



P-DUKE POWER

SDS01W · SDH01W Series

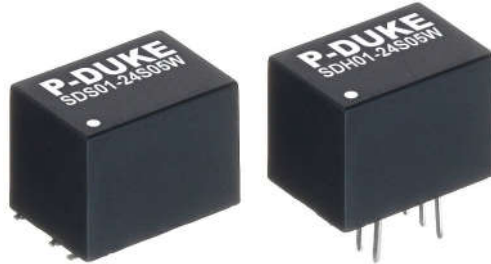
DC-DC Converter
Up to 1.08 Watts

3

YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway



3000
VDC
Isolation
Voltage

1600
VDC
Isolation
Voltage

4 : 1
Wide
Input
Range

NO
Min. Load
Required

REMOTE
ON
OFF

SCP

PART NUMBER STRUCTURE

SDS01 -	48	S	05	W	H
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Isolation Option
SDS : SMD type SDH : DIP type	12:4.5~18 24:9~36 48:18~75	S : Single D : Dual	3P3 : 3.3 05 : 5 09 : 9 12 : 12 15 : 15 24 : 24 05 : ±5 12 : ±12 15 : ±15	4:1	□: 1600VDC isolation H: 3000VDC isolation

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

Model Number	Input Range VDC	Output Voltage VDC	Output Current @Full Load mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load μF
SDS(H)01-12S3P3W	4.5 ~ 18	3.3	300	15	77	1680
SDS(H)01-12S05W	4.5 ~ 18	5	200	20	79	820
SDS(H)01-12S09W	4.5 ~ 18	9	112	20	79	630
SDS(H)01-12S12W	4.5 ~ 18	12	90	20	81	470
SDS(H)01-12S15W	4.5 ~ 18	15	70	20	81	330
SDS(H)01-12S24W	4.5 ~ 18	24	45	25	80	160
SDS(H)01-12D05W	4.5 ~ 18	±5	±100	25	77	±470
SDS(H)01-12D12W	4.5 ~ 18	±12	±45	25	80	±330
SDS(H)01-12D15W	4.5 ~ 18	±15	±35	25	81	±220
SDS(H)01-24S3P3W	9 ~ 36	3.3	300	10	76	1680
SDS(H)01-24S05W	9 ~ 36	5	200	10	78	820
SDS(H)01-24S09W	9 ~ 36	9	112	10	79	630
SDS(H)01-24S12W	9 ~ 36	12	90	10	81	470
SDS(H)01-24S15W	9 ~ 36	15	70	10	81	330
SDS(H)01-24S24W	9 ~ 36	24	45	10	80	160
SDS(H)01-24D05W	9 ~ 36	±5	±100	10	77	±470
SDS(H)01-24D12W	9 ~ 36	±12	±45	10	80	±330
SDS(H)01-24D15W	9 ~ 36	±15	±35	10	81	±220
SDS(H)01-48S3P3W	18 ~ 75	3.3	300	5	75	1680
SDS(H)01-48S05W	18 ~ 75	5	200	5	78	820
SDS(H)01-48S09W	18 ~ 75	9	112	5	79	630
SDS(H)01-48S12W	18 ~ 75	12	90	5	81	470
SDS(H)01-48S15W	18 ~ 75	15	70	6	81	330
SDS(H)01-48S24W	18 ~ 75	24	45	6	80	160
SDS(H)01-48D05W	18 ~ 75	±5	±100	6	77	±470
SDS(H)01-48D12W	18 ~ 75	±12	±45	6	80	±330
SDS(H)01-48D15W	18 ~ 75	±15	±35	6	81	±220

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom) 24Vin(nom) 48Vin(nom)	4.5 9 18	12 24 48	18 36 75	VDC
Start up time	Constant resistive load Power up Remote ON/OFF		10 10	20 20	ms
Input surge voltage	1 second, max. 12Vin(nom) 24Vin(nom) 48Vin(nom)			25 50 100	VDC
Input reflected ripple current	With external components 12Vin(nom) 24Vin(nom) 48Vin(nom)		15 10 5		mAp-p
Input filter				Capacitor type	
Remote ON/OFF	Ctrl pin applied current via 1kΩ DC-DC ON DC-DC OFF Remote off input current	Open or high impedance 2.0	3.0	4.0 2.5	mA mA
	Application circuit DC-DC ON DC-DC OFF				
					

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 Dual 10% Load to 90% Load Single Dual	-1.0 -1.0 -0.5 -0.8		+1.0 +1.0 +0.5 +0.8	%
Cross regulation	Asymmetrical load 25%/100% FL Dual	-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth		30		mVp-p
Temperature coefficient		-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		500		μs
Short circuit protection				Continuous, automatic recovery	

GENERAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute Standard Suffix "H"	1600 3000			VDC
Isolation resistance	500VDC	1			GΩ
Isolation capacitance	Standard Suffix "H"			50 50	pF
Switching frequency		100			kHz
Safety meets			IEC/ UL/ EN60950-1, 62368-1		
Case material			Non-conductive black plastic		
Base material			Non-conductive black plastic		
Potting material			Silicone (UL94 V-0)		
Weight			2.7g (0.10oz)		
MTBF	MIL-HDBK-217F, Full load			8.401 x 10 ⁶ hrs	

ENVIRONMENTAL SPECIFICATIONS

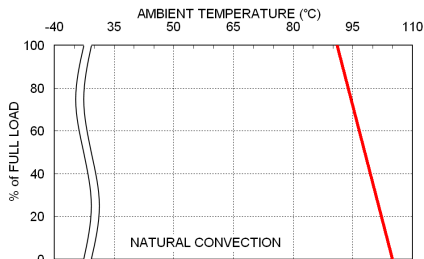
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 +90		+90 +105	°C
Maximum case temperature				105	°C
Storage temperature range		-55		+125	°C
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	
Lead-free reflow solder process	Only for SMD type			IPC J-STD-020E	
Moisture sensitivity level(MSL)	Only for SMD type			IPC J-STD-033C Level 2	

EMC SPECIFICATIONS

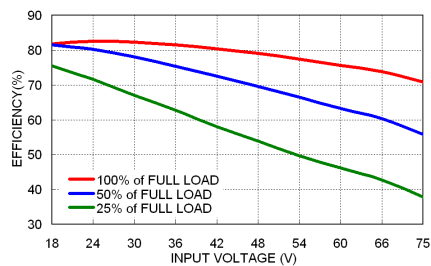
Parameter	Conditions	Level
EMI	EN55032 With external components	Class A, Class B
ESD	EN61000-4-2 Air ± 8 kV and Contact ± 6 kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2 kV	Perf. Criteria A
Surge	EN61000-4-5 ± 1 kV With an external input filter capacitor (Nippon chemi-con KY series, 220 μ F/100V.)	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

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

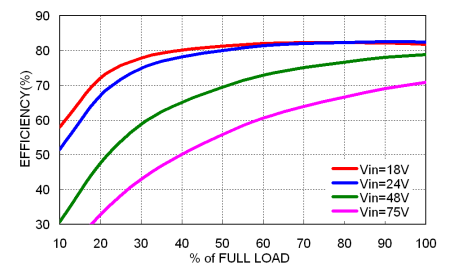
CHARACTERISTIC CURVE



SDS(H)01-48S05W Derating Curve



SDS(H)01-48S05W Efficiency vs. Input Voltage



SDS(H)01-48S05W Efficiency vs. Output Current

FUSE CONSIDERATION

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

This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

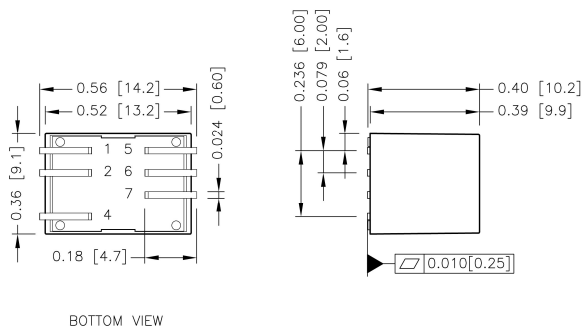
The input line fuse suggest as below :

Modules	Fuse Rating (A)	Fuse Type
SDS(H)01-12S□□W、SDS(H)01-12D□□W	0.5	Slow-Blow
SDS(H)01-24S□□W、SDS(H)01-24D□□W	0.315	Slow-Blow
SDS(H)01-48S□□W、SDS(H)01-48D□□W	0.16	Slow-Blow

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

MECHANICAL DRAWING

SDS01W: SMD TYPE

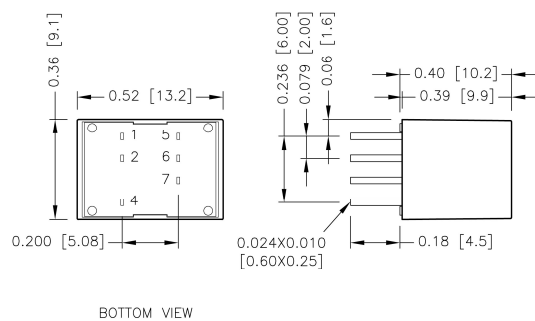


PIN CONNECTION

PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	Ctrl	Ctrl
5	NC	-Vout
6	-Vout	Common
7	+Vout	+Vout

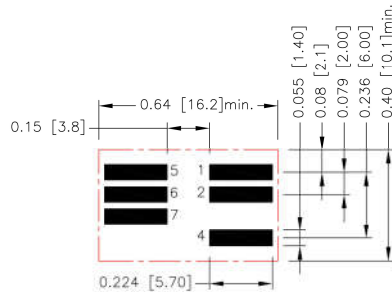
1. All dimensions in inch [mm]
2. Tolerance :x.xx±0.02 [x.x±0.5]
x.xxx±0.010 [x.xx±0.25]
3. Pin dimension tolerance ±0.004[0.10]

SDH01W: DIP TYPE



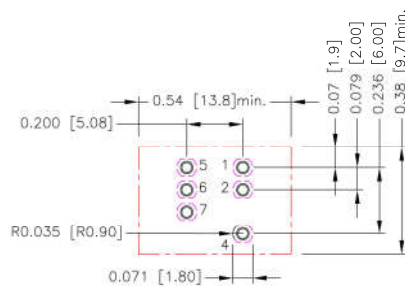
RECOMMENDED PAD LAYOUT

SMD TYPE



All dimensions in inch[mm]
Pad size(lead free recommended)
Top view pad:0.224x0.055[5.70x1.40]

DIP TYPE



All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.4.5.6.7: $\varnothing 0.035$ [0.90]
Top view pad 1.2.4.5.6.7: $\varnothing 0.044$ [1.13]
Bottom view pad 1.2.4.5.6.7:
Groove R0.035[0.90]L-0.071[1.80]

THERMAL CONSIDERATIONS

The power module operates in a variety of thermal environments.

However, sufficient cooling should be provided to help ensure reliable operation of the unit.

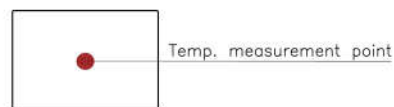
Heat is removed by conduction, convection, and radiation to the surrounding Environment.

Proper cooling can be verified by measuring the point as the figure below.

The temperature at this location should not exceed "Maximum case temperature".

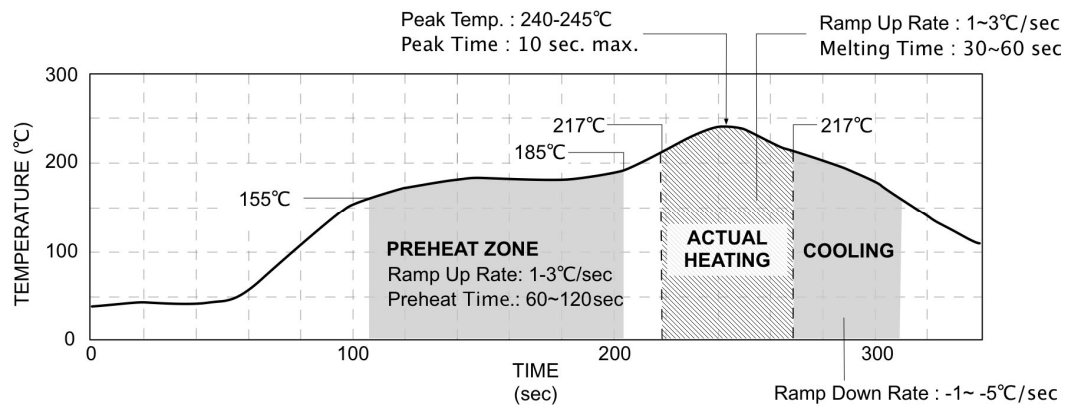
When Operating, adequate cooling must be provided to maintain the test point temperature at or below "Maximum case temperature".

You can limit this Temperature to a lower value for extremely high reliability.



TOP VIEW

LEAD FREE REFLOW PROFILE For SMD Type



*The curves define the maximum peak reflow temperature permissible measured on pin1 or Vin pin.