

MHI600ARW18 Series

Wide Input, 6W DIP Ultra-High Isolation DC/DC Converters



Key Features:

- 6W Output Power
- 8.0 kV Isolation
- 15 kV/ μ S CMTI
- Wide 2:1 Input Range
- Reinforced Insulation
- EN 60950 Approved (Pend.)
- -40°C to +75°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	12 VDC Input	9.0	12.0	18.0	VDC
	24 VDC Input	18.0	24.0	36.0	
	48 VDC Input	36.0	48.0	75.0	
Start-Up Threshold Voltage	12 VDC Input	7.0	8.0	9.0	VDC
	24 VDC Input	13.0	15.0	18.0	
	48 VDC Input	30.0	33.0	36.0	
Under Voltage Shutdown	12 VDC Input			8.5	VDC
	24 VDC Input			16.0	
	48 VDC Input			34.0	
Short Circuit Input Power				3,000	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		300	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	+75	°C
	Case			+95	
Storage Temperature Range		-50		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Diagram (Page 3)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.57 Oz (16.2g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	700			kHours
Safety Standards	UL 60950, EN 60950 (Pending)				

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (0.1 Sec)	12 VDC Input			25.0	VDC
	24 VDC Input			50.0	
	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.



MicroPower Direct

292 Page Street
Suite D
Stoughton, MA 02072
USA

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



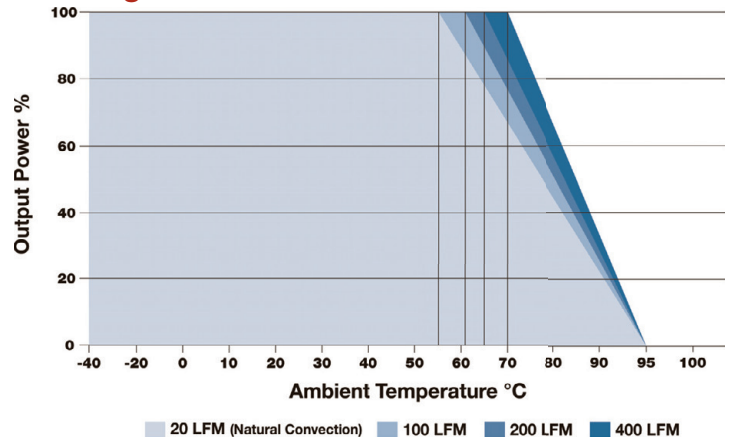
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Model Number	Input				Output			Efficiency (% Typ)	Capacitive Load (µF, Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
MHI612S-05ARWI8	12	9.0 - 18.0	563	30	5.0	1,000	200.0	74	1,000	1,200
MHI612S-12ARWI8	12	9.0 - 18.0	649	30	12.0	500	100.0	77	470	1,200
MHI612D-12ARWI8	12	9.0 - 18.0	641	30	±12.0	±250	±50.0	78	220	1,200
MHI612D-15ARWI8	12	9.0 - 18.0	641	30	±15.0	±200	±40.0	78	220	1,200
MHI624S-05ARWI8	24	18.0 - 36.0	274	20	5.0	1,000	200.0	76	1,000	600
MHI624S-12ARWI8	24	18.0 - 36.0	316	20	12.0	500	100.0	79	470	600
MHI624D-12ARWI8	24	18.0 - 36.0	313	20	±12.0	±250	±50.0	80	220	600
MHI624D-15ARWI8	24	18.0 - 36.0	313	20	±15.0	±200	±40.0	80	220	600
MHI648S-05ARWI8	48	36.0 - 75.0	137	10	5.0	1,000	200.0	76	1,000	300
MHI648S-12ARWI8	48	36.0 - 75.0	158	10	12.0	500	100.0	79	470	300
MHI648D-12ARWI8	48	36.0 - 75.0	156	10	±12.0	±250	±50.0	80	220	300
MHI648D-15ARWI8	48	36.0 - 75.0	156	10	±15.0	±200	±40.0	80	220	300

Notes:

- The specified maximum capacitive load is for each output.
- Load regulation is measured over a range of 25% I_{out} to 100% I_{out}.
- When measuring output ripple & noise, it is recommended that an external capacitor (0.47 µF typ.) be placed from the +V_{out} to the -V_{out} 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 the 12 V input units a 10 µF is recommended, for 24V input units a 4.7 µF 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

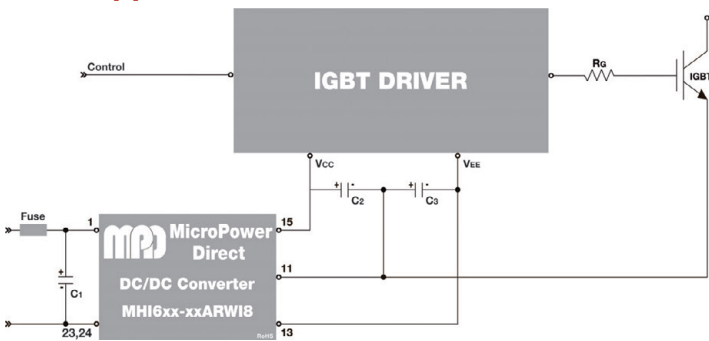


Notes:

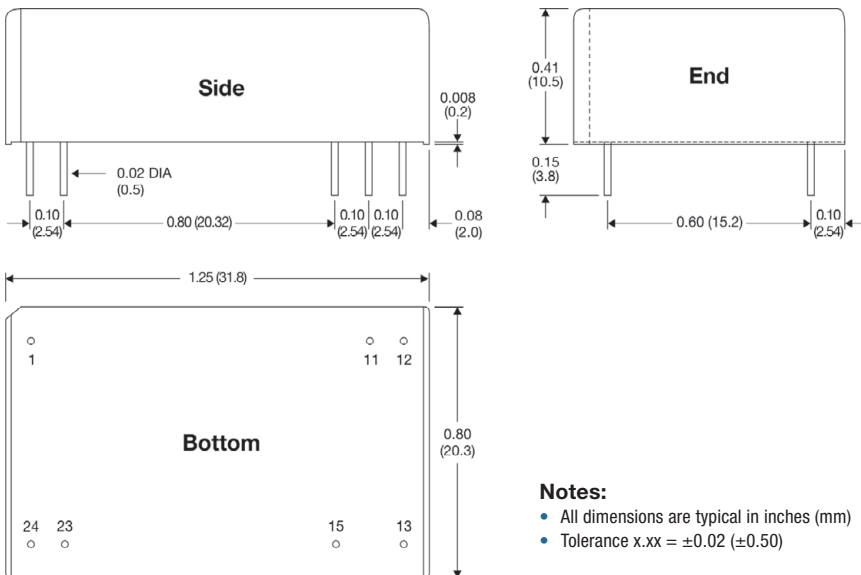
The MHI600x-xARW series is a good choice for applications involving high speed switching, such as driving IGBTs. They are designed to withstand the extra stress caused by the high voltage switching transients present in IGBT drive circuits.

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