

MHI200GR18 Series

Compact, 2W MiniDIP Ultra-High Isolation DC/DC Converters



Key Features:

- 2W Output Power
- 8.0 kV Isolation
- 15 kV/ μ S CMTI
- EN 60950 Approved (Pend.)
- Reinforced Insulation
- Compact MiniDIP Case
- -25°C to +80°C Operation
- Industry Standard Pin-Out



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
Input Voltage Range	5 VDC Input	4.5	5.0	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	24 VDC Input	21.6	24.0	26.4	
Input Filter	Capacitor Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			± 2.0	± 4.0	%
Output Voltage Balance	Dual Output, Balanced Loads		± 0.1	± 1.0	%
Line Regulation	$V_{IN} = \text{Min to Max}$		± 1.2	± 1.5	%
Load Regulation, See Note 2	See Model Selection Guide				
Ripple & Noise (20 MHz)	See Note 3			150	mV P - P
Temperature Coefficient			± 0.01	± 0.02	%/°C
Output Short Circuit	Momentary (0.5S Max)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Rated For 60 Sec	4,000			VAC rms
	Tested For 1 Sec	8,000			VDC
Isolation Resistance	500 VDC	10			G Ω
Isolation Capacitance	100 kHz, 1V		15	20	pF
Common Mode Transient Immunity		15			kV/ μ S
Switching Frequency		50	80	100	kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-25	+25	+80	°C
	Case			+105	
Storage Temperature Range		-50		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Diagram (Page 2)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.17 Oz (5.1g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.0			MHours
Safety Standards	UL 60950, EN 60950 (Pending)				

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (0.1 Sec)	5 VDC Input			9.0	VDC
	12 VDC Input			18.0	
	24 VDC Input			30.0	
Lead Temperature	1.5 mm From Case for 10 Sec			260	°C

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

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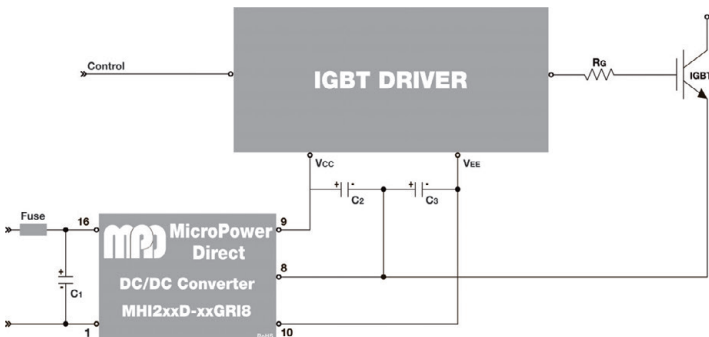
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Model Number	Input				Output			Efficiency (% Typ)	Load Regulation (% Max)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
MHI205S-05GRI8	5	4.5 - 5.5	615	60	5.0	400	8.0	65	±12.0	330	1,200
MHI205S-12GRI8	5	4.5 - 5.5	609	60	12.0	165	3.0	65	±10.0	330	1,200
MHI205S-15GRI8	5	4.5 - 5.5	605	60	15.0	133	2.5	66	±10.0	330	1,200
MHI205D-12GRI8	5	4.5 - 5.5	553	60	±12.0	±83	±1.5	72	±10.0	100	1,200
MHI205D-15GRI8	5	4.5 - 5.5	542	60	±15.0	±66	±1.0	73	±10.0	100	1,200
MHI212S-05GRI8	12	10.8 - 13.2	256	30	5.0	400	8.0	65	±12.0	330	600
MHI212S-12GRI8	12	10.8 - 13.2	254	30	12.0	165	3.0	65	±10.0	330	600
MHI212S-15GRI8	12	10.8 - 13.2	252	30	15.0	133	2.5	66	±10.0	330	600
MHI212D-12GRI8	12	10.8 - 13.2	224	30	±12.0	±83	±1.5	74	±10.0	100	600
MHI212D-15GRI8	12	10.8 - 13.2	220	30	±15.0	±66	±1.0	75	±10.0	100	600
MHI224S-05GRI8	24	21.6 - 26.4	128	15	5.0	400	8.0	65	±12.0	330	250
MHI224S-12GRI8	24	21.6 - 26.4	127	15	12.0	165	3.0	65	±10.0	330	250
MHI224S-15GRI8	24	21.6 - 26.4	126	15	15.0	133	2.5	66	±10.0	330	250
MHI224D-12GRI8	24	21.6 - 26.4	112	15	±12.0	±83	±1.5	74	±10.0	100	250
MHI224D-15GRI8	24	21.6 - 26.4	110	15	±15.0	±66	±1.0	75	±10.0	100	250

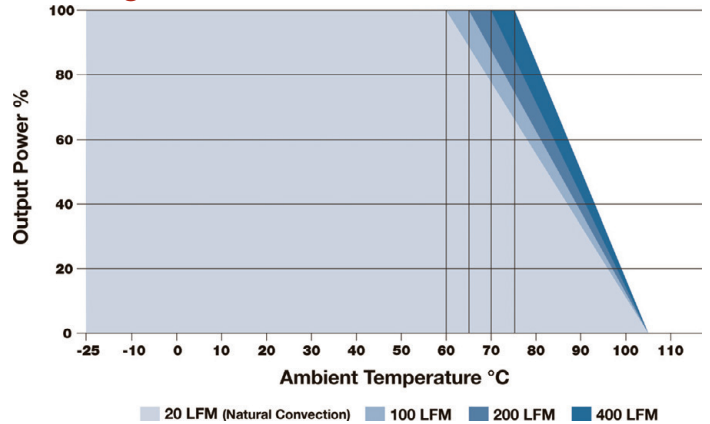
Notes:

- The specified maximum capacitive load is for each output.
- Load regulation is measured over a range of 20% load to 100% load.
- When measuring output ripple & noise, it is recommended that an external capacitor (3.3 µF typ.) be placed from the +Vout to the -Vout pins for single output units and from each output to common for dual output models.
- The converter should be connected to a low ac-impedance source. A source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up. In this case, it is recommended that a low ESR (<1.0Ω at 100 kHz) capacitor be mounted close to the converter. For 5V input units a 2.2 µF is recommended; for 12V input units, a 1.0 µF; and for 24V units a 0.47 µF.
- Operation at no-load will not damage the unit, but they may not meet all specifications.
- It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection tables for the correct rating.

IGBT Applications



Derating Curve

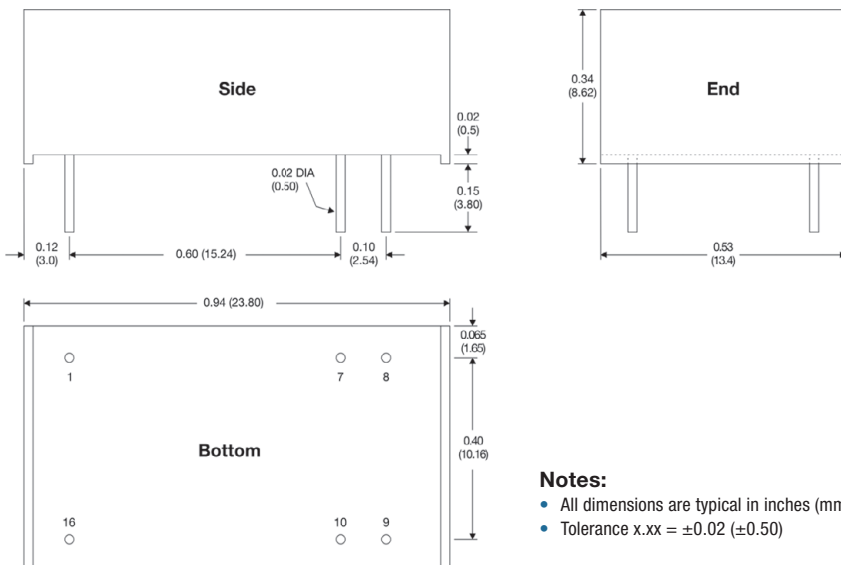


Notes:

The MHI200x-xxD series is a good choice for applications involving high speed switching, such as driving IGBTs. They are designed to withstand the extra stress caused by the high voltage switching transients present in IGBT drive circuits.

All of the MHIxxx series have isolation levels that range from 5.2 to 8 kV. Many of these have reinforced insulation. The high isolation levels (and the correspondingly low capacitive coupling rates) allow them to be safely used in applications with highly dynamic switched AC or DC.

Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)

Pin Connections

Pin	Single Output
1	-VIN
7	No Connection
8	No Connection
9	+VOUT
10	-VOUT
16	+VIN

Pin	Dual Output
1	-VIN
7	No Connection
8	Common
9	+VOUT
10	-VOUT
16	+VIN