



P-DUKE POWER

SDS03W · SDH03W Series

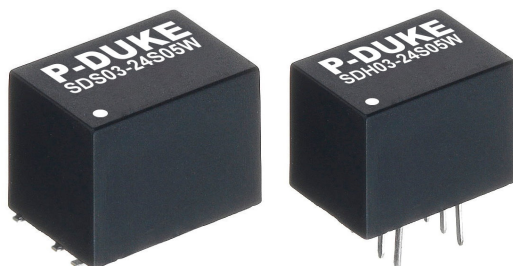
DC-DC Converter
Up to 3 Watts

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

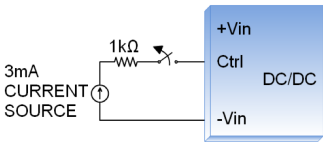
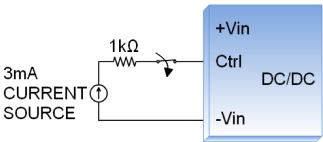
PART NUMBER STRUCTURE

SDS03 -	24	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	3P 3:3.3 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	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	μF
SDS(H)03-12S3P3W	4.5 ~ 18	3.3	700	35	76	4700
SDS(H)03-12S05W	4.5 ~ 18	5	600	40	80	2530
SDS(H)03-12S09W	4.5 ~ 18	9	333	40	81	1470
SDS(H)03-12S12W	4.5 ~ 18	12	250	40	83	1220
SDS(H)03-12S15W	4.5 ~ 18	15	200	40	84	1000
SDS(H)03-12S24W	4.5 ~ 18	24	125	40	82	470
SDS(H)03-12D05W	4.5 ~ 18	±5	±300	40	80	±1470
SDS(H)03-12D12W	4.5 ~ 18	±12	±125	40	82	±680
SDS(H)03-12D15W	4.5 ~ 18	±15	±100	40	82	±470
SDS(H)03-24S3P3W	9 ~ 36	3.3	700	20	77	4700
SDS(H)03-24S05W	9 ~ 36	5	600	20	80	2530
SDS(H)03-24S09W	9 ~ 36	9	333	25	81	1470
SDS(H)03-24S12W	9 ~ 36	12	250	25	83	1220
SDS(H)03-24S15W	9 ~ 36	15	200	25	83	1000
SDS(H)03-24S24W	9 ~ 36	24	125	25	82	470
SDS(H)03-24D05W	9 ~ 36	±5	±300	25	80	±1470
SDS(H)03-24D12W	9 ~ 36	±12	±125	25	82	±680
SDS(H)03-24D15W	9 ~ 36	±15	±100	25	82	±470
SDS(H)03-48S3P3W	18 ~ 75	3.3	700	12	77	4700
SDS(H)03-48S05W	18 ~ 75	5	600	12	80	2530
SDS(H)03-48S09W	18 ~ 75	9	333	13	81	1470
SDS(H)03-48S12W	18 ~ 75	12	250	13	83	1220
SDS(H)03-48S15W	18 ~ 75	15	200	14	83	1000
SDS(H)03-48S24W	18 ~ 75	24	125	14	82	470
SDS(H)03-48D05W	18 ~ 75	±5	±300	14	80	±1470
SDS(H)03-48D12W	18 ~ 75	±12	±125	14	82	±680
SDS(H)03-48D15W	18 ~ 75	±15	±100	14	82	±470

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)		20 20 20		mAp-p
Input filter				Capacitor type	
Remote ON/OFF	Ctrl pin applied current via 1k Ω 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	-1.0 -1.0		+1.0 +1.0	%
	10% Load to 90% Load Single Dual	-0.5 -0.8		+0.5 +0.8	%
Cross regulation	Asymmetrical load 25%/100% FL Dual	-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, automatic recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute Standard Suffix "H"	1600 3000			VDC
Isolation resistance	500VDC	1			G Ω
Isolation capacitance	Standard Suffix "H"			50 50	pF
Switching frequency		100			kHz
Safety meets				IEC/ UL/ EN60950-1	
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			5.627 x 10 ⁶ hrs	

ENVIRONMENTAL SPECIFICATIONS

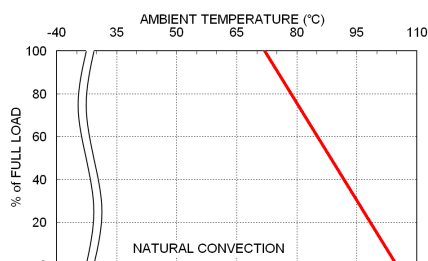
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 71		71 +105	°C
Storage temperature range		-55		+125	°C
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	
Lead-free reflow solder process				IPC J-STD-020D	
Moisture sensitivity level(MSL)				IPC J-STD-033B Level 2	

EMC SPECIFICATIONS

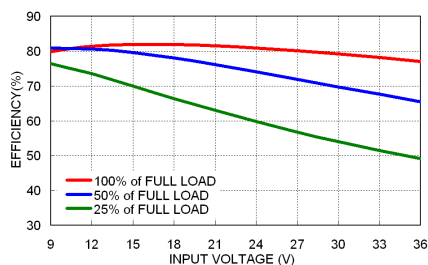
Parameter	Conditions	Level
EMI	EN55032 With external components.	Class A, Class B
ESD	EN61000-4-2 Air $\pm 8\text{kV}$ and Contact $\pm 6\text{kV}$	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 $\pm 2\text{kV}$	Perf. Criteria A
Surge	EN61000-4-5 With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

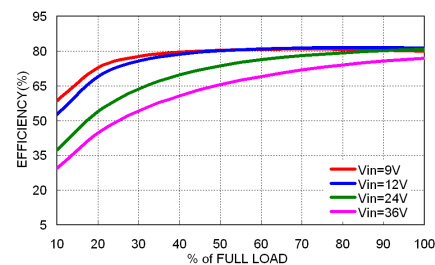
CHARACTERISTIC CURVE



SDS(H)03-24S05W Derating Curve



SDS(H)03-24S05W Efficiency vs. Input Voltage



SDS(H)03-24S05W 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.

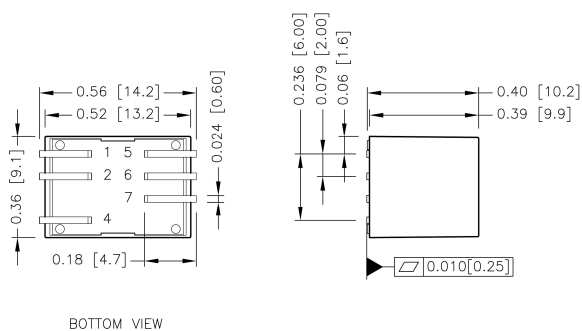
The input line fuse suggest as below :

Modules	Fuse Rating (A)	Fuse Type
SDS(H)03-12S□□W、SDS(H)03-12D□□W	1.6	Slow-Blow
SDS(H)03-24S□□W、SDS(H)03-24D□□W	0.8	Slow-Blow
SDS(H)03-48S□□W、SDS(H)03-48D□□W	0.5	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

SDS03W: SMD TYPE

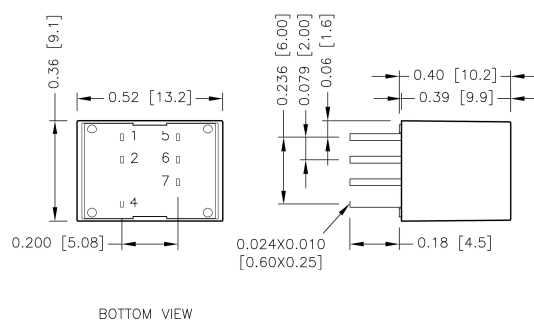


PIN CONNECTION

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

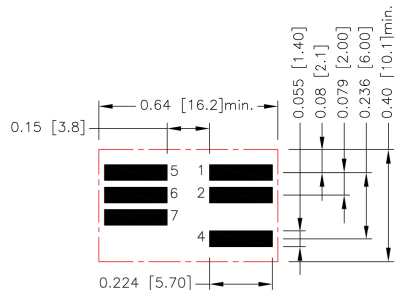
1. All dimensions in inch [mm]
2. Tolerance :x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
3. Pin pitch tolerance ±0.01 [0.25]
4. Pin dimension tolerance ±0.004[0.10]

SDH03W: DIP TYPE



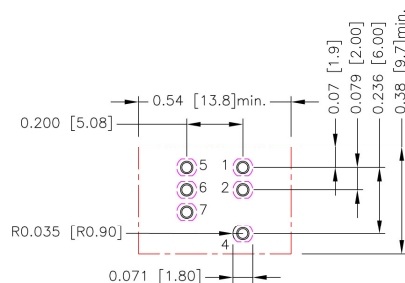
RECOMMENDED PAD LAYOUT

SMD TYPE



All dimensions in inch[mm]
Pad size(lead free recommended)
Top view pad:0.224x0.059[5.70x1.50]

DIP TYPE



All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.4.5.6.7: $\varnothing 0.035$ [$\varnothing 0.90$]
Top view pad 1.2.4.5.6.7: $\varnothing 0.044$ [$\varnothing 1.13$]
Bottom view pad 1.2.4.5.6.7:
Groove R0.035[R0.90]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.

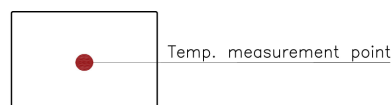
Heat is removed by conduction, convection, and radiation to the surrounding Environment.

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

The temperature at this location should not exceed 105°C .

When Operating, adequate cooling must be provided to maintain the test point temperature at or below 105°C .

Although the maximum point Temperature of the power modules is 105°C , you can limit this Temperature to a lower value for extremely high reliability.



TOP VIEW