BD36000-35A

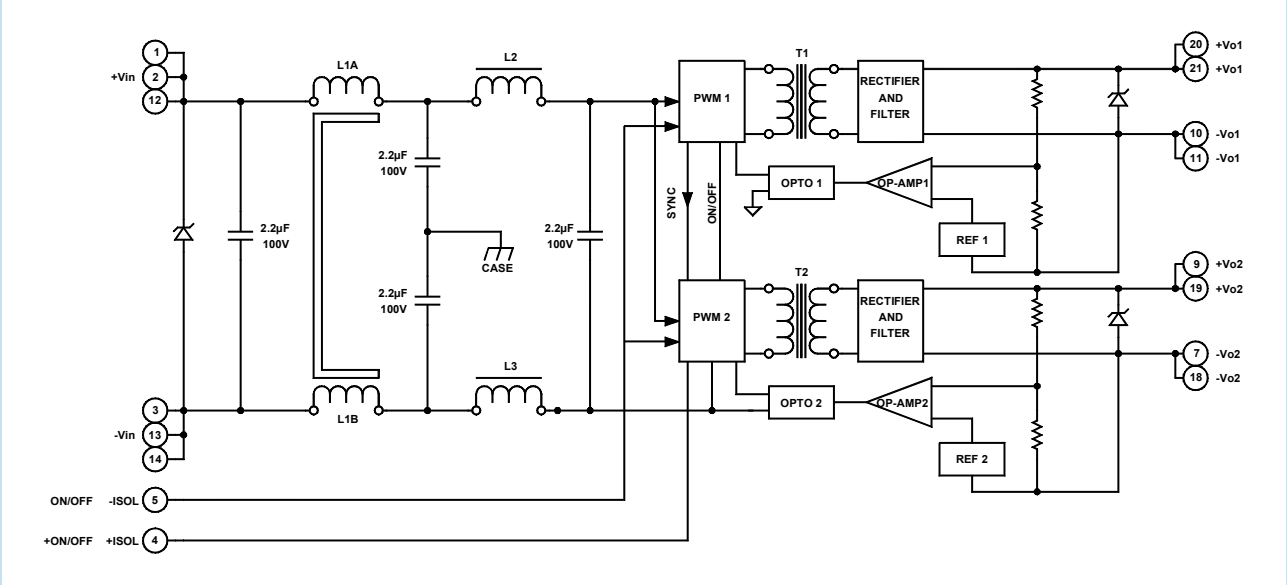
36W Dual DC/DC Converter

Key Features

- Input-to-output isolation
- Output-to-output isolation
- Soft start
- Common-mode and π filter
- Short circuit protection
- 1mA off state current
- Wide input voltage range (36–75Vdc)
- EMI six-sided shielding
- ON/OFF control

Functional Description

The BD36000-35A is a dual output DC/DC converter that operates from 36–75V_{IN} and provides 36W of output power. The converter has two outputs: 3.3V_{OUT}@1A for V_{O1} and 35V_{OUT}@0.93A for V_{O2}. It comes packaged in a 1.49×1.465×1.50-inch nickel-plated aluminum case. Input and output connections are established through a 21-pin AirBorn Micro series connector.



Typical Block Diagram

Electrical Specifications

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

INPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range (2:1)		36	48	75	Vdc
Input Filter	Common-mode or π filter				
Input Overvoltage Protection	Parallel zener, 100W surge for 1mS@25°C		80		Vdc
Undervoltage Shutdown			10		Vdc
Startup Input Voltage		28	32		Vdc
Reflected Ripple Current	See Figure 3		4		mA_{PP}
Reverse Voltage Protection	Parallel Diode		10		A
Unit On	Connect Pin 4 to Pin 5 through opto-isolator; See Figure 1				
	Voltage at Pin 5		10		Vdc
Unit On, Photo Transistor Current		0.75		1.4	mA
Unit Off	Pin 4 to Pin 5 High Z or Open				Vdc
Turn On Delay	Including soft start		3	10	mS

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
$3.3V_{OUT}$					
Output Voltage Accuracy			±1	±3	%
Output Current			1		A
Ripple & Noise (20MHz BW)	See Figure 3		1	3	% of V_{OUTPP}
Regulation	Over all operating conditions, including line, load, temperature and aging		±2	±5	%
OVP			3.9		Vdc
$35V_{OUT}$					
Output Voltage Accuracy			±1	±3	%
Output Current		930			mA
Ripple & Noise (20MHz BW)	See Figure 3		1	2	% of V_{OUTPP}
Regulation	Over all operating conditions, including line, load, temperature and aging		±2	±5	%
OVP			39		Vdc
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		100	200	µS

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency	V_{O1} = 3.3V, V_{O2} = 35V		82		%
Isolation Voltage (1 min.), Input to Output		500	1000		Vdc
Isolation Voltage (1 min.), Output to Output			500		Vdc
Isolation Resistance			10^9		Ω
Isolation Capacitance	External		4700		pF
Switching Frequency			330		kHz

ENVIRONMENTAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Operating Temperature Range (Ambient)	Mounting plate temperature	-55		+85	°C
Storage Temperature Range		-60		+125	°C
Derating	None required (Case connected to metal plate)				
Humidity	Up to 100% condensing				
Cooling	Conduction to mounting plate				
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		518,000		hours

PHYSICAL CHARACTERISTICS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Dimensions (L×W×H)	1.490×1.465×1.500 in. (37.85×37.21×38.10mm)				
Weight	3.54 oz. (100.5g)				
Case Material	Nickel-plated aluminum				
Shielding	Six-sided continuous				
Case Connection	Input filter, Y connection				

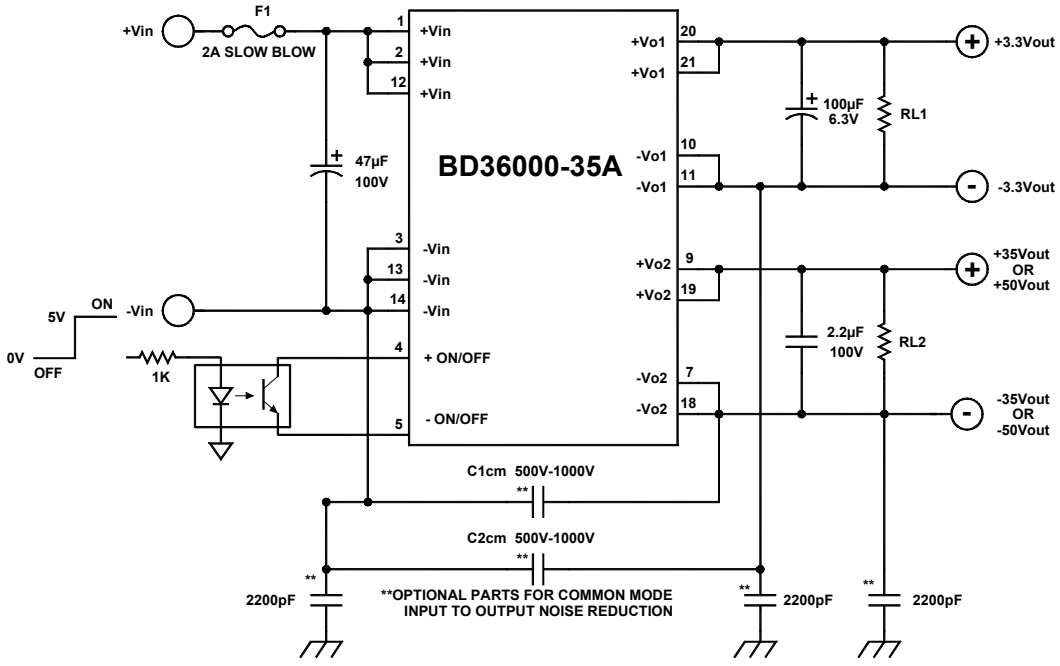


FIGURE 1. Connection diagram of BD36000-35A
C_{1CM}, C_{2CM} = 2200pF to 0.01µF @ 500V to 1000V

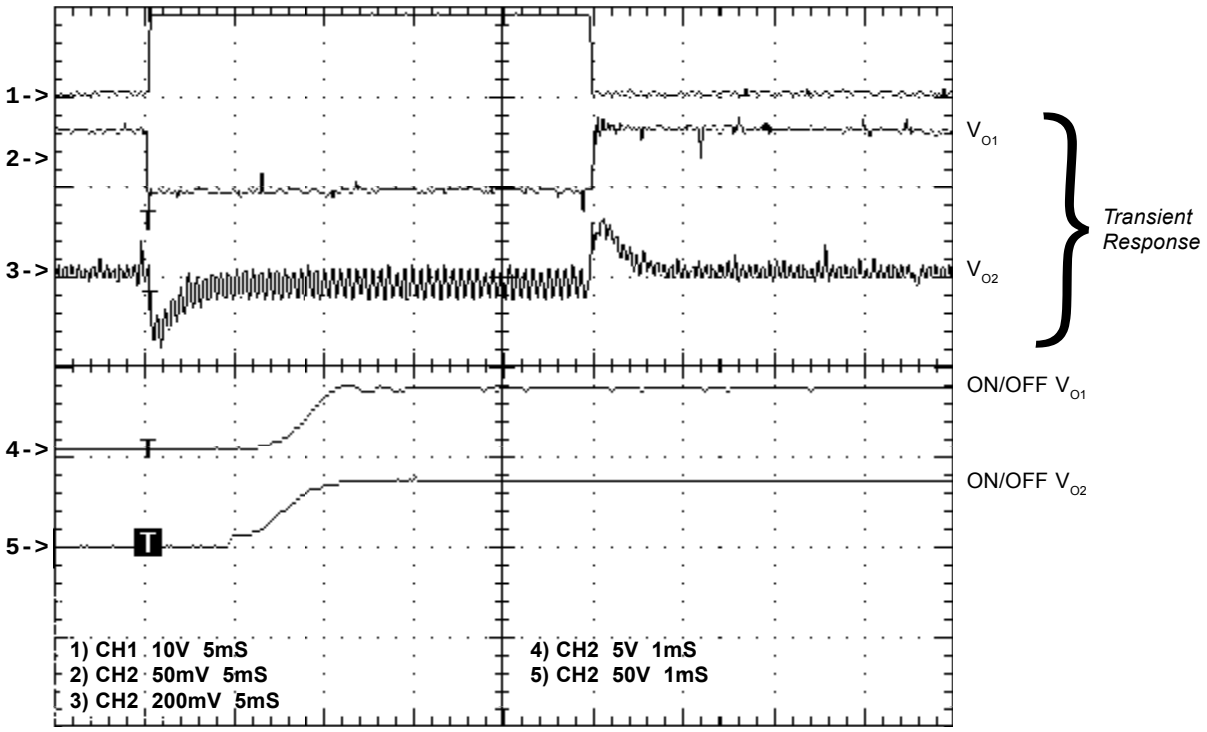


FIGURE 2. Dynamic performance of BD36000-35A*

1) Load step 50% FL to FL to 50% FL
2) V_{O1}
3) V_{O2}
4) Turn on delay with soft start (V_{O1})
5) Turn on delay with soft start (V_{O2})

* All input/output measurements are made on a test card that connects to the converter via its 6-inch mating connector.

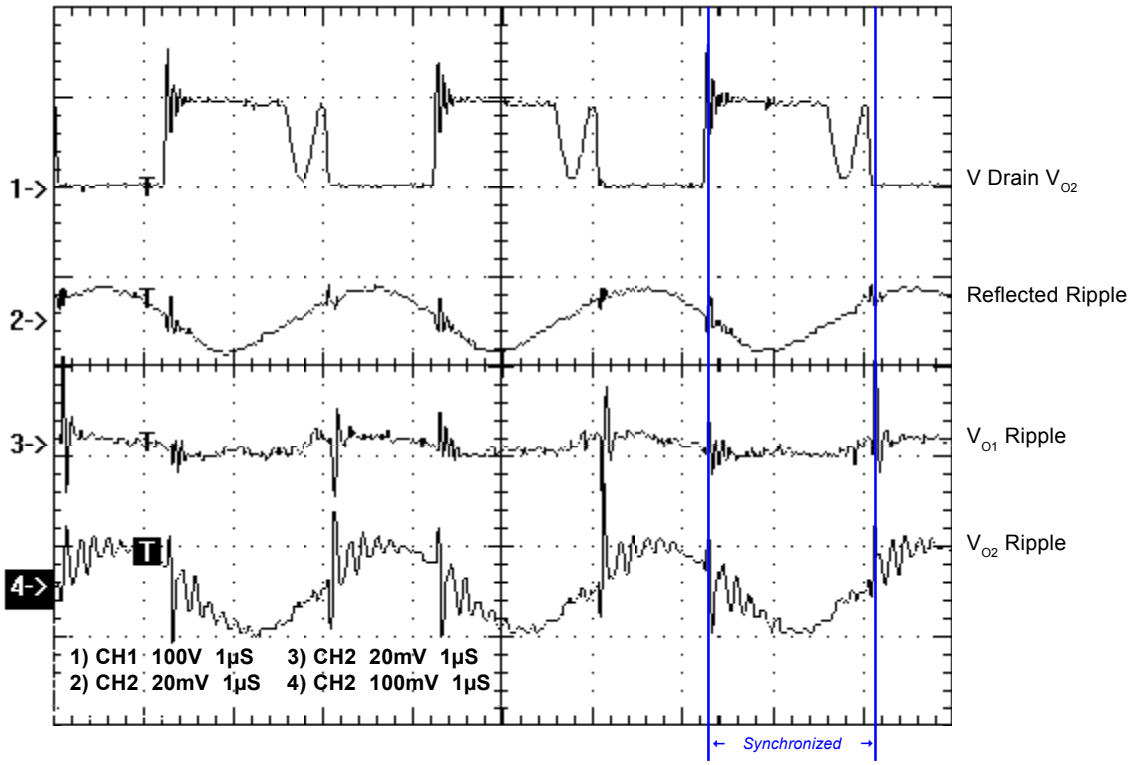
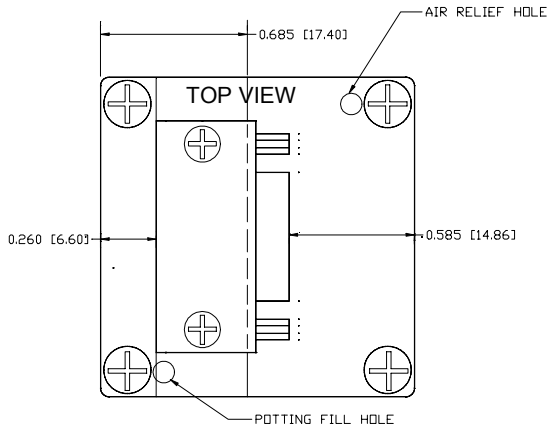
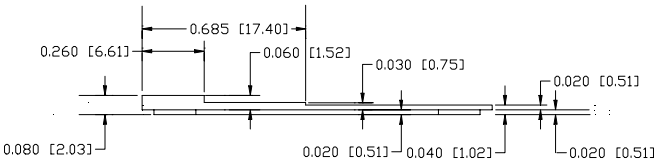


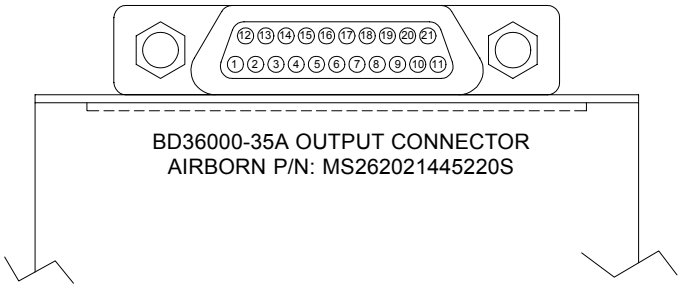
FIGURE 3. Static performance of BD36000-35A

MECHANICAL SPECIFICATIONS

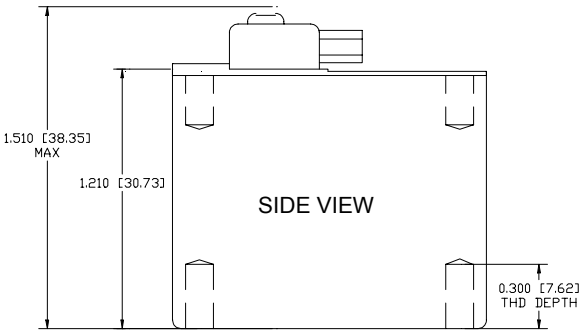


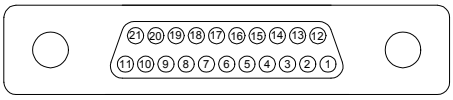


LID PROFILE

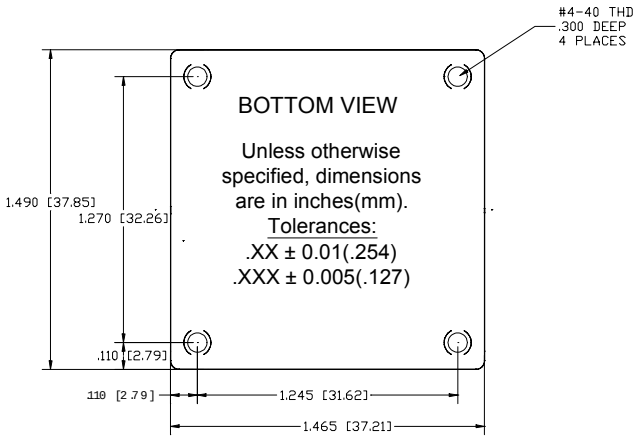


BD36000-35A OUTPUT CONNECTOR
AIRBORN P/N: MS262021445220S





AIRBORN MATING CONNECTOR
AIRBORN P/N: MQ21202116141WE



PIN ASSIGNMENT

OUTPUT CONNECTOR
AIRBORN P/N: MS262021445220S

Pin	Function	Pin	Function
1	$-V_{O1}$	12	$+V_{O1}$
2	$-V_{O1}$	13	$+V_{O1}$
3	NC	14	$+V_{O2}$
4	$-V_{O2}$	15	$+V_{O2}$
5	NC	16	$-V_{O2}$
6	-ISOL	17	NC
7	+ISOL	18	NC
8	$-V_{IN}$	19	NC
9	$-V_{IN}$	20	$-V_{IN}$
10	$+V_{IN}$	21	$+V_{IN}$
11	$+V_{IN}$		