

# IDD05U SERIES

DC - DC CONVERTER  
5 ~ 6W SINGLE & DUAL OUTPUT



## FEATURES

- EFFICIENCY UP TO 82%
- 4:1 WIDE INPUT RANGE
- I/O ISOLATION
- INPUT Pi FILTER
- SHORT CIRCUIT PROTECTION
- HIGH PERFORMANCE
- UL/cUL/TUV/CE
- 3 YEARS WARRANTY



## MODEL LIST

MODEL NO.	INPUT VOLTAGE	INPUT CURRENT (typ.)   (max.)		OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	CAPACITOR LOAD (max.)
<b>Single Output Models</b>									
IDD05 - 03S4U	9~36 VDC	0.28 A	0.72 A	5 WATTS	+ 3.3VDC	1500 mA	72%	74%	2200 $\mu$ F
IDD05 - 05S4U	9~36 VDC	0.28 A	0.72 A	5 WATTS	+ 5 VDC	1000 mA	74%	76%	2200 $\mu$ F
IDD05 - 12S4U	9~36 VDC	0.31 A	0.84 A	6 WATTS	+ 12 VDC	500 mA	80%	82%	1000 $\mu$ F
IDD05 - 15S4U	9~36 VDC	0.31 A	0.84 A	6 WATTS	+ 15 VDC	400 mA	80%	82%	1000 $\mu$ F
IDD05 - 03S5U	18~75 VDC	0.14 A	0.37 A	5 WATTS	+ 3.3VDC	1500 mA	72%	74%	2200 $\mu$ F
IDD05 - 05S5U	18~75 VDC	0.14 A	0.37 A	5 WATTS	+ 5 VDC	1000 mA	74%	76%	2200 $\mu$ F
IDD05 - 12S5U	18~75 VDC	0.15 A	0.44 A	6 WATTS	+ 12 VDC	500 mA	80%	82%	1000 $\mu$ F
IDD05 - 15S5U	18~75 VDC	0.15 A	0.44 A	6 WATTS	+ 15 VDC	400 mA	80%	82%	1000 $\mu$ F
<b>Dual Output Models</b>									
IDD05 - 05D4U	9~36 VDC	0.28 A	0.73 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	74%	76%	$\pm$ 2200 $\mu$ F
IDD05 - 12D4U	9~36 VDC	0.32 A	0.86 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	78%	80%	$\pm$ 1000 $\mu$ F
IDD05 - 15D4U	9~36 VDC	0.31 A	0.86 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	78%	80%	$\pm$ 1000 $\mu$ F
IDD05 - 05D5U	18~75 VDC	0.13 A	0.37 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	76%	78%	$\pm$ 2200 $\mu$ F
IDD05 - 12D5U	18~75 VDC	0.16 A	0.44 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	78%	80%	$\pm$ 1000 $\mu$ F
IDD05 - 15D5U	18~75 VDC	0.16 A	0.44 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	78%	80%	$\pm$ 1000 $\mu$ F

### SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

#### GENERAL

Characteristics	Conditions	min.	typ.	max.	unit
Switching frequency	Vi nom, Io nom		200		KHz
Isolation voltage	Input - Output	1,500			VDC
Isolation resistance	Input - Output, @ 500VDC	100			MΩ
Isolation capacitance	100KHz / IV			1,000	PF
Ambient temperature	Operating at Vi nom, Io nom	-40		+ 71	°C
Case temperature	Operating at Vi nom, Io nom			+ 100	°C
Derating	Vi nom	See derating curve			
Storage temperature	Non operational	-40		+ 100	°C
Relative humidity	Vi nom, Io nom	20		95	% RH
Temperature coefficient	Vi nom, Io min			± 0.02	% / °C
Dimension		L50.8 x W25.4 x H10.16			mm
MTBF	Bellcore issue 6@40°C, GB		1,446,000		Hours
Cooling	Free air convection				

#### INPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Input voltage range	Ta min ... Ta max, Io nom	9	24	36	VDC
		18	48	75	VDC
No load input current	Vi nom, Io = 0	24V		20	mA
		48V		15	mA
Input voltage w/o damage	Io nom	24V		40	VDC
		48V		80	VDC
Startup voltage	Io nom	24V	8.5		VDC
		48V	16		VDC
Input filter	Pi type				

#### OUTPUT SPECIFICATIONS

Characteristics	Conditions	min.	typ.	max.	unit
Output voltage accuracy	Vi nom, Io nom			± 2	%
Minimum load	Vi nom single output models	0			%
	Vi nom dual output models (each output)	10			%
Line regulation	Io nom, Vi min ... Vi max			± 1	%
Load regulation	Vi nom, Io 0 ... Io nom, single output models			± 2	%
	Vi nom, Io min ... Io nom, dual output models			± 5	%
Cross regulation (Dual model)	Aymmetrical load 10% - 100% FL			± 5	%
Startup time	Vi nom, Io nom			30	ms
Transient recovery time	Vi nom, I ~ 0.5 Io nom			500	μs
Ripple & noise *	Vi nom, Io nom, BW = 20MHz	3.3V & 5V		100	mV
		12V, 15V & dual		150	mV
Efficiency	Vi nom, Io nom, Po / Pi	Up to 82%, See model list and efficiency curve			

\* Note : Output must be added 0.1 μF / 35V capacitor when application.

### SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

### CONTROL AND PROTECTION

Input reversed	Shunt diode built in, external fuse recommended 1A
Output short circuit	Current limited (Auto-recovery)
Rated over load protection	110%min....160%max

### APPROVALS AND STANDARD

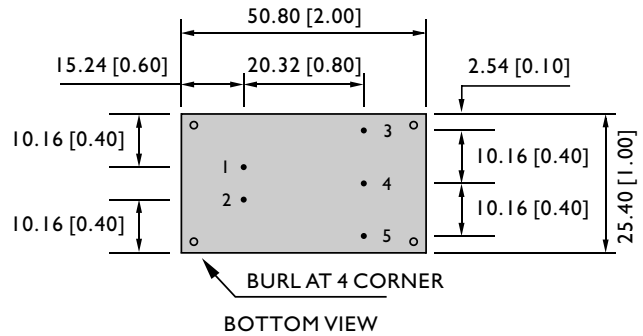
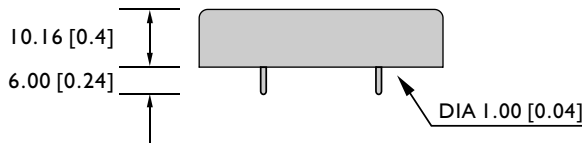
UL/cUL	UL 60950-1 Recognized
cTUVus	UL 62368-1
TUV	EN 62368-1
CE	EN 61204-3, EN 55032 Class A, EN 61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-6
Vibration	meet IEC 60068-2-6 (10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)

### PHYSICAL CHARACTERISTICS

Case size	50.8 x 25.4 x 10.16 mm (2 x 1 x 0.4 inches)
Case material	Plastic base / Metal case
Weight	35 g
Potting material	Silicone

### MECHANISM & PIN CONFIGURATION

mm [inch]



GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

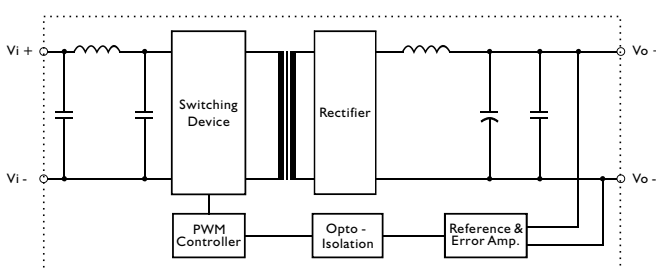
### PIN ASSIGNMENT

#### GENERAL

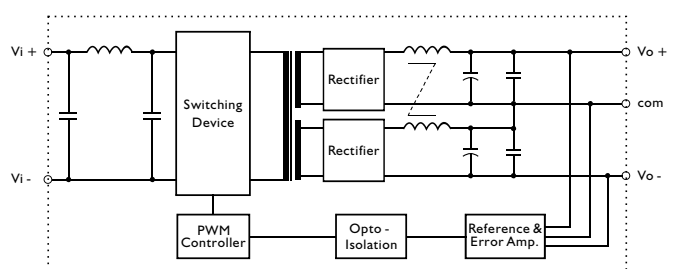
PIN NO.	1	2	3	4	5
SINGLE	Vi +	Vi -	Vo +	NO PIN	Vo -
DUAL	Vi +	Vi -	Vo +	com	Vo -

### CIRCUIT SCHEMATIC

• Block diagram for IDD05U series with single output

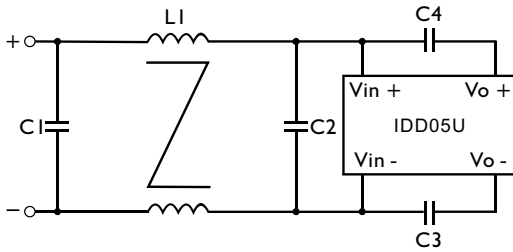


• Block diagram for IDD05U series with dual output



### RECOMMENDED CIRCUIT

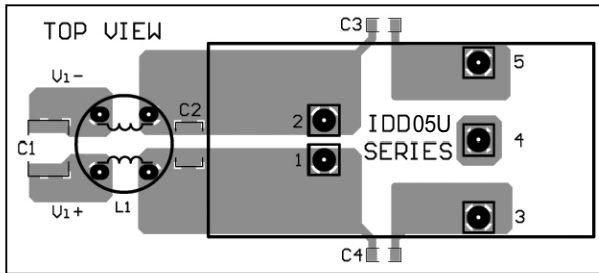
- Recommended filter for EN 55032 Class B compliance



- The components used in the above figure, together with the manufacturer part numbers for these components, are as follows.

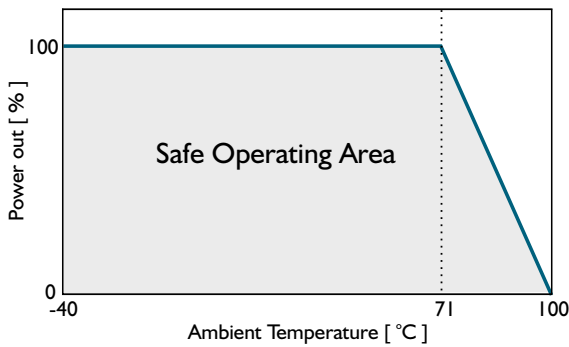
	C1	C2	C3	C4	L1
IDD05-XXX4U	3.3 $\mu$ F / 50V MLCC	2.2 $\mu$ F / 50V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	500 $\mu$ H Common choke
IDD05-XXX5U	3.3 $\mu$ F / 100V MLCC	2.2 $\mu$ F / 100V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	1 mH Common choke

- Recommended EN 55032 Class B filter circuit layout.

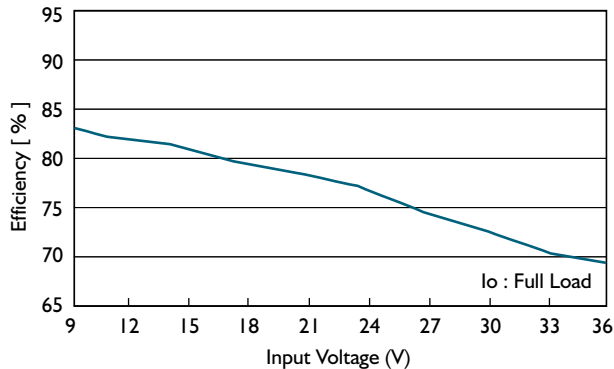


### DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage  
IDD05-05S4U



Efficiency Vs Output Load  
IDD05-05S4U

