

IDD05U SERIES

DC - DC CONVERTER

5 ~ 6W SINGLE & DUAL OUTPUT



FEATURES

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



EN 60950-1



UL 60950-1

MODEL LIST

MODEL NO.	INPUT VOLTAGE	INPUT CURRENT (typ.) (max.)		OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	CAPACITOR LOAD (max.)
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Single Output Models

IDD05 - 03S4U	9~36 VDC	0.28 A	0.72 A	5 WATTS	+ 3.3VDC	1500 mA	72%	74%	2200 μ F
IDD05 - 05S4U	9~36 VDC	0.28 A	0.72 A	5 WATTS	+ 5 VDC	1000 mA	74%	76%	2200 μ F
IDD05 - 12S4U	9~36 VDC	0.31 A	0.84 A	6 WATTS	+ 12 VDC	500 mA	80%	82%	1000 μ F
IDD05 - 15S4U	9~36 VDC	0.31 A	0.84 A	6 WATTS	+ 15 VDC	400 mA	80%	82%	1000 μ F
IDD05 - 03S5U	18~75 VDC	0.14 A	0.37 A	5 WATTS	+ 3.3VDC	1500 mA	72%	74%	2200 μ F
IDD05 - 05S5U	18~75 VDC	0.14 A	0.37 A	5 WATTS	+ 5 VDC	1000 mA	74%	76%	2200 μ F
IDD05 - 12S5U	18~75 VDC	0.15 A	0.44 A	6 WATTS	+ 12 VDC	500 mA	80%	82%	1000 μ F
IDD05 - 15S5U	18~75 VDC	0.15 A	0.44 A	6 WATTS	+ 15 VDC	400 mA	80%	82%	1000 μ F

Dual Output Models

IDD05 - 05D4U	9~36 VDC	0.28 A	0.73 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	74%	76%	$\pm$ 2200 μ F
IDD05 - 12D4U	9~36 VDC	0.32 A	0.86 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	78%	80%	$\pm$ 1000 μ F
IDD05 - 15D4U	9~36 VDC	0.31 A	0.86 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	78%	80%	$\pm$ 1000 μ F
IDD05 - 05D5U	18~75 VDC	0.13 A	0.37 A	5 WATTS	$\pm$ 5 VDC	$\pm$ 500 mA	76%	78%	$\pm$ 2200 μ F
IDD05 - 12D5U	18~75 VDC	0.16 A	0.44 A	6 WATTS	$\pm$ 12 VDC	$\pm$ 250 mA	78%	80%	$\pm$ 1000 μ F
IDD05 - 15D5U	18~75 VDC	0.16 A	0.44 A	6 WATTS	$\pm$ 15 VDC	$\pm$ 200 mA	78%	80%	$\pm$ 1000 μ 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	1500			VDC
Isolation resistance	Input - Output, @ 500VDC	100			MΩ
Isolation capacitance	100KHz / 1V			1000	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		1446000		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 models		20	mA
		48V models		15	mA
Input voltage w/o damage	Io nom	24V models		40	VDC
		48V models		80	VDC
Startup voltage	Io nom	24V models	8.5		VDC
		48V models	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	0			%
	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 models		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

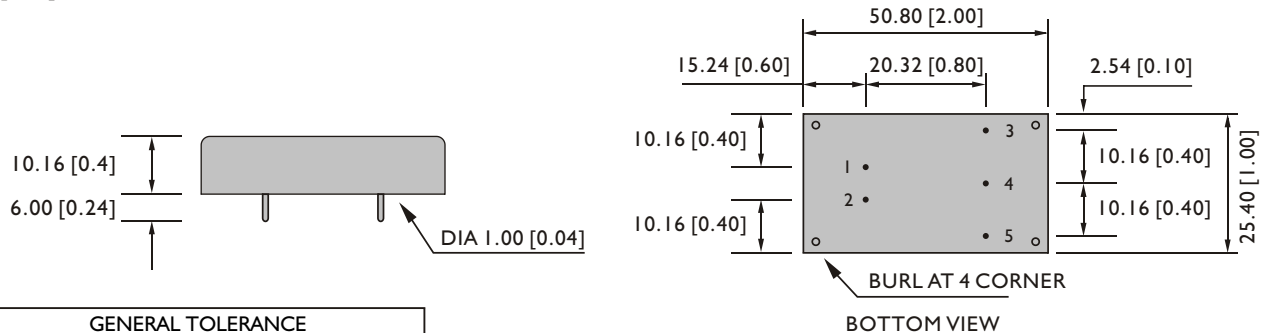
UL/cUL	UL 60950-1 Recognized
TUV	EN 60950-1, CB scheme
CE	EN 61204-3, EN 55022 Class A, EN 61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-6
Vibration	meet IEC 60068-2-6 (10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)

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]

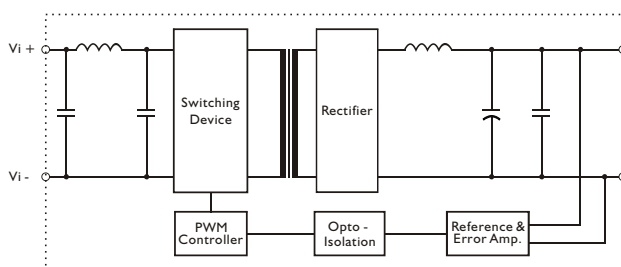
PIN ASSIGNMENT

GENERAL

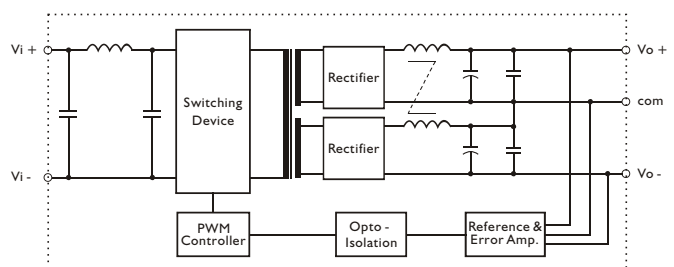
PIN NO.	1	2	3	4	5
SINGLE	Vi +	Vi -	Vo +	NO PIN	Vo -
DUAL	Vi +	Vi -	Vo +	com	Vo -

CIRCUIT SCHEMATIC

• Block diagram for IDD05U series with single output

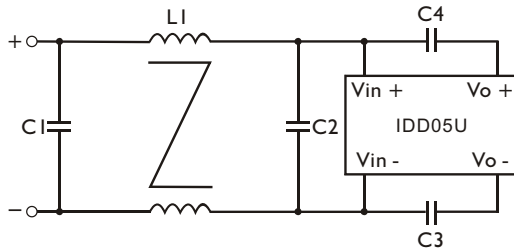


• Block diagram for IDD05U series with dual output



RECOMMENDED CIRCUIT

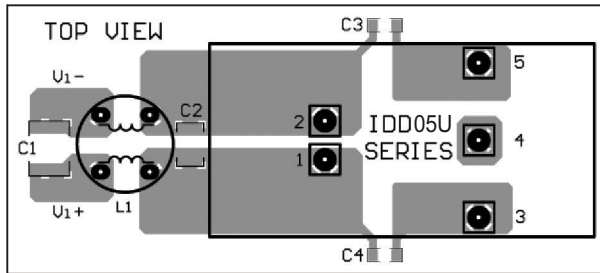
- Recommended filter for EN55022 Class B compliance



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

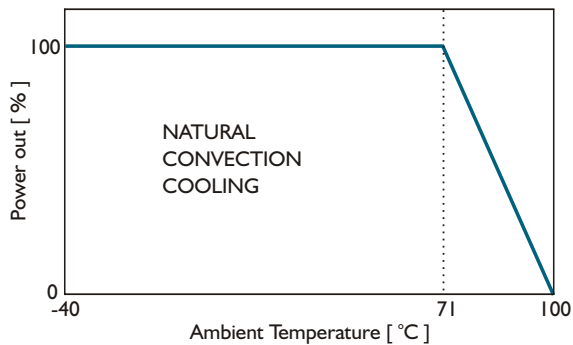
	C1	C2	C3	C4	L1
IDD05-XXX4U	3.3 μ F / 50V MLCC	2.2 μ F / 50V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	500 μ H Common choke
IDD05-XXX5U	3.3 μ F / 100V MLCC	2.2 μ F / 100V MLCC	1nF / 2KV MLCC	1nF / 2KV MLCC	1 mH Common choke

- Recommended EN 55022 Class B filter circuit layout.

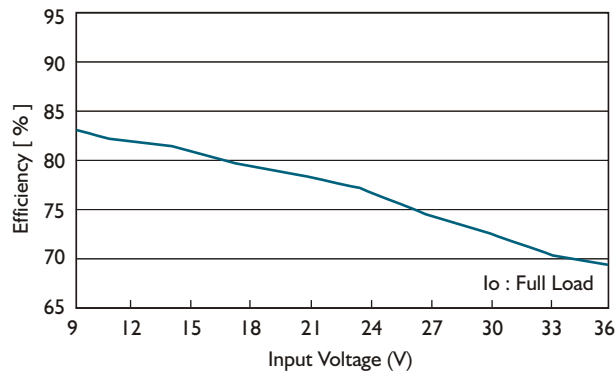


DERATING AND EFFICIENCY CURVE

Temperature derating curve



Efficiency Vs Input Voltage
IDD05-05S4U



Efficiency Vs Output Load
IDD05-05S4U

