



BD10022

10W 48V_{IN} 80V_{OUT}@125mA
DC/DC CONVERTER

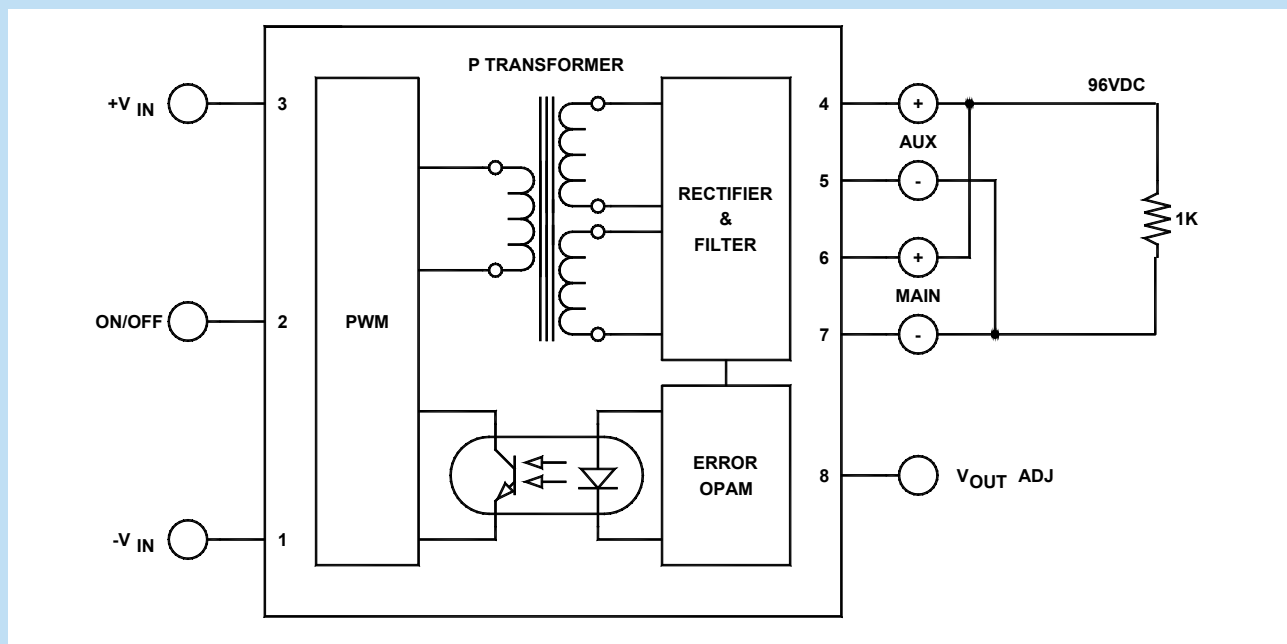
Key Features

- Input-to-output isolation
- Soft start
- Hot pluggable
- Short circuit and thermal protection
- Adjustable output
- 50μA off state current
- Wide input voltage range (36–72Vdc)



Functional Description

The BD10022 is an application-specific DC/DC converter designed to turn on in less than 10ms without any output capacitor and to supply 10W to the load while its output can be adjusted from 70 V_{DC} to greater than 90 V_{DC}. Its nominal output is set for 80 V_{DC}.



Typical Block Diagram

Electrical Specifications

INPUT SPECIFICATIONS

Unless otherwise specified, all parameters are given under typical +25°C with nominal input voltage and under full output load conditions.

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range (2:1)		36	48	72	Vdc
Input Filter	RC				
No Load Input Current	V_{IN} 48		10		mA
Full Load Input Current	V_{IN} 48		230		mA
Reverse Voltage Protection	Parallel diode		5		A
On/Off	Reference to $-V_{IN}$				
Voltage	Open		10		Vdc
Unit On	Open				
Unit Off	Short to $-V_{IN}$				
Off State Current	Pin 2 short to Pin 3		50	120	μA
Turn On Delay	Including soft start, see Figure 2		6		S
Startup Input Voltage		11	16		Vdc

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Voltage and Current Ratings		70	80	90	%
Output Voltage Accuracy			±1		%
Output Current			125		mA
Ripple & Noise (20MHz BW)	See Figure 4		±1		%
Line Regulation			±1		%
Load Regulation			±1		%
Temperature Coefficient @ FL			±0.02		%/°C
Short Circuit Protection	Continuous, Current Limit				
Short Circuit Restart	Automatic				
Transient Response (to within 1% of V_{OUT})	50% FL to 100% FL to 50% FL, see Figure 3				μS

GENERAL SPECIFICATIONS

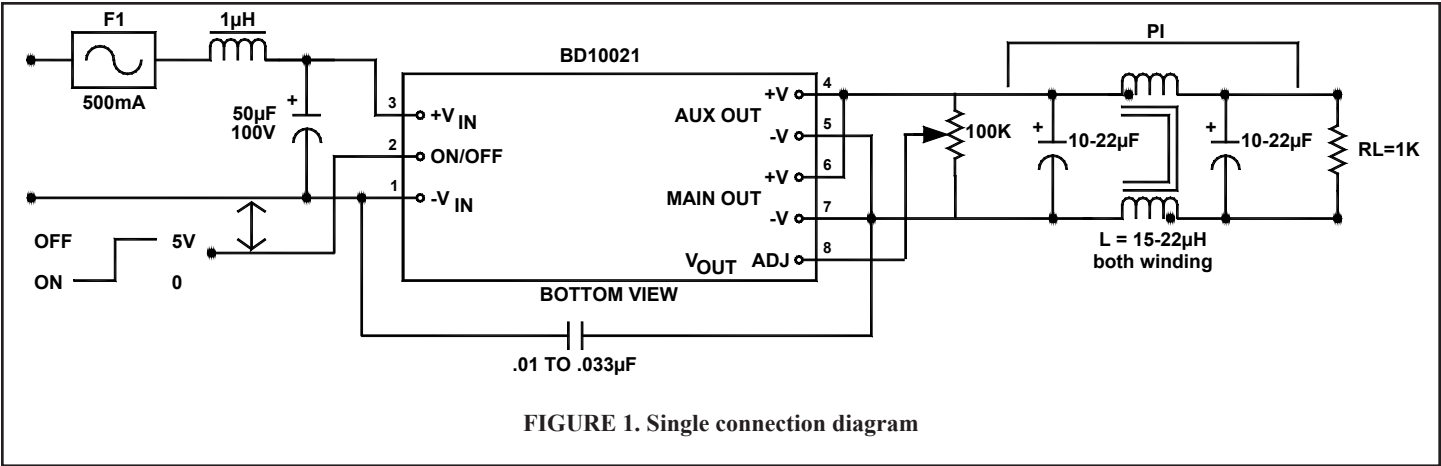
PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency			82		
Isolation Voltage (1 min.)		500	1000		Vdc
Isolation Resistance			10 ⁹		Ω
Isolation Capacitance			300		pF
Switching Frequency		108	125	130	kHz

ENVIRONMENTAL SPECIFICATIONS

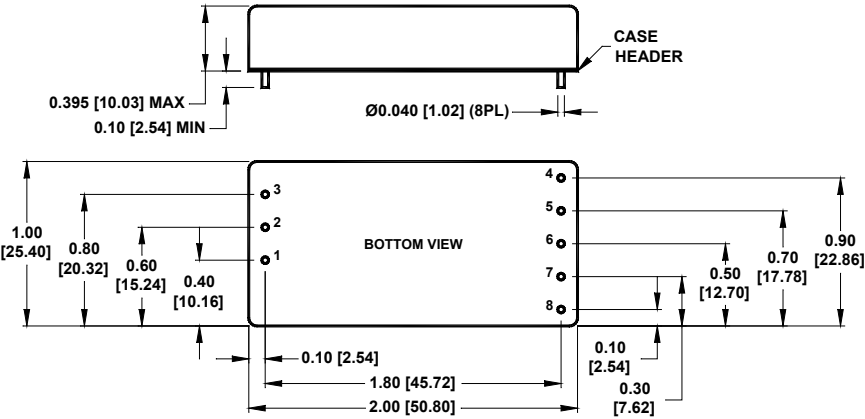
PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Operating Temperature Range (Ambient)	(For -55°C to +85°C, please contact factory)	-25		+60	°C
Storage Temperature Range		-60		+105	°C
Derating	None required				
Thermal Protection			145		°C
Thermal Hysteresis			30		°C
Humidity	Up to 95% non-condensing				
Cooling	Free-air convection				
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		850,000		hours

PHYSICAL CHARACTERISTICS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Dimensions (L×W×H)	2.00×1.00×0.395 in. (50.80×25.40×10.03mm)				
Weight	1.04 oz. (30g)				
Case Material	Coated metal				
Shielding	Six-sided continuous				
Case Connection	IN				



MECHANICAL SPECIFICATIONS
in inches [mm]



Pin	Function
1	-V _{IN}
2	ON/OFF
3	+V _{IN}
	(SEE FIGURE 1)
4	+V _{OUT} (CONNECT PIN 4 TO 6)
5	-V _{OUT} (CONNECT PIN 5 TO 7)
6	+V _{OUT} (CONNECT PIN 4 TO 6)
7	-V _{OUT} (CONNECT PIN 5 TO 7)
8	V _{OUT} ADJ

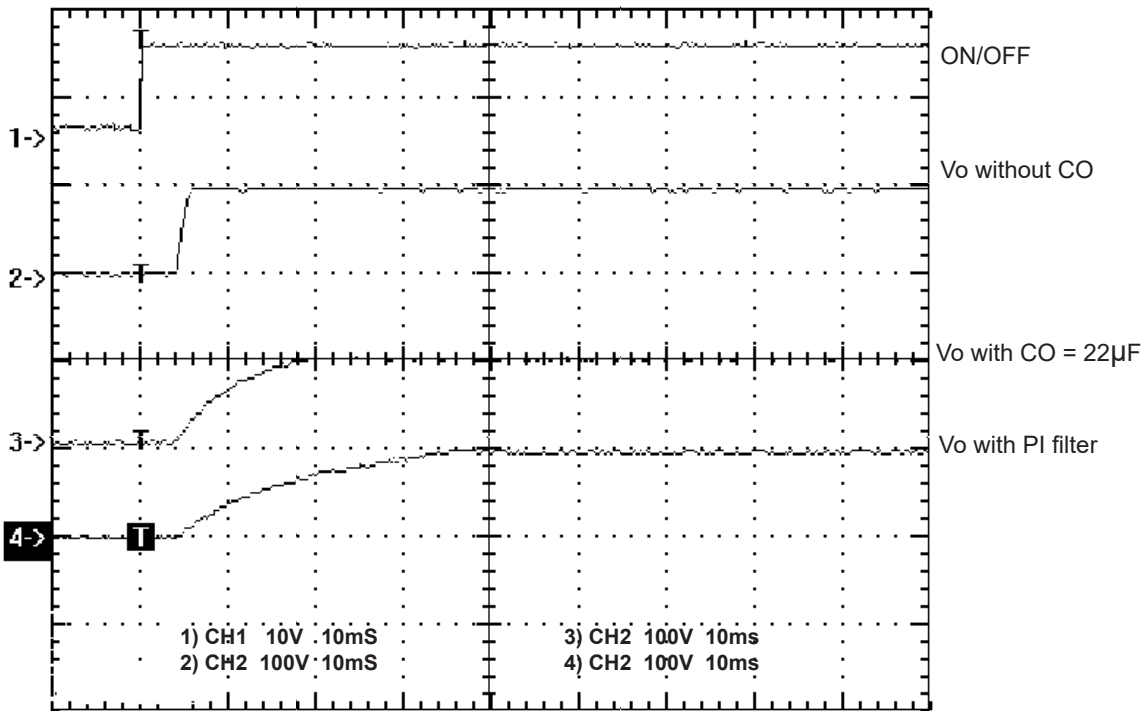


FIGURE 2. Turn on delay with soft start and output filters

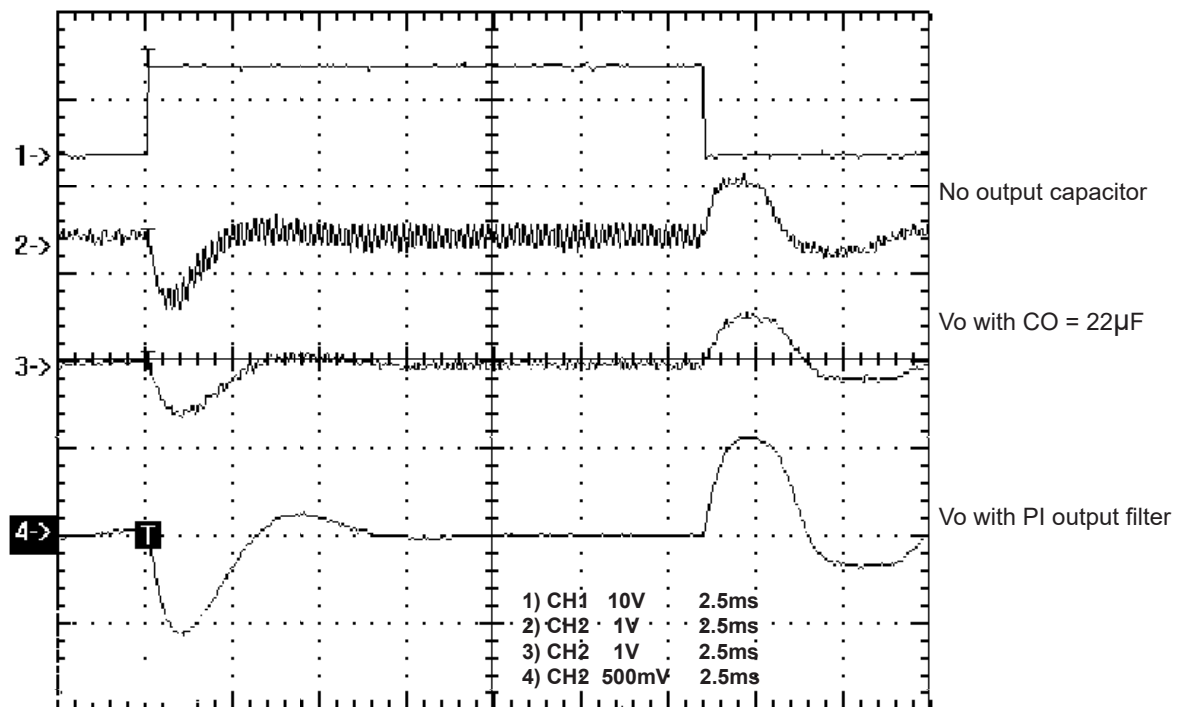


FIGURE 3. Transient Response

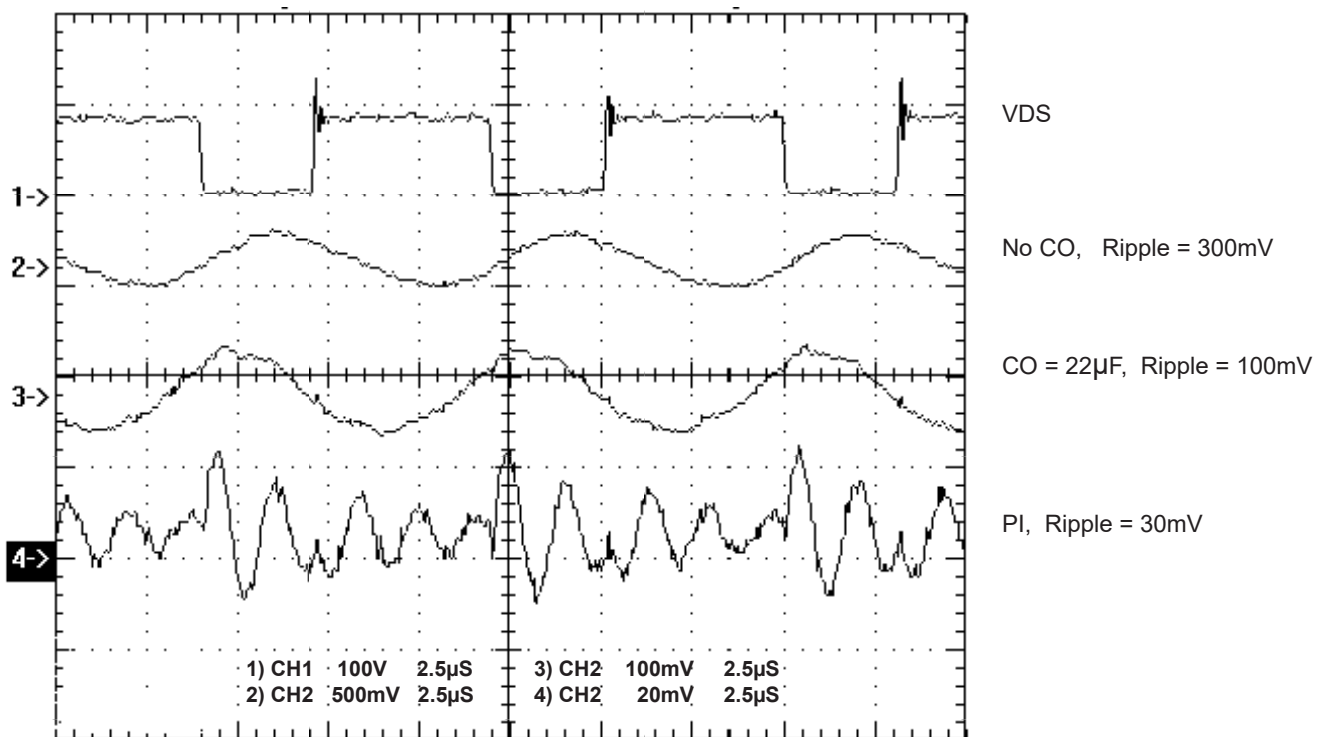


FIGURE 4. Output Ripple