

MHI200DI5.7 Series

High Isolation, 2W SIP Single & Dual Output DC/DC Converters



Key Features:

- 2W Output Power
- 5.7 kV Isolation
- 15 kV/ μ S CMTI
- 40 Standard Models
- Miniature SIP Case
- -40°C to +80°C Operation
- Industry Standard Pin-Out
- Low Cost

RoHS



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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	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 (0.5S 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	+80	°C
	Case			+95	
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.

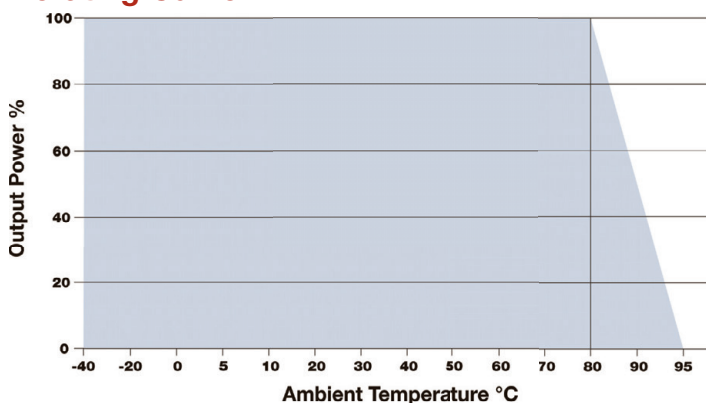
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Model Number	Input				Output			Efficiency (%, Typ)	Load Regulation (%, Max)	Capacitive Load (µF, Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
MHI205S-03DI5.7	5	4.5 - 5.5	446	35	3.3	500	10.0	74	±20.0	1,650	1,000
MHI205S-05DI5.7	5	4.5 - 5.5	500	35	5.0	400	8.0	80	±15.0	940	1,000
MHI205S-09DI5.7	5	4.5 - 5.5	493	35	9.0	222	4.4	81	±10.0	940	1,000
MHI205S-12DI5.7	5	4.5 - 5.5	492	35	12.0	168	3.4	82	±10.0	440	1,000
MHI205S-15DI5.7	5	4.5 - 5.5	501	35	15.0	132	2.6	79	±10.0	440	1,000
MHI205D-05DI5.7	5	4.5 - 5.5	513	35	±5.0	±200	±4.0	78	±15.0	440	1,000
MHI205D-09DI5.7	5	4.5 - 5.5	504	35	±9.0	±112	±2.2	80	±10.0	440	1,000
MHI205D-12DI5.7	5	4.5 - 5.5	504	35	±12.0	±84	±1.7	80	±10.0	200	1,000
MHI205D-15DI5.7	5	4.5 - 5.5	501	35	±15.0	±66	±1.3	79	±10.0	200	1,000
MHI205D-1509DI5.7	5	4.5 - 5.5	495	35	+15.0	66	1.3	80	±10.0	200	1,000
					-9.0	-110	-2.2			440	1,000
MHI212S-03DI5.7	12	10.8 - 13.2	181	17	3.3	500	10.0	76	±20.0	1,650	500
MHI212S-05DI5.7	12	10.8 - 13.2	211	17	5.0	400	8.0	79	±15.0	940	500
MHI212S-09DI5.7	12	10.8 - 13.2	206	17	9.0	222	4.4	81	±10.0	940	500
MHI212S-12DI5.7	12	10.8 - 13.2	202	17	12.0	168	3.4	83	±10.0	440	500
MHI212S-15DI5.7	12	10.8 - 13.2	201	17	15.0	132	2.6	82	±10.0	440	500
MHI212D-05DI5.7	12	10.8 - 13.2	211	17	±5.0	±200	±4.0	79	±15.0	440	500
MHI212D-09DI5.7	12	10.8 - 13.2	207	17	±9.0	±112	±2.2	81	±10.0	440	500
MHI212D-12DI5.7	12	10.8 - 13.2	205	17	±12.0	±84	±1.7	82	±10.0	200	500
MHI212D-15DI5.7	12	10.8 - 13.2	199	17	±15.0	±66	±1.3	83	±10.0	200	500
MHI212D-1509DI5.7	12	10.8 - 13.2	204	17	+15.0	66	1.3	81	±10.0	200	500
					-9.0	-110	-2.2			440	500
MHI215S-03DI5.7	15	13.5 - 16.5	143	16	3.3	500	10.0	77	±20.0	1,650	300
MHI215S-05DI5.7	15	13.5 - 16.5	169	16	5.0	400	8.0	79	±15.0	940	300
MHI215S-09DI5.7	15	13.5 - 16.5	160	16	9.0	222	4.4	83	±10.0	940	300
MHI215S-12DI5.7	15	13.5 - 16.5	162	16	12.0	168	3.4	83	±10.0	440	300
MHI215S-15DI5.7	15	13.5 - 16.5	155	16	15.0	132	2.6	85	±10.0	440	300
MHI215D-05DI5.7	15	13.5 - 16.5	165	16	±5.0	±200	±4.0	81	±15.0	440	300
MHI215D-09DI5.7	15	13.5 - 16.5	160	16	±9.0	±112	±2.2	84	±10.0	440	300
MHI215D-12DI5.7	15	13.5 - 16.5	164	16	±12.0	±84	±1.7	82	±10.0	200	300
MHI215D-15DI5.7	15	13.5 - 16.5	161	16	±15.0	±66	±1.3	82	±10.0	200	300
MHI215D-1509DI5.7	15	13.5 - 16.5	159	16	+15.0	66	1.3	83	±10.0	200	300
					-9.0	-110	-2.2			440	300
MHI224S-03DI5.7	24	21.6 - 26.4	90	12	3.3	500	10.0	76	±20.0	1,650	200
MHI224S-05DI5.7	24	21.6 - 26.4	108	12	5.0	400	8.0	77	±15.0	940	200
MHI224S-09DI5.7	24	21.6 - 26.4	103	12	9.0	222	4.4	81	±10.0	940	200
MHI224S-12DI5.7	24	21.6 - 26.4	102	12	12.0	168	3.4	82	±10.0	440	200
MHI224S-15DI5.7	24	21.6 - 26.4	101	12	15.0	132	2.6	82	±10.0	440	200
MHI224D-05DI5.7	24	21.6 - 26.4	108	12	±5.0	±200	±4.0	77	±15.0	440	200
MHI224D-09DI5.7	24	21.6 - 26.4	104	12	±9.0	±112	±2.2	81	±10.0	440	200
MHI224D-12DI5.7	24	21.6 - 26.4	104	12	±12.0	±84	±1.7	81	±10.0	200	200
MHI224D-15DI5.7	24	21.6 - 26.4	103	12	±15.0	±66	±1.3	80	±10.0	200	200
MHI224D-1509DI5.7	24	21.6 - 26.4	102	12	+15.0	66	1.3	81	±10.0	200	200
					-9.0	-110	-2.2			440	200

Notes:

1. The specified maximum capacitive load is for each output.
2. Load regulation is measured over a range of 20% I_{OUT} to 100% I_{OUT}.
3. When measuring output ripple & noise, it is recommended that an external capacitor (1 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.
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





The **MHI2xxD-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 **MHI205D-1509DI5.7** to the **IGD962**. For more information on this connection, please contact the factory.

Side View: Shows the profile of the PCB. Dimensions include a total width of 0.77 (19.50), a thickness of 0.020 (0.50), and a central slot width of 0.30 (7.62). The slot is flanked by two 0.10 (2.54) wide sections and a 0.085 (2.16) wide section. A 0.02 (0.50) X 0.01 (0.25) feature is indicated on the slot wall.

End View: Shows the end profile of the PCB. Dimensions include a total height of 0.40 (10.2), a central slot width of 0.13 (3.2), and a bottom section width of 0.08 (2.00).

Bottom View: Shows the bottom of the PCB with six mounting holes labeled 1, 2, 5, 6, and 7. The distance between the center of hole 1 and hole 2 is 0.10 (2.54). The distance between the center of hole 5 and hole 6 is 0.10 (2.54). The distance between the center of hole 6 and hole 7 is 0.085 (2.16). The total width is 0.77 (19.50) and the total height is 0.28 (7.10).

Notes:

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

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)