vs Temp (400µA Load)**

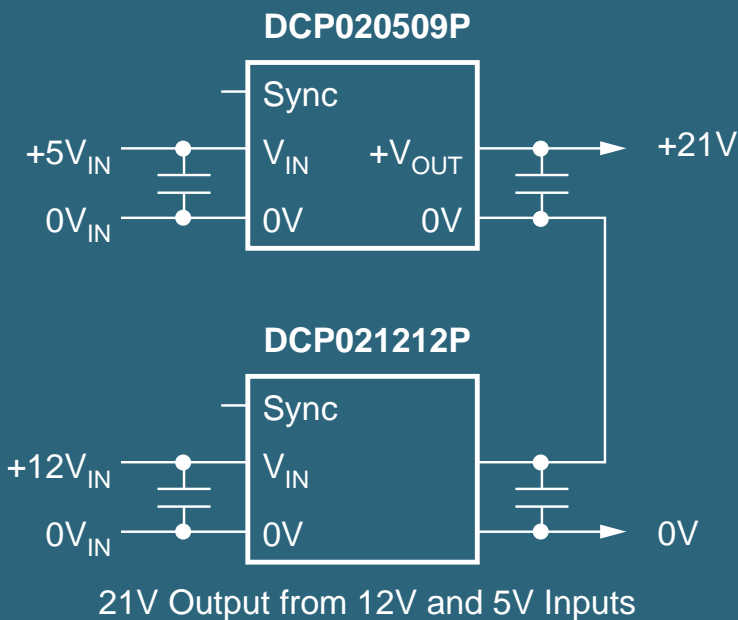
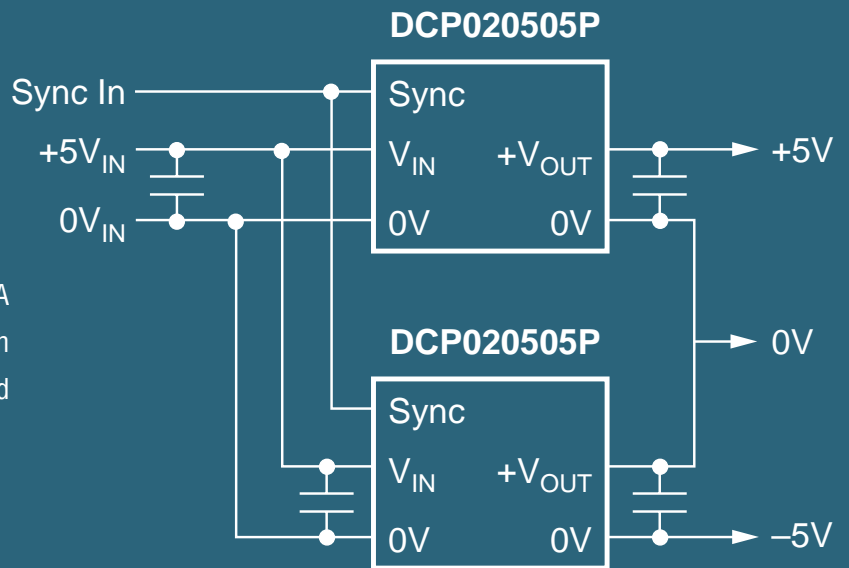


## Application Solutions

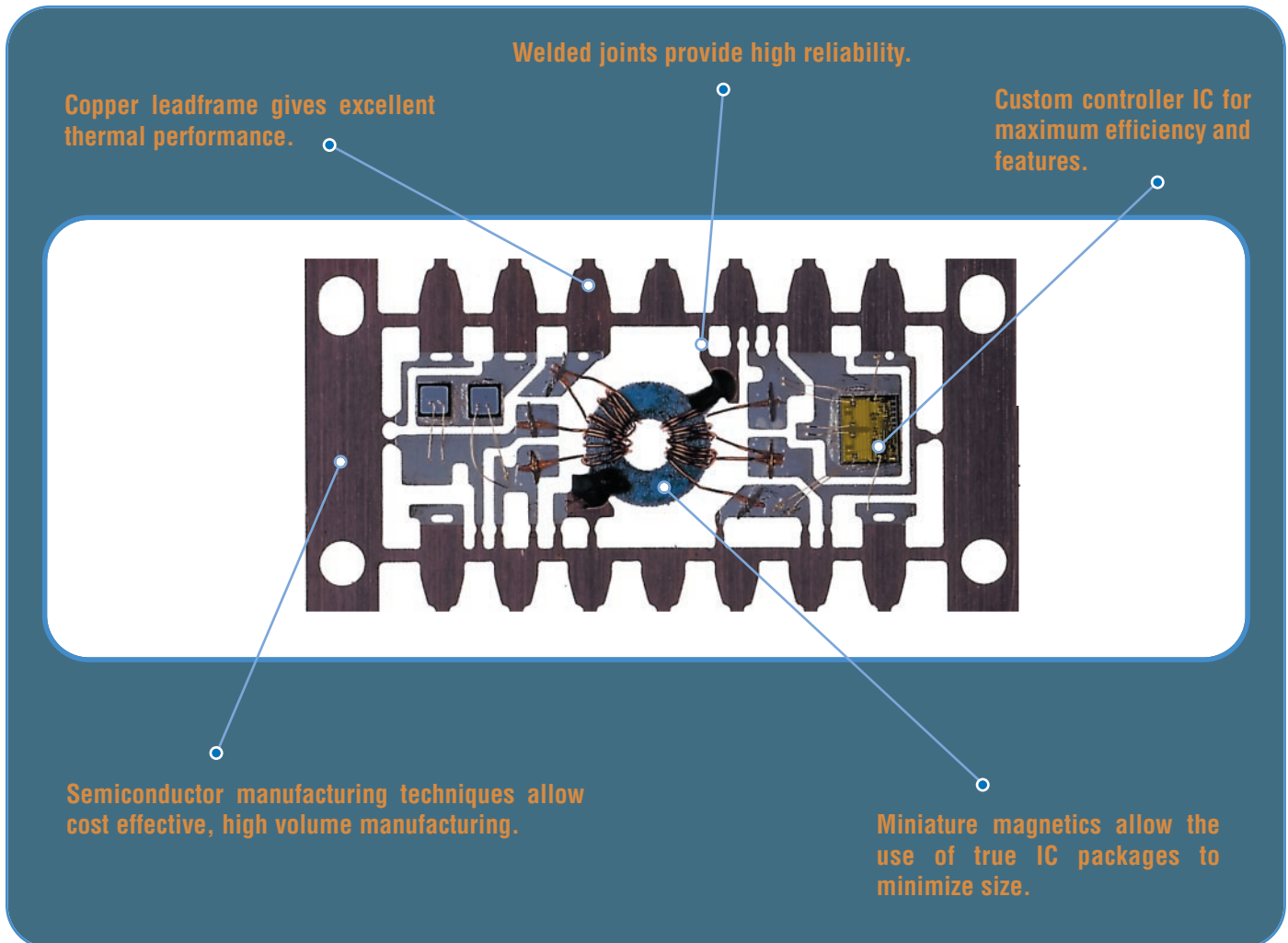


The simplest configuration for the DCP family of DC/DC Converters is a single voltage in and a single voltage out. Shown here is a 5V to 5V conversion.

Higher power can be achieved by combining devices. A 4-Watt circuit is shown, with dual output rails. Both devices are synchronized to reduce noise and radiated emissions.



Unusual voltages can be generated by combining the output voltages of two devices. The additive effect makes possible a wide variety of outputs.



### Reliability

As can be seen above, the DCP and DCR families of products are manufactured using semiconductor assembly techniques. This ensures that the products have the highest reliability in the market.

Our commitment to provide the highest performance and most reliable products is shown by our investment in design and the many approvals by internationally recognized standards. For example, a figure of 75 FITS has already been demonstrated.

Full vibration testing to MIL-STD-883 Method 2007.2 has been completed to ensure the robustness of the assembly.

### Device Approvals

Safety isolation testing has been done to the requirements of UL1950. This involves testing at 1000Vrms or 1500Vrms for one minute as appropriate to prove the device. During production, a one second flash test is carried out.

Electro Magnetic Compatibility (EMC) testing to EN55022 Class B shows that the products exhibit excellent performance for emissions and immunity.

Further details can be found in the relevant product data sheet available from our website, [www.Burr-Brown.com](http://www.Burr-Brown.com), or from Burr-Brown representatives and distributors.

## Corporate Profile

Burr-Brown Corporation designs, manufactures, and markets a broad line of analog and mixed-signal integrated circuits used in the processing of real-world electronic signals. These products are used in a wide range of markets and applications, including industrial and process control, telecommunications, test and measurement, medical and scientific instrumentation, medical imaging, digital audio and video, personal computing, and multimedia.

Burr-Brown's product strategy is to design innovative, proprietary products which bring a very high level of functional value to our customers' applications. There are currently over 1200 products in our portfolio. We produce both standard products which are used in a broad range of applications, and specially developed products optimally suited for emerging, fast growth, target applications such as audio signal processing and broadband communications.

### Corporate Headquarters

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