

MHI100DI5.7 Series

High Isolation, 1W SIP Single & Dual Output DC/DC Converters



Key Features:

- 1W Output Power
- 5.7 kV Isolation
- 15 kV/ μ S CMTI
- 40 Standard Models
- Miniature SIP Case
- -40°C to +85°C Operation
- Industry Standard Pin-Out
- 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
Input Voltage Range	5 VDC Input	4.5	5.0	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	15 VDC Input	13.5	15.0	16.5	
	24 VDC Input	21.6	24.0	26.4	
Input Filter	Capacitor Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				± 5.0	%
Output Voltage Balance	Dual Output, Balanced Loads		± 0.1	± 1.0	%
Line Regulation	For V_{IN} Change of 1%		± 1.2		%
Load Regulation, See Note 2	See Model Selection Guide				
Ripple & Noise (20 MHz)	See Note 3			100	mV P - P
Temperature Coefficient			± 0.01	± 0.02	%/°C
Output Short Circuit	Momentary (0.5 Sec Max)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Rated For 60 Sec	5,200			VDC
	Tested For 1 Sec	5,700			
Isolation Resistance	500 VDC	10			G Ω
Isolation Capacitance	100 kHz, 1V		7		pF
Common Mode Transient Immunity		15			kV/ μ S
Switching Frequency			100		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
	Case			+100	
Storage Temperature Range		-55		+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	0.08 Oz (2.4g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.0			MHours

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	
	15 VDC Input			20.0	
	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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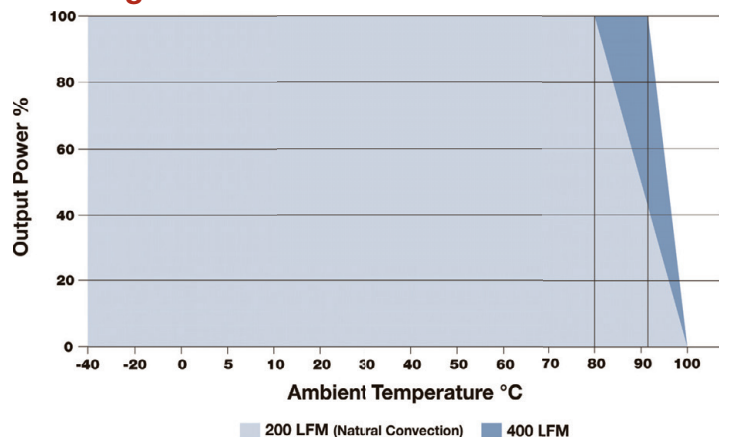
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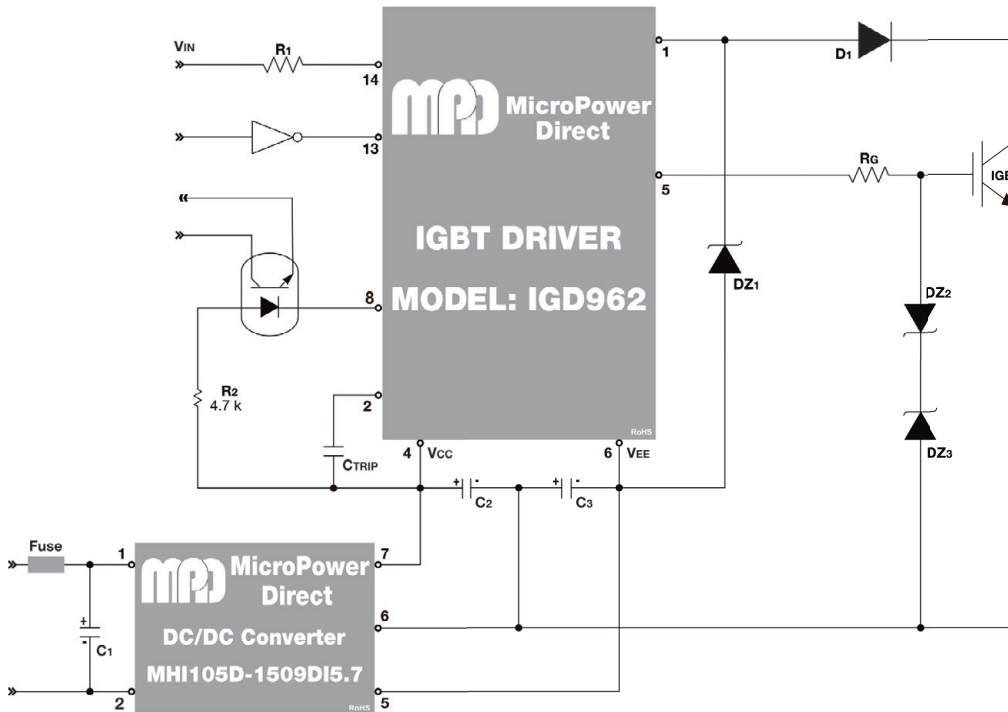
Model Number	Input				Output			Efficiency (% Typ)	Load Regulation (% Max)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
MHI105S-03DI5.7	5	4.5 - 5.5	286	35	3.3	303	0.0	70	±20.0	1,000	500
MHI105S-05DI5.7	5	4.5 - 5.5	286	35	5.0	200	0.0	70	±15.0	470	500
MHI105S-09DI5.7	5	4.5 - 5.5	266	35	9.0	111	0.0	75	±10.0	470	500
MHI105S-12DI5.7	5	4.5 - 5.5	261	35	12.0	84	0.0	77	±10.0	220	500
MHI105S-15DI5.7	5	4.5 - 5.5	254	35	15.0	66	0.0	78	±10.0	220	500
MHI105D-05DI5.7	5	4.5 - 5.5	282	35	±5.0	±100	±0.0	71	±15.0	220	500
MHI105D-09DI5.7	5	4.5 - 5.5	269	35	±9.0	±56	±0.0	75	±10.0	220	500
MHI105D-12DI5.7	5	4.5 - 5.5	262	35	±12.0	±42	±0.0	77	±10.0	100	500
MHI105D-15DI5.7	5	4.5 - 5.5	254	35	±15.0	±33	±0.0	78	±10.0	100	500
MHI105D-1509DI5.7	5	4.5 - 5.5	260	35	+15.0 -9.0	+33 -55	±0.0	76	±10.0	100 220	500 500
MHI112S-03DI5.7	12	10.8 - 13.2	117	17	3.3	303	0.0	71	±20.0	1,000	250
MHI112S-05DI5.7	12	10.8 - 13.2	117	17	5.0	200	0.0	71	±15.0	470	250
MHI112S-09DI5.7	12	10.8 - 13.2	110	17	9.0	111	0.0	76	±10.0	470	250
MHI112S-12DI5.7	12	10.8 - 13.2	108	17	12.0	84	0.0	78	±10.0	220	250
MHI112S-15DI5.7	12	10.8 - 13.2	104	17	15.0	66	0.0	79	±10.0	220	250
MHI112D-05DI5.7	12	10.8 - 13.2	116	17	±5.0	±100	±0.0	72	±15.0	220	250
MHI112D-09DI5.7	12	10.8 - 13.2	111	17	±9.0	±56	±0.0	75	±10.0	220	250
MHI112D-12DI5.7	12	10.8 - 13.2	108	17	±12.0	±42	±0.0	78	±10.0	100	250
MHI112D-15DI5.7	12	10.8 - 13.2	104	17	±15.0	±33	±0.0	79	±10.0	100	250
MHI112D-1509DI5.7	12	10.8 - 13.2	107	17	+15.0 -9.0	+33 -55	±0.0	77	±10.0	100 220	250 250
MHI115S-03DI5.7	15	13.5 - 16.5	95	16	3.3	303	0.0	70	±20.0	1,000	200
MHI115S-05DI5.7	15	13.5 - 16.5	95	16	5.0	200	0.0	70	±15.0	470	200
MHI115S-09DI5.7	15	13.5 - 16.5	89	16	9.0	111	0.0	75	±10.0	470	200
MHI115S-12DI5.7	15	13.5 - 16.5	90	16	12.0	84	0.0	75	±10.0	220	200
MHI115S-15DI5.7	15	13.5 - 16.5	84	16	15.0	66	0.0	79	±10.0	220	200
MHI115D-05DI5.7	15	13.5 - 16.5	94	16	±5.0	±100	±0.0	71	±15.0	220	200
MHI115D-09DI5.7	15	13.5 - 16.5	90	16	±9.0	±56	±0.0	75	±10.0	220	200
MHI115D-12DI5.7	15	13.5 - 16.5	86	16	±12.0	±42	±0.0	78	±10.0	100	200
MHI115D-15DI5.7	15	13.5 - 16.5	84	16	±15.0	±33	±0.0	79	±10.0	100	200
MHI115D-1509DI5.7	15	13.5 - 16.5	87	16	+15.0 -9.0	+33 -55	±0.0	76	±10.0	100 220	200 200
MHI124S-03DI5.7	24	21.6 - 26.4	60	12	3.3	303	0.0	70	±20.0	1,000	150
MHI124S-05DI5.7	24	21.6 - 26.4	60	12	5.0	200	0.0	70	±15.0	470	150
MHI124S-09DI5.7	24	21.6 - 26.4	56	12	9.0	111	0.0	75	±10.0	470	150
MHI124S-12DI5.7	24	21.6 - 26.4	53	12	12.0	84	0.0	78	±10.0	220	150
MHI124S-15DI5.7	24	21.6 - 26.4	52	12	15.0	66	0.0	80	±10.0	220	150
MHI124D-05DI5.7	24	21.6 - 26.4	59	12	±5.0	±100	±0.0	71	±15.0	220	150
MHI124D-09DI5.7	24	21.6 - 26.4	56	12	±9.0	±56	±0.0	75	±10.0	220	150
MHI124D-12DI5.7	24	21.6 - 26.4	55	12	±12.0	±42	±0.0	77	±10.0	100	150
MHI124D-15DI5.7	24	21.6 - 26.4	53	12	±15.0	±33	±0.0	78	±10.0	100	150
MHI124D-1509DI5.7	24	21.6 - 26.4	55	12	+15.0 -9.0	+33 -55	±0.0	75	±10.0	100 220	150 150

Notes:

1. The specified maximum capacitive load is for each output.
2. Load regulation is measured over a range of 20% Iout to 100% Iout.
3. When measuring output ripple & noise, it is recommended that an external capacitor (1 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.
4. The converter should be connected to a low ac-impedance source. An input 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 (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 & 15V input units, a 1.0 µF; and for 24V units a 0.47 µF.
5. Operation at no-load will not damage the unit, but they may not meet all specifications.
6. 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





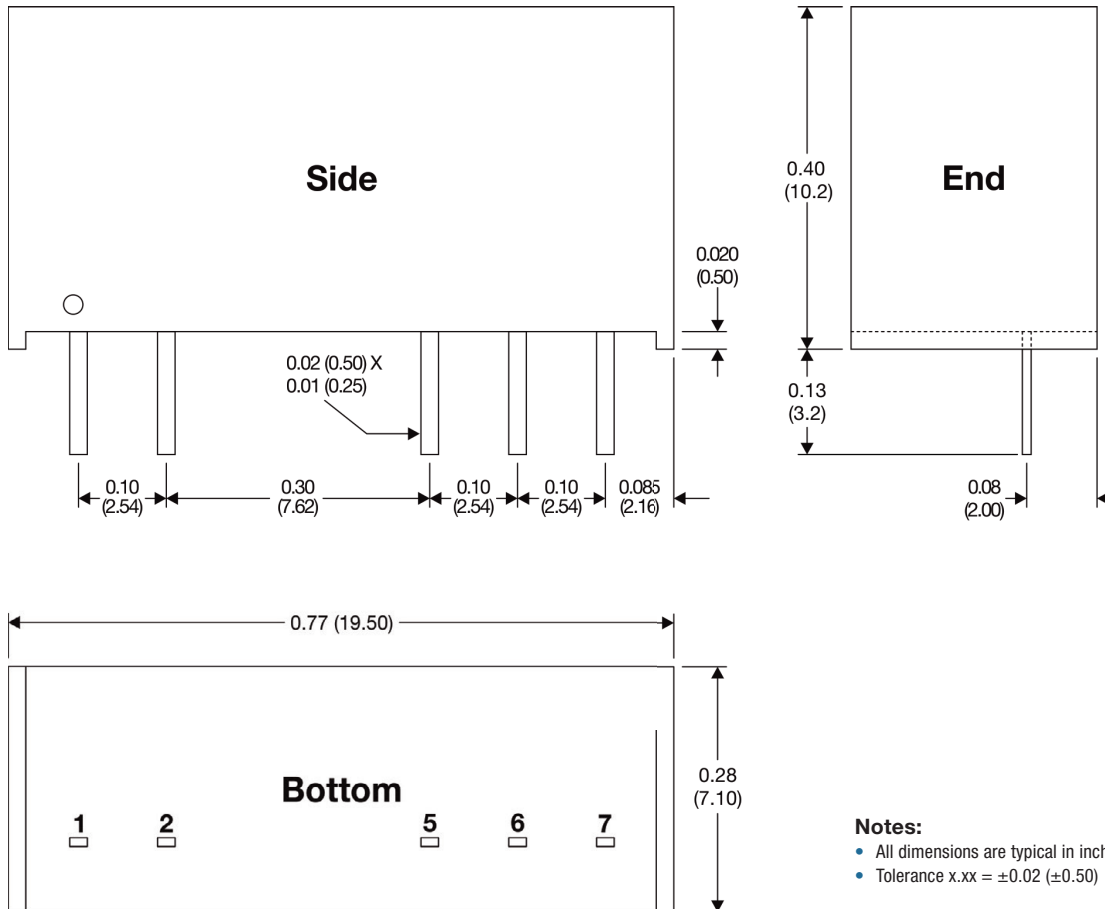
Notes:

The MHI100x-xxD series is a good choice for IGBT applications. They are designed to withstand the extra stress caused by the high voltage switching transients present in IGBT drive circuits.

The MHI1xxD-1509DI5.7 models are specifically designed for use with "962" type drivers. The IGD962 (available from MPD) is a hybrid integrated circuit specifically designed to drive N-channel IGBT modules. It provides the I/O isolation, high speed, drive voltage stability and fault protection required to control most MOS gated power devices.

The drawing at right illustrates a typical connection of the MHI105D-1509DI5.7 to the IGD962. For more information on this connection, please contact the factory.

Mechanical Dimensions



Pin Connections

Pin	Single Output
1	+VIN
2	-VIN
5	-VOUT
6	No Pin
7	+VOUT

Pin	Dual Output
1	+VIN
2	-VIN
5	-VOUT
6	Common
7	+VOUT

Notes:

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