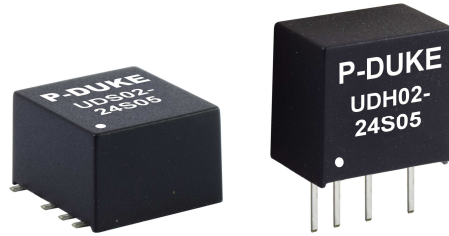


# UDS02 UDH02 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE  
UP TO 2.01 Watts



## FEATURES

- ULTRA SMALL SMD PACKAGE, 0.47 x 0.44 x 0.31 INCH  
SIP PACKAGE, 0.47 x 0.30 x 0.43 INCH
- NO MINIMUM LOAD REQUIRED
- REGULATED OUTPUT VOLTAGE
- CONTINUOUS SHORT CIRCUIT PROTECTION
- 1600VDC INPUT TO OUTPUT ISOLATION
- SAFETY MEETS UL60950-1, EN60950-1, & IEC60950-1
- CE MARKED
- COMPLIANT TO RoHS II & REACH

## APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- MEASUREMENT EQUIPMENT
- SEMICONDUCTOR EQUIPMENT

## TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

Model Number	Input Range	Output Voltage	Output Current @ Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	µF
UDS(H)02-05S3P3	4.5 ~ 13.2	3.3	500	55	77	3300
UDS(H)02-05S05	4.5 ~ 13.2	5	400	55	80	1680
UDS(H)02-05S12	4.5 ~ 13.2	12	167	65	83	820
UDS(H)02-05S15	4.5 ~ 13.2	15	134	65	82	680
UDS(H)02-05S24	4.5 ~ 13.2	24	83	65	82	220
UDS(H)02-05D05	4.5 ~ 13.2	±5	±200	65	78	±1000
UDS(H)02-05D12	4.5 ~ 13.2	±12	±83	65	82	±470
UDS(H)02-05D15	4.5 ~ 13.2	±15	±67	65	80	±330
UDS(H)02-12S3P3	9 ~ 18	3.3	500	25	77	3300
UDS(H)02-12S05	9 ~ 18	5	400	25	80	1680
UDS(H)02-12S12	9 ~ 18	12	167	25	84	820
UDS(H)02-12S15	9 ~ 18	15	134	32	83	680
UDS(H)02-12S24	9 ~ 18	24	83	32	83	220
UDS(H)02-12D05	9 ~ 18	±5	±200	32	79	±1000
UDS(H)02-12D12	9 ~ 18	±12	±83	32	83	±470
UDS(H)02-12D15	9 ~ 18	±15	±67	32	81	±330
UDS(H)02-24S3P3	18 ~ 36	3.3	500	15	77	3300
UDS(H)02-24S05	18 ~ 36	5	400	15	78	1680
UDS(H)02-24S12	18 ~ 36	12	167	15	84	820
UDS(H)02-24S15	18 ~ 36	15	134	15	84	680
UDS(H)02-24S24	18 ~ 36	24	83	15	82	220
UDS(H)02-24D05	18 ~ 36	±5	±200	15	80	±1000
UDS(H)02-24D12	18 ~ 36	±12	±83	15	83	±470
UDS(H)02-24D15	18 ~ 36	±15	±67	15	82	±330
UDS(H)02-48S3P3	36 ~ 75	3.3	500	8	76	3300
UDS(H)02-48S05	36 ~ 75	5	400	8	79	1680
UDS(H)02-48S12	36 ~ 75	12	167	8	83	820
UDS(H)02-48S15	36 ~ 75	15	134	8	83	680
UDS(H)02-48S24	36 ~ 75	24	83	8	82	220
UDS(H)02-48D05	36 ~ 75	±5	±200	8	78	±1000
UDS(H)02-48D12	36 ~ 75	±12	±83	8	82	±470
UDS(H)02-48D15	36 ~ 75	±15	±67	8	80	±330

**PART NUMBER STRUCTURE**

<b>UDS02</b> -	<b>48</b>	<b>S</b>	<b>05</b>
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)
<b>UDS</b> : SMD type	<b>05</b> :4.5~13.2	<b>S</b> :Single	<b>3P3</b> :3.3
<b>UDH</b> : SIP type	<b>12</b> :9~18 <b>24</b> :18~36 <b>48</b> :36~75		<b>05</b> :5 <b>12</b> :12 <b>15</b> :15 <b>24</b> :24
		<b>D</b> : Dual	<b>05</b> :± 5 <b>12</b> :±12 <b>15</b> :±15

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	5Vin(nom)	4.5	5	13.2	VDC
	12Vin(nom)	9	12	18	
	24Vin(nom)	18	24	36	
	48Vin(nom)	36	48	75	
Start up time	Constant resistive load	Power up		5	ms
Input surge voltage	1 second, max.	5Vin(nom)		15	VDC
		12Vin(nom)		25	
		24Vin(nom)		50	
		48Vin(nom)		100	
Input reflected ripple current <sup>(1)</sup>	5Vin(nom)		50		mAp-p
	12Vin(nom)		50		
	24Vin(nom)		30		
	48Vin(nom)		30		
Input filter					Capacitor type

**OUTPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit	
Voltage accuracy		-1.0		+1.0	%	
Line regulation	Low Line to High Line at Full Load	-0.2		+0.2	%	
Load regulation	No Load to Full Load	Single		+1.0	%	
		Dual		+1.0		
	10% Load to 90% Full Load	Single	-0.5		+0.5	%
		Dual	-0.8		+0.8	
Cross regulation	Asymmetrical load 25%/100% FL	-5.0		+5.0	%	
Ripple and noise	Measured by 20MHz bandwidth		50		mVp-p	
Temperature coefficient		-0.02		+0.02	%/°C	
Transient response recovery time	25% load step change		500		µs	
Short circuit protection					Continuous, automatics recovery	

**GENERAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	1600			VDC
Isolation resistance	500VDC	1			GΩ
Isolation capacitance				75	pF
Switching frequency		100			kHz
Safety meets					UL60950-1 EN60950-1 IEC60950-1
Case material					Non-conductive black plastic
Base material					None
Potting material					Silicone (UL94 V-0)
Weight					2.1g(0.07oz)
MTBF	MIL-HDBK-217F, Full load				5.735 x 10 <sup>6</sup> hrs

**ENVIRONMENTAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		105	°C
Storage temperature range		-55		+125	°C
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

**EMC SPECIFICATIONS**

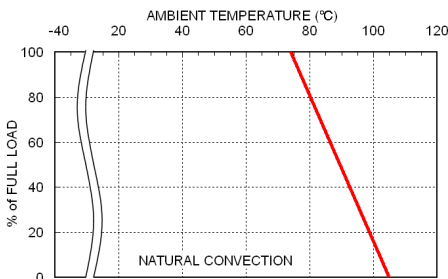
Parameter	Conditions	Level
EMI <sup>(1)</sup>	EN55022	Class A · Class B
ESD	EN61000-4-2 Air ± 8kV Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient <sup>(2)</sup>	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge <sup>(2)</sup>	EN61000-4-5 ±1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 100A/m continuous; 1000A/m 1 second	Perf. Criteria A

**Note:**

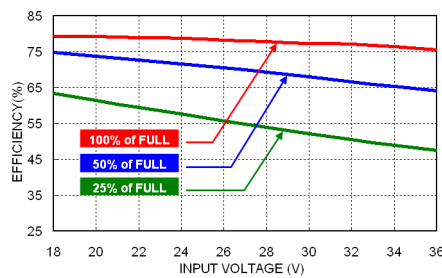
- The standard modules meet EMI Class A or Class B and input reflected ripple current with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220µF/100V.

**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

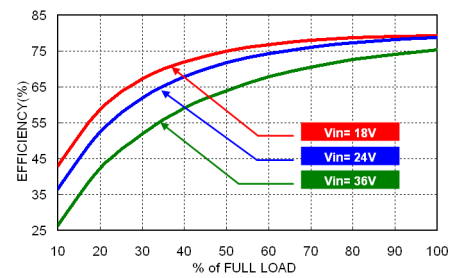
**CHARACTERISTIC CURVE**



UDS(H)02-24S05 Derating Curve



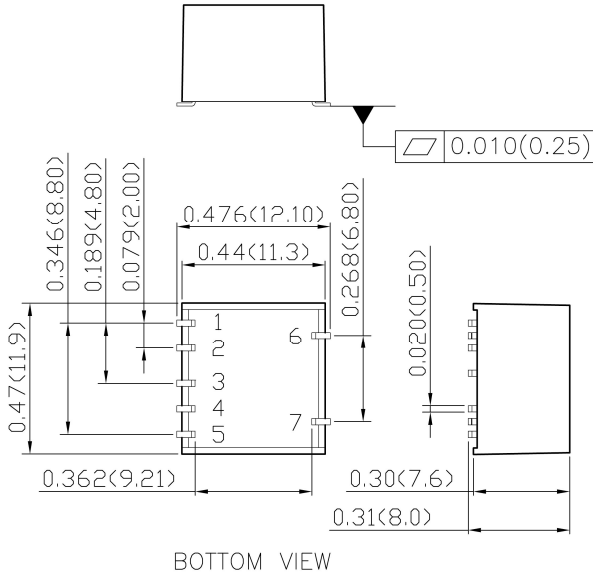
UDS(H)02-24S05 Efficiency vs. Input Voltage



UDS(H)02-24S05 Efficiency vs. Output Load

**MECHANICAL DRAWING**

**UDS02**

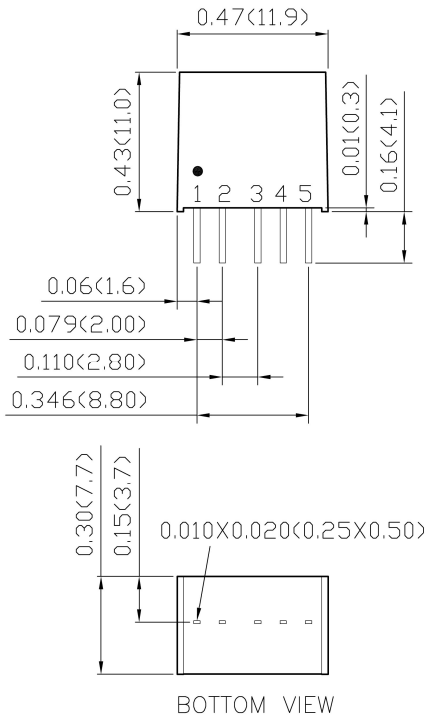


**PIN CONNECTION**

PIN	SINGLE	DUAL
1	-Vin	-Vin
2	+Vin	+Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout
6	* NC	* NC
7	* NC	* NC

\* NC : No electrical characteristics

**UDH02**



**PIN CONNECTION**

PIN	SINGLE	DUAL
1	-Vin	-Vin
2	+Vin	+Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)  
 x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)