

MHI300ARUI8 Series

Wide Input, 3W DIP Ultra-High Isolation DC/DC Converters



Key Features:

- 3W Output Power
- 8.0 kV Isolation
- 15 kV/ μ S CMTI
- Wide 4:1 Input Range
- Reinforced Insulation
- EN 60950 Approved (Pend.)
- -40°C to +85°C Operation
- Industry Standard Pin-Out



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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	24 VDC Input	9.0	24.0	40.0	VDC	
	48 VDC Input	18.0	48.0	80.0		
Start-Up Threshold Voltage	24 VDC Input	8.0	8.5	9.0	VDC	
	48 VDC Input	13.0	15.0	17.0		
Under Voltage Shutdown	24 VDC Input			8.5	VDC	
	48 VDC Input			16.0		
Short Circuit Input Power				2,000	mW	
Input Filter	π (Pi) Filter					
Conducted EMI	Meets EN 55022 Class A & FCC Level A					
Output						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Output Voltage Accuracy				± 1.0	%	
Output Voltage Balance	Dual Output, Balanced Loads		± 0.5	± 2.0	%	
Line Regulation	$V_{IN} = \text{Min to Max}$		± 0.3	± 0.5	%	
Load Regulation	See Note 2		± 0.5	± 1.0	%	
Ripple & Noise (20 MHz) ^{<} See Note 3	5 VDC Output Models		75	100	mV P - P	
	All Other Models		100	150		
Transient Recovery Time, See Note 4	25% Load Step Change		150	500	μ Sec	
Transient Response Deviation			± 3.0	± 6.0	%	
Output Power Protection	Foldback	120	150		%	
Temperature Coefficient			± 0.02	± 0.05	%/°C	
Output Short Circuit	Continuous (Autorecovery)					
General						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Isolation Voltage, 60 Sec	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		7	13	pF	
Common Mode Transient Immunity		15			kV/ μ S	
Switching Frequency			150		kHz	
Environmental						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Operating Temperature Range	Ambient	-40	+25	+85	°C	
	Case			+100		
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	0.54 Oz (16.2g)					
Reliability Specifications						
Parameter	Conditions	Min.	Typ.	Max.	Units	
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.0			MHours	
Safety Standards	UL 60950, EN 60950 (Pending)					
Absolute Maximum Ratings						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Input Voltage Surge (0.1 Sec)	24 VDC Input			50.0	VDC	
	48 VDC Input			100.0		
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.

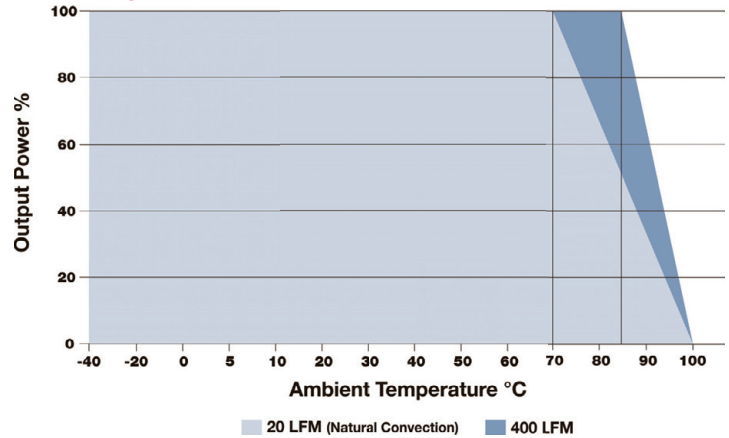
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Model Number	Input				Output			Efficiency (% Typ)	Capacitive Load (µF, Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
MHI324S-05ARUI8	24	9.0 - 40.0	162	20	5.0	600	90.0	77	1,000	1,000
MHI324S-12ARUI8	24	9.0 - 40.0	152	20	12.0	250	37.5	82	470	1,000
MHI324D-12ARUI8	24	9.0 - 40.0	151	20	±12.0	±125	±18.8	83	220	1,000
MHI324D-15ARUI8	24	9.0 - 40.0	151	20	±15.0	±100	±15.0	83	220	1,000
MHI348S-05ARUI8	48	18.0 - 80.0	81	10	5.0	600	90.0	77	1,000	500
MHI348S-12ARUI8	48	18.0 - 80.0	76	10	12.0	250	37.5	82	470	500
MHI348D-12ARUI8	48	18.0 - 80.0	75	10	±12.0	±125	±18.8	83	220	500
MHI348D-15ARUI8	48	18.0 - 80.0	75	10	±15.0	±100	±15.0	83	220	500

Notes:

- The specified maximum capacitive load is for each output.
- Load regulation is measured over a range of 25% Iout to 100% Iout.
- When measuring output ripple & noise, it is recommended that an external capacitor (0.47 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. To further reduce output ripple, a 3.3 µF is recommended.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- 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 24V input units a 4.7 µF is recommended and for 48V units a 2.2 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.

Derating Curve

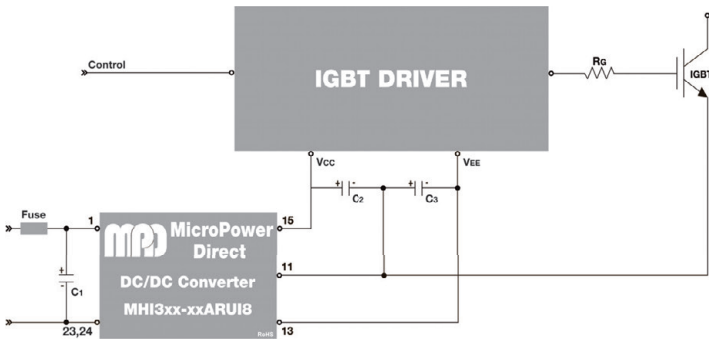


Notes:

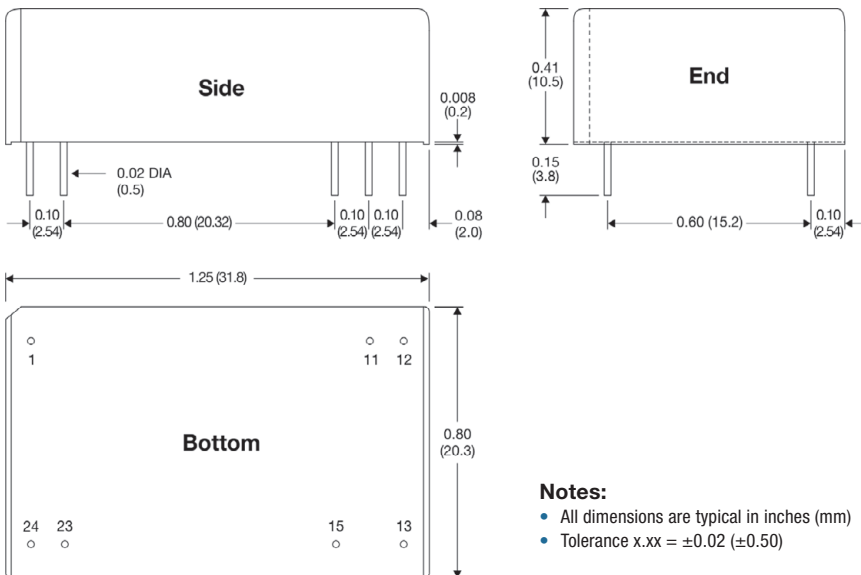
The MHI300x-xxARU series is a good choice for applications involving high speed switching, such as driving IGBTs. They are designed to withstand the extra stress caused by the high voltage switching transients present in IGBT drive circuits.

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.

IGBT Applications



Mechanical Dimensions



Notes:

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

Pin Connections

Pin	Single Output	Pin	Dual Output
1	+VIN	1	+VIN
11	No Pin	11	Common
12	-VOUT	12	No Pin
13	+VOUT	13	-VOUT
15	No Pin	15	+VOUT
23	-VIN	23	-VIN
24	-VIN	24	-VIN