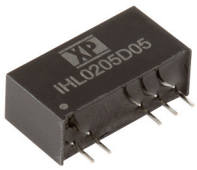
IHL02 Series

DC-DC Converter

XP Power

2 Watts

- High Isolation, 5.2kVDC (functional insulation)
- Working voltage rated for 250Vrms & 400VDC
- Single & dual outputs
- Bipolar outputs for MOSFET & IGBT drives
- Common mode transient immunity (CMTI) 20 kV/µs
- SIP7 package
- -40 °C to +95 °C operation
- Full load at 65 °C ambient
- MTBF 3.3 MHrs
- 3 year warranty



Dimensions:

IHL02:
0.77 x 0.28 x 0.39" (19.5 x 7.2 x 10.0 mm)

The IHL02 series is a low cost, high isolation, high working voltage DC-DC converter with excellent common mode transient immunity (CMTI). The low input to output capacitance of just 10pF, high continuous working voltage rating and 2.5mm isolation barrier, make the product ideal for IGBT & MOSFET driver applications.

Input

Characteristic	Minimum	Typical	maximum	Units	Notes & Conditions
Input Voltage Range	4.5		5.5	VDC	5 V nominal
	10.8		13.2		12 V nominal
	13.5		16.5		15 V nominal
	21.6		26.4		24 V nominal
Input Reflected Ripple Current		20		mA pk-pk	Through 12 µH inductor and 47 µF capacitor
Input Surge			9	VDC for 100 ms	5 V nominal
			18		12 V nominal
			20		15 V nominal
			30		24 V nominal

Output

Characteristic	Minimum	Typical	maximum	Units	Notes & Conditions
Output Voltage	3.3		30	VDC	See Models and Ratings table
Initial Set Accuracy			±5	%	At full load
Minimum Load	10			%	Minimum load required to meet specified regulation
Line Regulation			±1.2	%/1%	Output changes by max of 1.2% for each 1% change in input voltage
Load Regulation			12/10	%	For IHL0205S3V3 and IHL0205S05/Other Models. From 10% to full load, see application note
Cross Regulation		±5		%	On dual output models, when one output is at 25% load and other is varied from 10% load to full load
Ripple & Noise			150	mV pk-pk	20 MHz bandwidth. Measured using 10 µF electrolytic in parallel with 0.1 µF ceramic capacitor
Short Circuit Protection					Continuous, auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.03	%/°C	

Downloaded from Arrow.com.

Models & Ratings

Input Voltage	Output Voltage	Output Current	Input current		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
5V (4.5-5.5V)	3V3	500 mA	40 mA	435 mA	1000 µF	76%	IHL0205S3V3
	5 V	400 mA	40 mA	505 mA	470 µF	79%	IHL0205S05
	9 V	222 mA	40 mA	480 mA	470 µF	83%	IHL0205S09
	12 V	167 mA	40 mA	475 mA	220 µF	84%	IHL0205S12
	15 V	133 mA	40 mA	470 mA	220 µF	85%	IHL0205S15
	±5 V	±200 mA	40 mA	505 mA	±220 µF	79%	IHL0205D05
	±9 V	±111 mA	40 mA	490 mA	±220 µF	82%	IHL0205D09
	±12 V	±83.3 mA	40 mA	480 mA	±100 µF	83%	IHL0205D12
	±15 V	±66.7 mA	40 mA	475 mA	±100 µF	84%	IHL0205D15
	+15/-9 V	+66.7/-111 mA	40 mA	480 mA	+100/-220 µF	83%	IHL0205D1509
12V (10.8-13.2V)	3V3	500 mA	30 mA	185 mA	1000 µF	74%	IHL0212S3V3
	5 V	400 mA	30 mA	210 mA	470 µF	79%	IHL0212S05
	9 V	222 mA	30 mA	205 mA	470 µF	82%	IHL0212S09
	12 V	167 mA	30 mA	205 mA	220 µF	82%	IHL0212S12
	15 V	133 mA	30 mA	200 mA	220 µF	83%	IHL0212S15
	±5 V	±200 mA	30 mA	210 mA	±220 µF	79%	IHL0212D05
	±9 V	±111 mA	30 mA	205 mA	±220 µF	81%	IHL0212D09
	±12 V	±83.3 mA	30 mA	200 mA	±100 µF	83%	IHL0212D12
	±15 V	±66.7 mA	30 mA	200 mA	±100 µF	83%	IHL0212D15
	+15/-9V	+66.7/-111 mA	30 mA	210 mA	+100/-220 µF	80%	IHL0212D1509
15V (13.5-16.5V)	3V3	500 mA	25 mA	150 mA	1000 µF	74%	IHL0215S3V3
	5 V	400 mA	25 mA	170 mA	470 µF	78%	IHL0215S05
	9 V	222 mA	25 mA	165 mA	470 µF	81%	IHL0215S09
	12 V	167 mA	25 mA	165 mA	220 µF	82%	IHL0215S12
	15 V	133 mA	25 mA	160 mA	220 µF	83%	IHL0215S15
	±5 V	±200 mA	25 mA	170 mA	±220 µF	79%	IHL0215D05
	±9 V	±111 mA	25 mA	165 mA	±220 µF	81%	IHL0215D09
	±12 V	±83.3 mA	25 mA	160 mA	±100 µF	83%	IHL0215D12
	±15 V	±66.7 mA	25 mA	165 mA	±100 µF	82%	IHL0215D15
	+15/-9V	+66.7/-111 mA	25 mA	165 mA	+100/-220 µF	81%	IHL0215D1509
24V (21.6-26.4V)	3V3	500 mA	20 mA	95 mA	1000 µF	73%	IHL0224S3V3
	5 V	400 mA	20 mA	105 mA	470 µF	78%	IHL0224S05
	9 V	222 mA	20 mA	105 mA	470 µF	81%	IHL0224S09
	12 V	167 mA	20 mA	105 mA	220 µF	81%	IHL0224S12
	15 V	133 mA	20 mA	105 mA	220 µF	81%	IHL0224S15
	±5 V	±200 mA	20 mA	105 mA	±220 µF	79%	IHL0224D05
	±9 V	±111 mA	20 mA	105 mA	±220 µF	80%	IHL0224D09
	±12 V	±83.3 mA	20 mA	105 mA	±100 µF	81%	IHL0224D12
	±15 V	±66.7 mA	20 mA	100 mA	±100 µF	82%	IHL0224D15
	+15/-9V	+66.7/-111 mA	20 mA	105 mA	+100/-220 µF	80%	IHL0224D1509

Notes

Input currents measured at nominal input voltage.

General

Characteristic	Minimum	Typical	maximum	Units	Notes & Conditions
Efficiency		80		%	See Models and Ratings table
Isolation: Input to Output	5200			VDC	Functional (100% production test for 60s)
Isolation Working Voltage			250	VAC rms	400 VDC
Isolation Resistance	10^9			Ω	
Isolation Capacitance		7		pF	
Switching Frequency	50		100	kHz	
Power Density			23.7	W/in³	
Mean Time Between Failure	3.3			MHrs	MIL-HDBK-217F, +25 °C GB
Case Material					Non-conductive black plastic (UL94V-0)
Pin Material					C5191R-H solder coated phospher bronze
Potting Material					Epoxy (UL94V-0)
Solder Process			260	°C	1.5mm from case, 10 s max.
Weight		0.006 (2.7)		lb (g)	

Downloaded from Arrow.com.

Environmental

Characteristic	Minimum	Typical	maximum	Units	Notes & Conditions
Operating Temperature	-40		+95	°C	Derate Linearly from 100% at 65 °C to no load at 95 °C
Storage Temperature	-40		+125	°C	
Case Temperature			+100	°C	
Humidity	2.5		95	%RH	Non-condensing
Cooling					Natural convection

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	See Application Note
Radiated	EN55032	Class B	

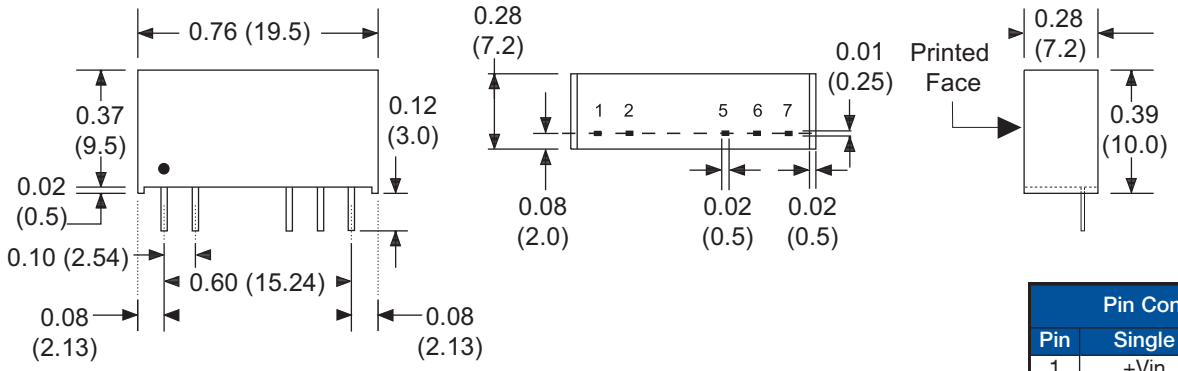
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±6/±8 kV	A	Contact/Air Discharge
Radiated Immunity	EN61000-4-3	10 Vrms	A	
EFT/Burst	EN61000-4-4	2 kV	A	External components required, see application notes
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	1 A/m	A	
CMTI		20 kV/µs		1500 VDC

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Mechanical Details



Pin Connections		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Common
7	+Vout	+Vout

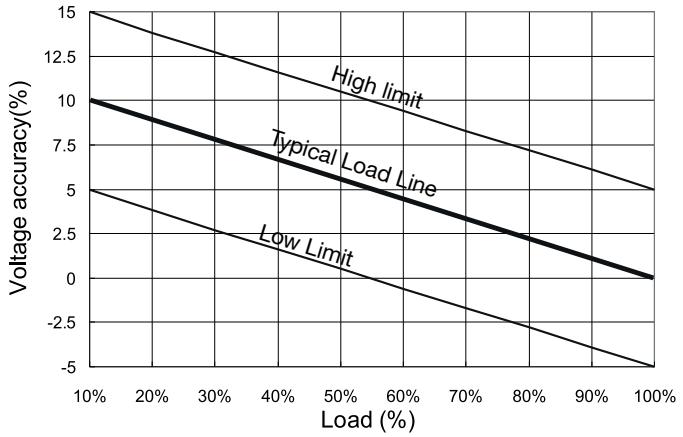
Notes

1. All dimensions are in inches (mm)
2. Weight: 0.006 lbs (2.7 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch and length tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Downloaded from Arrow.com.

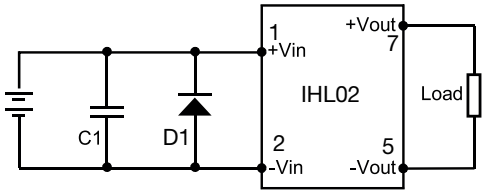
Application Note

Regulation



EFT Filter

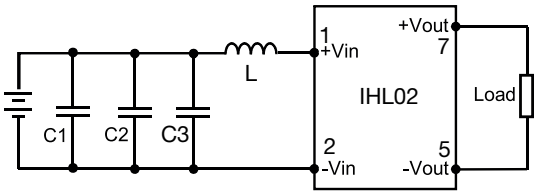
Input components C1 and D1 are used to help meet EFT and surge test requirements for the module.



	C1	D1
IHL0205XXXX	330 µF/50 V	SMDJ9.0 A
IHL0212XXXX	330 µF/50 V	SMDJ13 A
IHL0215XXXX	330 µF/50 V	SMDJ18 A
IHL0224XXXX	1000 µF/35 V	SMDJ24 A

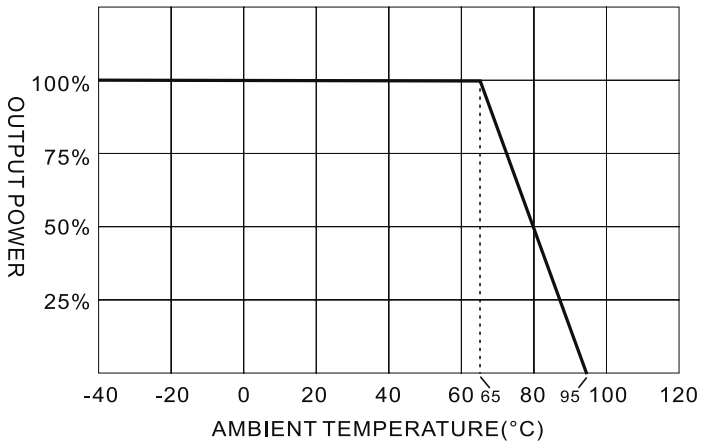
EMI Filter

Input filter components (C1,C2, C3 and L) are used to help meet conducted emissions requirements for the module. These components should be mounted as close as possible to the module, and all leads should be minimised to decrease radiated noise.



	C1	L	C2	C3
IHL0205XXXX	1206, 4.7 µF/ 16 V	6.8 µH		
IHL0212XXXX	1206, 22 µF/ 25 V	6.8 µH		
IHL0215XXXX	1206, 22 µF/ 25 V	6.8 µH		
IHL0224XXXX	1210, 10 µF/ 35 V	10 µH	1210, 10 µF/ 35 V	1210, 10 µF/ 35 V

Derating Curve



Downloaded from Arrow.com.