



BD2000

2W HIGH-VOLTAGE ISOLATED DC/DC CONVERTER

Single $302V_{OUT}$

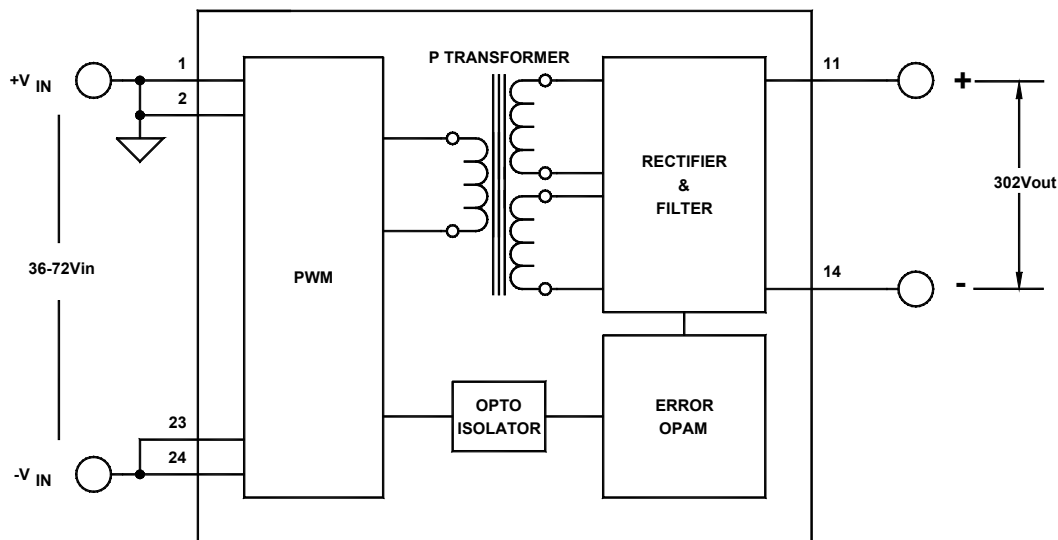
Key Features

- Short circuit and thermal protection
- Wide input voltage range ($36-72V_{dc}$)
- Metal case
- Six-sided shielding



Functional Description

The BD2000 is a 2W High-Voltage Isolated DC/DC Converter that accepts an input voltage from $-36V_{IN}$ to $-72V_{IN}$ and generates $-302V_{OUT}@6mA$.



Typical Block Diagram

Electrical Specifications

ABSOLUTE MAXIMUM RATINGS

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		36	48	72	Vdc
Output Short Circuit Duration	Continuous				
Internal Power Dissipation				0.5	W

INPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range (2:1)		36	48	75	Vdc
No Load Input Current			10		mA
Full Load Input Current			50		mA
Input Filter	C = 2.2μF				
Reflected Ripple Current	Without external capacitor, See Figure 2		200		mA _{pp}
Turn On Delay	With soft start, C _o = 0.5μF, See Figure 1		35	40	mS
Startup Input Voltage		11	16		Vdc

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Voltage		297.7	302	307.3	Vdc
Current			6		mA
Output Voltage Accuracy			±1		%
Ripple & Noise (20MHz BW)	See Figure 2		±1		%
Line Regulation			±1		%
Load Regulation			±1		%
Temperature Coefficient @ FL				±0.02	%/°C
Short Circuit Protection	Continuous, Current Limit				
Short Circuit Restart	By recycling input voltage				
Transient Response (to within 1% of V _{OUT})	50% FL to 100% FL to 50% FL, See Figure 3		500		μS

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency			74		%
Switching Frequency		108	125	130	kHz
Isolation (1 min.)			1500		Vdc

ENVIRONMENTAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Operating Temperature Range (Ambient)		-40		+70	°C
Storage Temperature Range		-60		+105	°C
Thermal Shutdown	Case temperature	96	100	104	°C
Thermal Resistance	Maximum case temperature is 18°C above ambient		36		°C/W
Derating	None required				
Humidity	Up to 95% non-condensing				
Cooling	Free-air convection				
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		1.3x10 ⁶		hours

PHYSICAL CHARACTERISTICS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Dimensions (L×W×H)	1.25×0.80×0.40 in. (31.75×20.32×10.16mm)				
Weight	0.56 oz. (15.8g)				
Case Material	Coated metal				
Shielding	Six-sided continuous				
Case Connection					

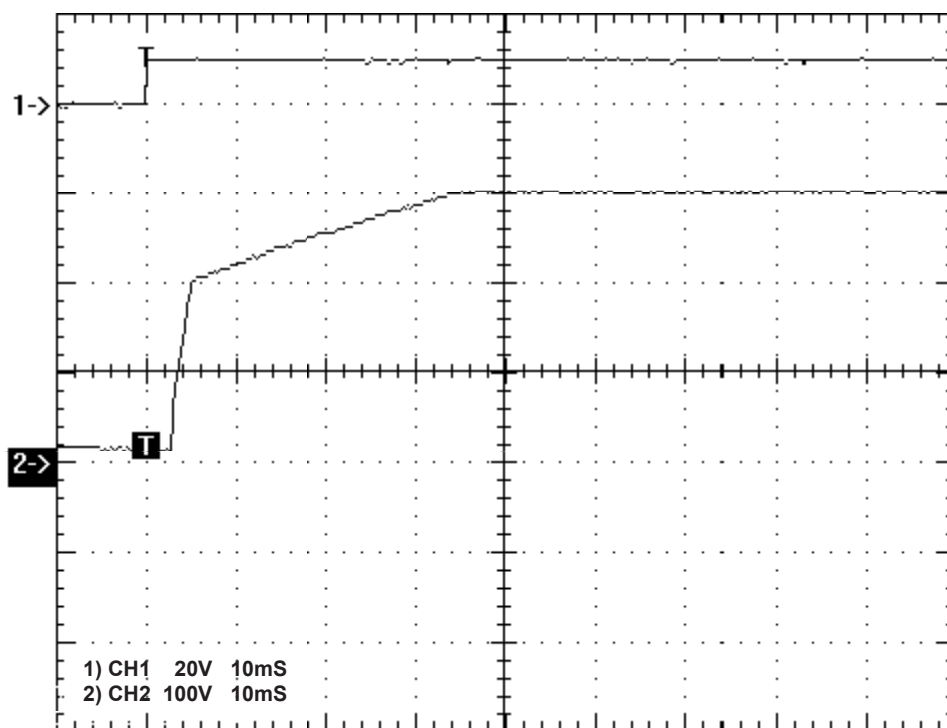


FIGURE 1. Turn on delay and soft start of BD2000

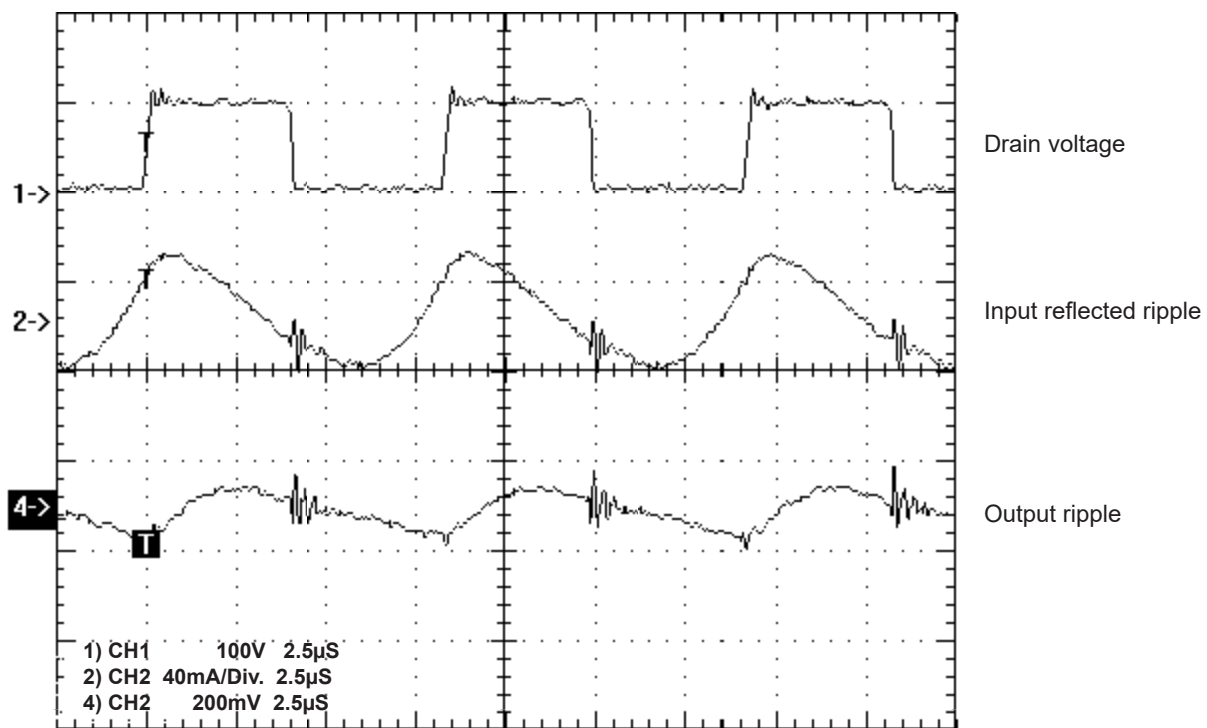


FIGURE 2. Input/output noise of BD2000
 $C_{IN}=10\mu F$, $C_{O(External)}=0.5\mu F$, $V_{IN}=48V$

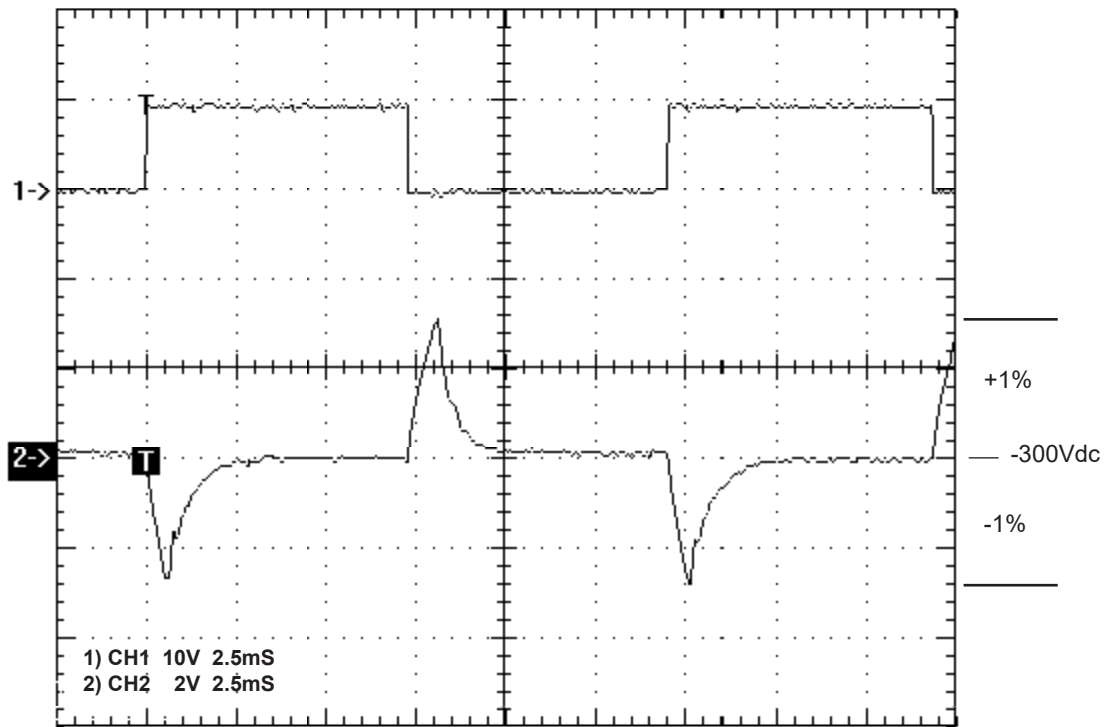


FIGURE 3. Transient response of BD2000
50% FL (95k) to FL (45k) to 50% FL (95k)

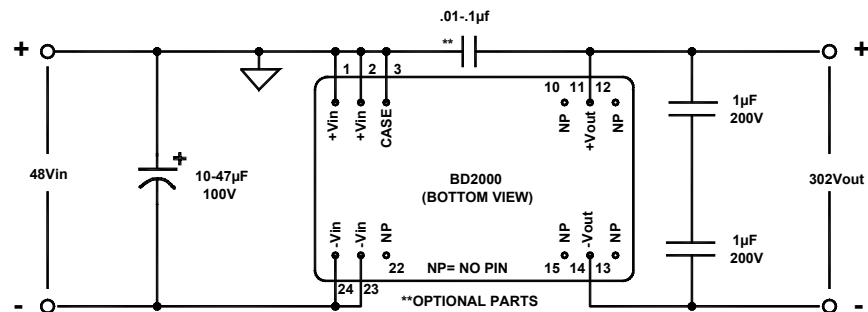
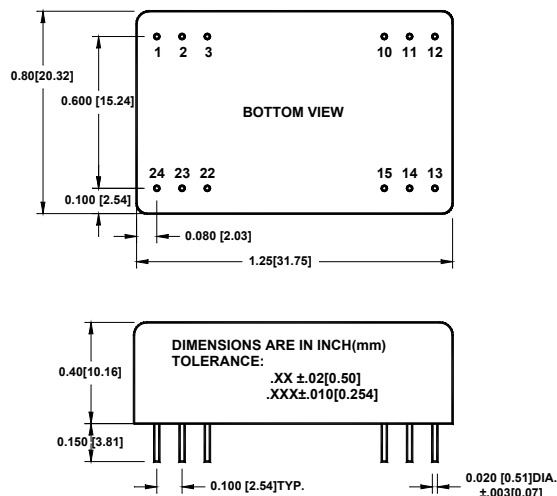


FIGURE 4. Typical connection diagram

MECHANICAL SPECIFICATIONS

in inches [mm]



Pin	Function
1	+V _{IN}
2	+V _{IN}
3	CASE
10	No Pin
11	+V _{OUT}
12	No Pin
13	No Pin
14	-V _{OUT}
15	No Pin
22	No Pin
23	-V _{IN}
24	-V _{IN}