IEU02 Series

DC-DC Converter

XP Power

2 Watt

- Regulated Single & Dual Output
- 2:1 Input Range
- Compact DIP8 Package
- 1500 VDC Isolation
- Operating Temperature -40 °C to +95 °C
- ITE Safety Approvals
- Full Load at 70 °C
- Class A Conducted & Radiated Emissions
- 3 Year Warranty



Dimensions:

IEU02:
0.55 x 0.55 x 0.31" (14.0 x 14.0 x 8.0 mm)

Models & Ratings

Input voltage	Output voltage	Output current	Input current[1]		Maximum capacitive load[2]	Efficiency	Model number
			No load	Full load			
4.5-10V	3V3	400 mA	40 mA	335 mA	100 µF	79%	IEU0205S3V3
	5 V	400 mA		495 mA	100 µF	81%	IEU0205S05
	12 V	167 mA		470 mA	100 µF	85%	IEU0205S12
	15 V	134 mA		460 mA	100 µF	87%	IEU0205S15
	±5 V	±200 mA		480 mA	±100 µF	83%	IEU0205D05
	±12 V	±83 mA		470 mA	±100 µF	85%	IEU0205D12
	±15 V	±67 mA		475 mA	±100 µF	85%	IEU0205D15
9-18V	3V3	400 mA	27 mA	140 mA	100 µF	80%	IEU0212S3V3
	5 V	400 mA		200 mA	100 µF	83%	IEU0212S05
	12 V	167 mA		190 mA	100 µF	87%	IEU0212S12
	15 V	134 mA		195 mA	100 µF	87%	IEU0212S15
	±5 V	±200 mA		200 mA	±100 µF	84%	IEU0212D05
	±12 V	±83 mA		195 mA	±100 µF	86%	IEU0212D12
	±15 V	±67 mA		195 mA	±100 µF	86%	IEU0212D15
18-36V	3V3	400 mA	15 mA	70 mA	100 µF	79%	IEU0224S3V3
	5 V	400 mA		100 mA	100 µF	84%	IEU0224S05
	12 V	167 mA		95 mA	100 µF	86%	IEU0224S12
	15 V	134 mA		95 mA	100 µF	87%	IEU0224S15
	±5 V	±200 mA		100 mA	±100 µF	84%	IEU0224D05
	±12 V	±83 mA		95 mA	±100 µF	86%	IEU0224D12
	±15 V	±67 mA		95 mA	±100 µF	86%	IEU0224D15
36-75V	3V3	400 mA	8 mA	35 mA	100 µF	79%	IEU0248S3V3
	5 V	400 mA		50 mA	100 µF	83%	IEU0248S05
	12 V	167 mA		50 mA	100 µF	85%	IEU0248S12
	15 V	134 mA		50 mA	100 µF	86%	IEU0248S15
	±5 V	±200 mA		50 mA	±100 µF	82%	IEU0248D05
	±12 V	±83 mA		50 mA	±100 µF	84%	IEU0248D12
	±15 V	±67 mA		50 mA	±100 µF	84%	IEU0248D15

Notes

1. Input currents measured at nominal input voltage.
2. Maximum capacitive load is per output.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.5		10	VDC	5 V nominal
	9.0		18		12 V nominal
	18.0		36		24 V nominal
	36.0		75		48 V nominal
Input Filter	Internal Capacitor				
Input Surge			12	VDC for 1 s	5 V nominal
			25		12 V nominal
			50		24 V models
			100		48 V models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		30	VDC	See Models and Ratings table
Initial Set Accuracy			±1.5	%	At full load
Output Voltage Balance			±2.0	%	For dual output with balanced laods
Minimum Load				A	No minimum load required
Line Regulation			±0.2	%	From minimum to maximum input at full load
Load Regulation			±1.0	%	From 0 to full load
Cross Regulation			±5.0	%	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Transient Response			5	% deviation	Recovery within 1% in less than 500 µs for a 25% load change.
Ripple & Noise		70		mV pk-pk	20 MHz bandwidth. Measured using 0.47 µF ceramic capacitor.
Overload Protection		180		%	
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		84		%	See Models and Ratings table
Isolation: Input to Output	1500/1800			VDC	60 s/1 s
Isolation Resistance	10^9			Ω	At 500 VDC
Isolation Capacitance		100		pF	
Switching Frequency		100		kHz	
Power Density			21.3	W/in^3	
Mean Time Between Failure		4.2		MHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.008 (3.9)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+95	°C	See Derating Curve.
Storage Temperature	-50		+125	°C	
Case Temperature			+95	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection
Case Flammability	UL 94V-0 Rated				Non conductive black plastic
Lead-Free Reflow Solder Process					IPC/JEDEC J-STD-020D.1

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55022	Class A	See application note
Radiated	EN55022	Class A	See application note

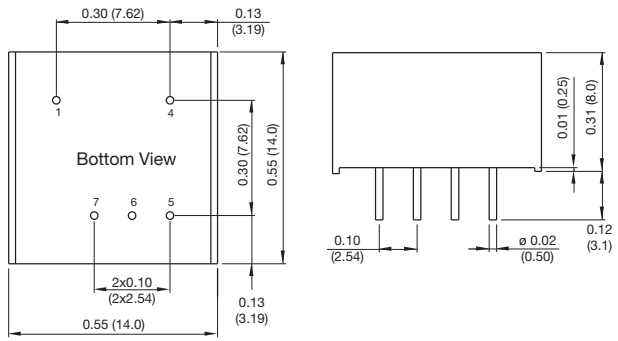
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±8 kV air discharge, ±6 kV contact	A	
Radiated	EN61000-4-3	10 V/m	A	
EFT/Burst	EN61000-4-4	±2 kV	A	With external input capacitor, suggested part is CHEMI-CON KY 220µF/100V
Surge	EN61000-4-5	±1 kV	A	With external input capacitor, suggested part is CHEMI-CON KY 220µF/100V
Conducted	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	3 A/m	A	

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CB Report	IEC60950-1	Information Technology
UL	UL/cUL60950-1	Information Technology

Mechanical Details



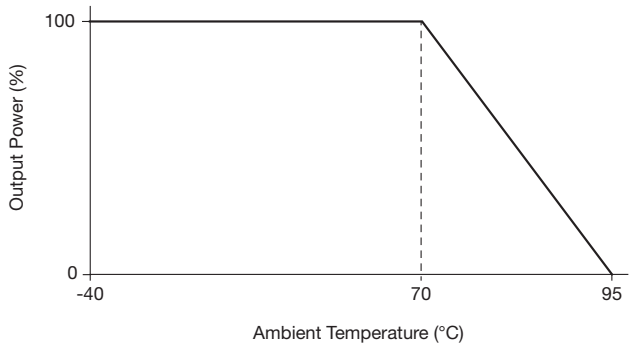
Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
4	+Vin	+Vin
5	+Vout	+Vout
6	No Pin	Common
7	-Vout	-Vout

Notes

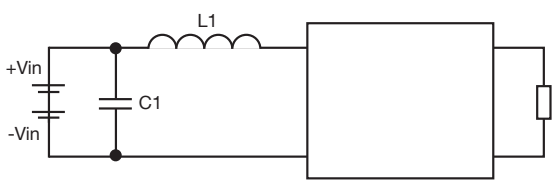
1. All dimensions are in inches (mm)
2. Weight: 0.008 lbs (3.9g) approx.
3. Tolerance: X.XX±0.01 (X.X±0.25)
   X.XXX±0.005 (X.XX±0.13)
4. Pin Tolerance: ±0.002 (±0.05)

Application Notes

Derating Curve



EMI Filter



Model	C1	L1
IEU0205	4.7 µF/16 V	3.3 µH
IEU0212	4.7 µF/25 V	18.0 µH
IEU0224	4.7 µF/50 V	39.0 µH
IEU0248	2.2 µF/100 V	68.0 µH

C1 = 1206 X7R MLCC, L1 = SCD0504T series