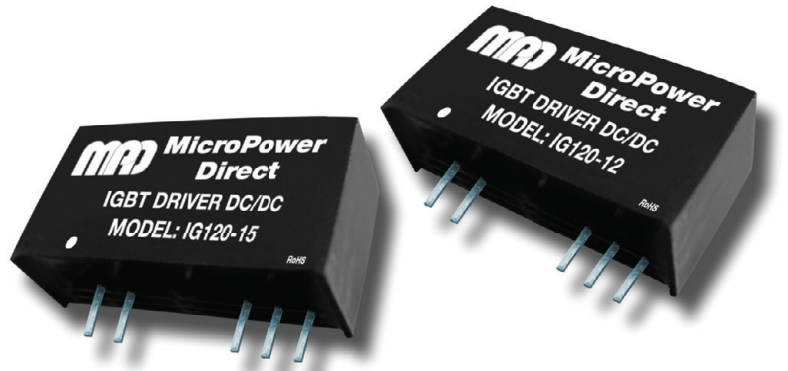


# IG120 Series

## High Isolation IGBT Driver DC/DC Converters



### Key Features:

- Operates With xx962 Drivers
- Independent Outputs
- EN 60950 Approved
- 3,000 VAC Isolation
- Miniature SIP Case
- >3.5 MHour MTBF
- Seven Standard Models
- **LOW COST!!**

RoHS



### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Supply Voltage Range		See Model Selection Guide			
Input Filter		Internal Capacitor			

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Line Regulation	For VIN Change of 1%		±1.2	±1.5	%
Load Regulation	See Note 1		6.3	15	%
Ripple & Noise (20 MHz)			100	200	mV P - P
Efficiency			80		%
Temperature Coefficient				±0.03	%/°C
Output Short Circuit		Continuous (Autorecovery)			

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	3,000			VAC
Isolation Resistance		1,000			MΩ
Isolation Capacitance, 1 kHz/0.1V			6.6		pF
Switching Frequency			100	300	kHz

#### EMI Characteristics

Parameter	Standard		Level	
Radiated Emissions	See Page 3	EN 55022	Class B	
Conducted Emissions	See Page 3	EN 55022	Class B	
ESD		EN 61000-4-2	Criteria B; ±8 kV Contact	

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+105	°C
Storage Temperature Range		-50		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	0.768 x 0.386 x 0.492 Inches (19.50 x 9.80 x 12.50 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	0.152 Oz (4.3g)

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	3.5			MHours

#### Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Max Supply Voltage (1 Sec)	IG120-12	-0.7		13	VDC
	IG120-12W	-0.7		15	
	IG100-9, IG100-9D	-0.7		16	
	IG120-15, IG136-15	-0.7		16	
	IG120-24	-0.7		26	
Lead Temperature	1.5 mm From Case For 10 Sec			300	°C

**Caution:** Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

### MicroPower Direct

292 Page Street  
Suite D  
Stoughton, MA 02072  
USA

T: (781) 344-8226  
F: (781) 344-8481  
E: sales@micropowereirect.com  
W: www.micropowereirect.com



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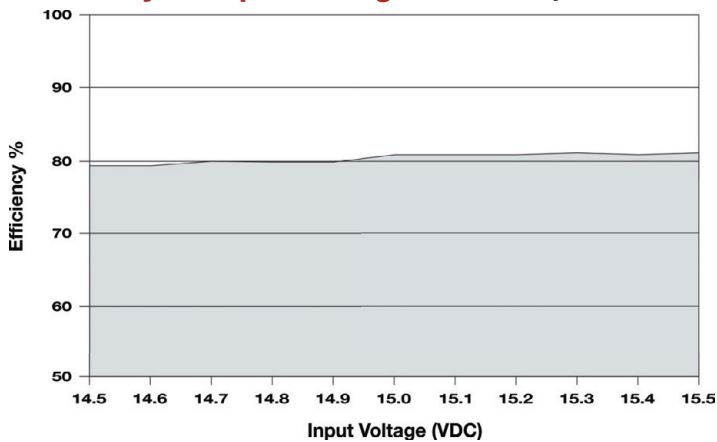
Model Number	Input (Supply)		Output 1					Output 2					Load Regulation (%)		Maximum Capacitive Load (μF)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Voltage (VDC)			Current (mA Max)	Current (mA, Min)	Voltage (VDC)			Current (mA Max)	Current (mA, Min)				
	Nom.	Range	Min.	Nom.	Max.			Min.	Nom.	Max.			Min.	Max.		
IG100-09	15	14.5 - 15.5	8.0	9.0	10.0	111.0	0.0						8.3	15	220	200
IG100-09D	15	14.5 - 15.5	8.0	9.0	10.0	55.0	0.0	-8.0	-9.0	-10.0	55.0	0.0	8.3	15	220	200
IG120-12	12	11.6 - 12.4	14.0	15.0	16.0	80.0	0.0	-7.0	-8.7	-10.0	40.0	0.0	6.3	15	220	400
IG120-12W	12	9.0 - 15.0	14.0	15.0	16.0	100.0	0.0	-7.0	-8.0	-9.0	80.0	0.0	6.3	15	220	500
IG120-15	15	14.5 - 15.5	14.0	15.0	16.0	80.0	0.0	-7.0	-8.7	-10.0	40.0	0.0	6.3	15	220	300
IG136-15	15	14.5 - 15.5	16.5	17.0	18.0	80.0	0.0	-7.0	-8.7	-10.0	40.0	0.0	6.3	15	220	400
IG120-24	24	23.3 - 24.7	14.0	15.0	16.0	80.0	0.0	-7.0	-8.7	-10.0	40.0	0.0	6.3	15	220	200

## Notes:

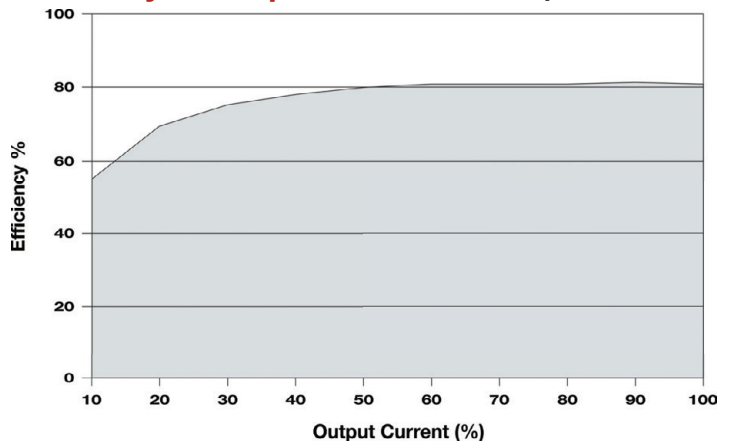
1. Load regulation is measured from 10% load to full load. Load regulation is specified for the primary output (output 1). The load regulation of output 2 may vary slightly. The typical load regulation for IG100-9 and IG100-9D is 8.3%.
2. Operation at no-load will not damage these units. However, they may not meet all specifications.
3. If output 2 is not used, it should be left open.
4. It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection table above for the correct rating.

The IG100 series is designed to operate with the IGD962 IGBT driver. Contact the factory for more information

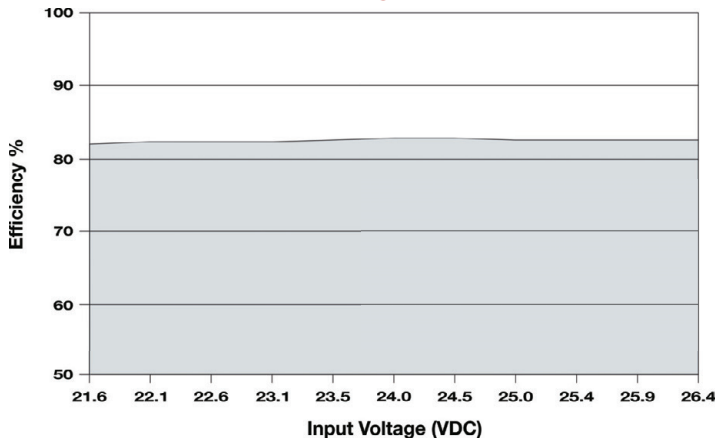
### Efficiency vs Input Voltage 15 VDC Input



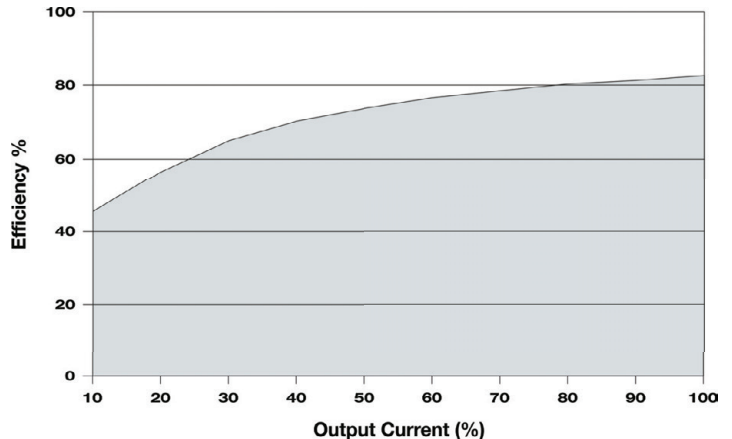
### Efficiency vs Output Load 15 VDC Input

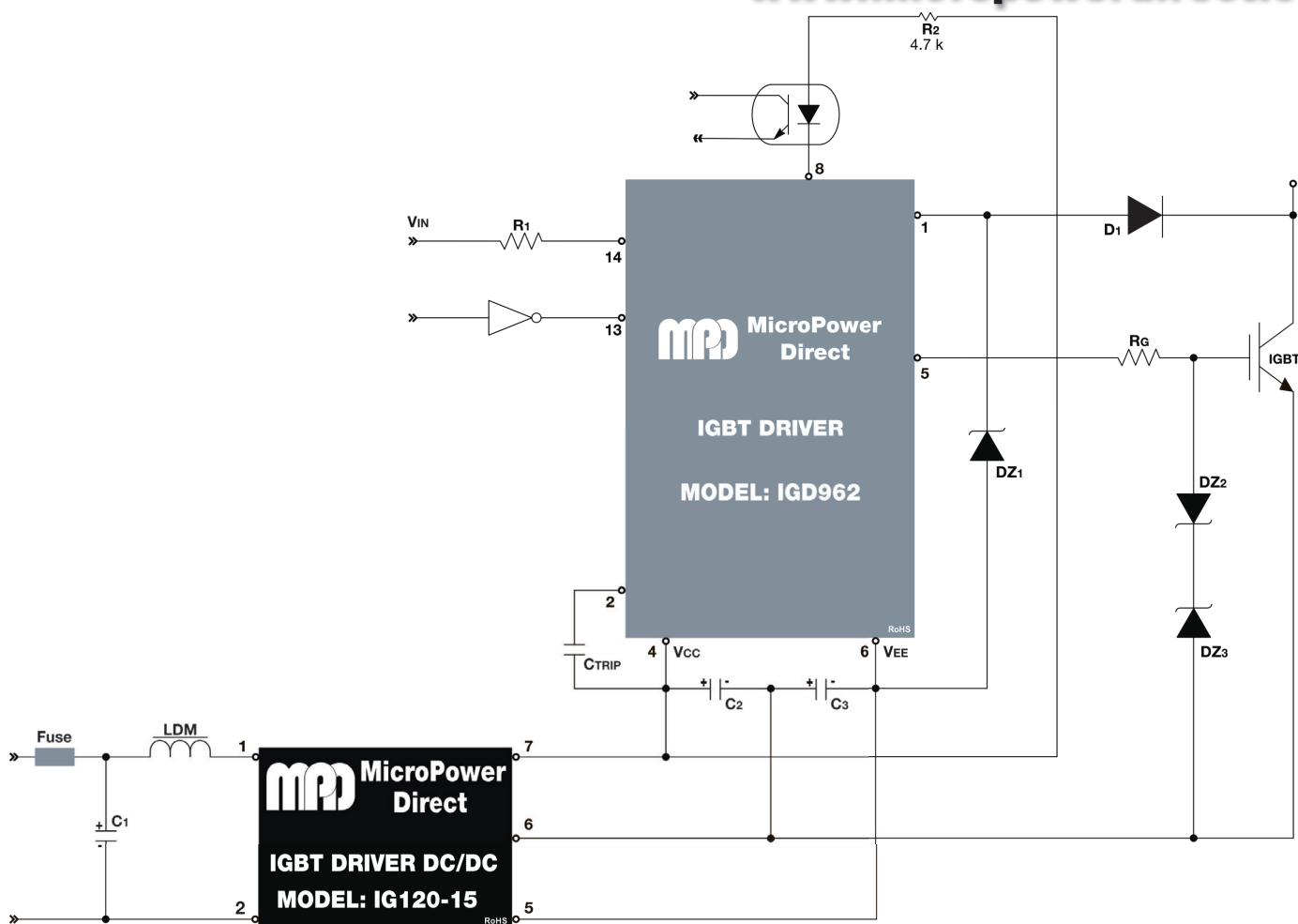


### Efficiency vs Input Voltage 24 VDC Input



### Efficiency vs Output Load 24 VDC Input





The **IG100** series may be used in a wide variety of on-board power distribution applications. However, it has been designed specifically to power 962 type IGBT drivers. A typical connection to the **MicroPower Direct IGD962** is shown in the diagram above.

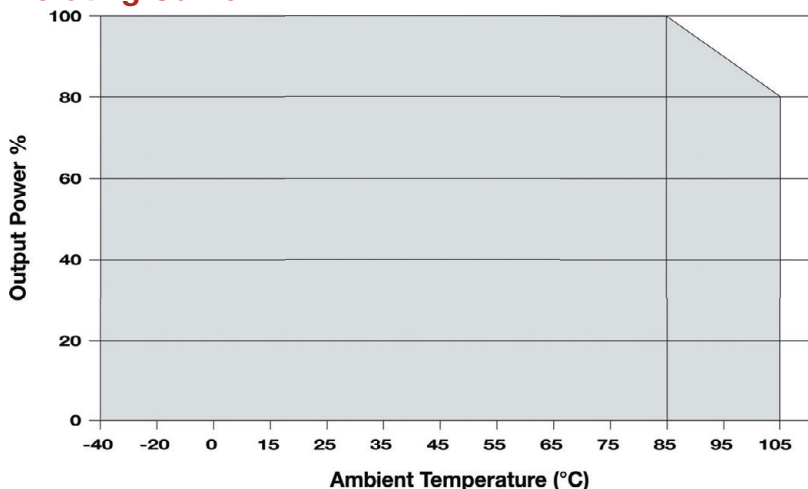
Go to the **MPD** website for complete information on our wide line of IGBT driver products, including the **IGD962**. Or contact the factory with any technical inquiries.

Some notes on this circuit (starting with the **IG120-15** input) are:

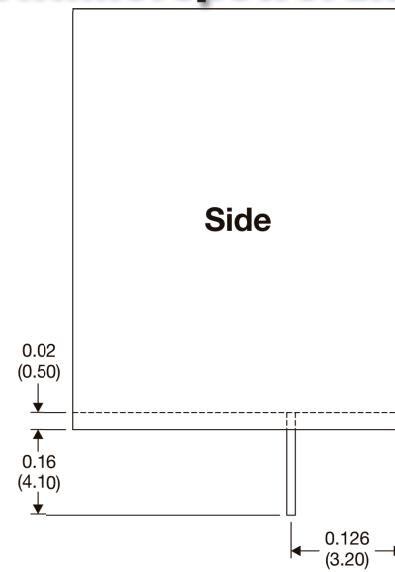
1. The **IG100** DC/DC should be mounted as close to the IGBT driver as possible, to minimize the length of connecting board traces or wires.
2. The **IG100** series does not include overload protection (typical of most low power DC/DC's). It is recommended that an external fuse be used. The recommended fuse is shown in the model chart on page 2.
3. The addition of the input filter components (C1 and LDM) will typically bring the circuit within the limits of EN 55022 Class B. The recommended values for these components are shown in the table at right. If meeting EN 55022 class B is not a concern, the inductor (LDM) can be eliminated (as shown in the circuit diagram below). In this case, the recommended value for C1 is 100  $\mu$ F/35V.
4. The recommended values for the output filter capacitors C2 and C3 are shown in the table at right.
5. C1, C2 and C3 should be mounted as close to the unit as possible. To ensure peak gate current, these capacitors should have a low ESR. The trace (or wire) between the DC/DC and the driver circuit should be as short as possible.
6. The average output power of the driver circuit must be lower than output power of the DC/DC.
7. Recommended values for components are:

Component	12 VIN	15 VIN	24 VIN
C1	4.7 $\mu$ F/50V	4.7 $\mu$ F/50V	4.7 $\mu$ F/50V
LDM	12 $\mu$ H	12 $\mu$ H	12 $\mu$ H
C2	100 $\mu$ F/35V	100 $\mu$ F/35V	100 $\mu$ F/35V
C3	100 $\mu$ F/35V	100 $\mu$ F/35V	100 $\mu$ F/35V

## Derating Curve



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Pin	Function
1	+Vin
2	Gnd
5	Vout 2
6	Common
7	Vout 1

Technical drawing of a stepped profile. The drawing shows a cross-section with the following dimensions:

- Top horizontal dimension: 0.551 (14.00)
- Left vertical dimension: 0.472 (12.00)
- Bottom horizontal dimension: 0.787 (20.00)
- Right vertical dimension: 0.224 (5.70)

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.02$  ( $\pm 0.50$ )
- Pin 5 on the **IG100-09** has no connection

- Tube length equals 20.866 (530), unit quantity equals 25 pcs.
- Tube length equals 8.661 (220), unit quantity equals 10 pcs.
- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.02$  ( $\pm 0.50$ )



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292 Page Street Ste D Stoughton, MA 02072 • TEL: (781) 344-8226 • FAX: (781) 344-8481 • E-Mail: [sales@micropowerdirect.com](mailto:sales@micropowerdirect.com)