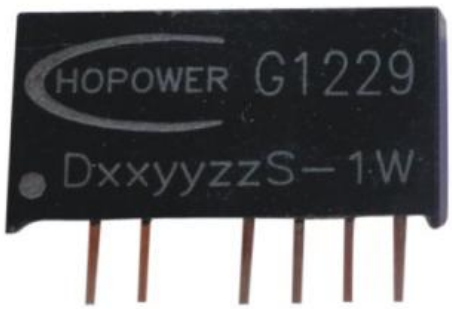
DS-1W Series

Features



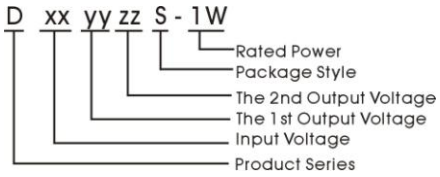
- ★ Small Footprint
- ★ Isolation Voltage 1000 VDC
- ★ 7 PIN SIP Package
- ★ Temperature Range:-40℃ to +85℃
- ★ UL94V-0 Inflaming retarding package
- ★ MTBF>1million hours(25℃)
- ★ High Efficiency up to 80%

Applications

The D_S-1W Series are specially designed for application where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to where:

1. Input voltage variation ⩽±10%
2. Input and output isolation voltage ⩽ 1000 VDC
3. Where the regulation of the output voltage and the output ripple noise are not demanding.



Model Detail List Specification

Model Number	Input Voltage range (nominal voltage)	Output Voltage	Output Current(mA)		Input Current Full load.(mA)		Efficiency	Max. Capacitive Load(μF)
			Min.	Max.	Max.	No.		
D050505S-1W	4.5~5.5VDC (5 VDC)	5.0;5.0V	10;10	100;100	136	28	73%	100
D050909S-1W		9.0;9.0V	5;5	56;56	132		76%	
D051212S-1W		12.0;12.0V	4;4	42;42	130		77%	
D051515S-1W		15.0;15.0V	3;3	33;33	126		78%	
D120505S-1W	10.8~13.2VDC (12 VDC)	5.0;5.0V	10;10	100;100	55	24	75%	
D120909S-1W		9.0;9.0V	5;5	56;56	52		80%	
D121212S-1W		12.0;12.0V	4;4	42;42	51		82%	
D121515S-1W		15.0;15.0V	3;3	33;33	49		83%	
D240505S-1W	21.6~26.4VDC (24 VDC)	5.0;5.0V	10;10	100;100	27	16	75%	
D240909S-1W		9.0;9.0V	5;5	56;56	26		78%	
D241212S-1W		12.0;12.0V	4;4	42;42	26		80%	
D241515S-1W		15.0;15.0V	3;3	33;33	25		82%	

1. Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output that provided the safe and reliable operation is ensured, the recommended capacitance of its filter capacitor.
2. The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series.

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Output Specifications

Item	Test Conditions		Min.	Typ.	Max.	Unit
Output Power			0.1		1	W
Line Voltage Regulation	For Vin change of ±1%				±1.5	%
Load regulation	10% to 100% load	5V output		10		
		9V output		8.3		
		12V output		6.8		
		15V output		6.3		
Ripple	20MHz Bandwidth			50		mVp-p
Noise				75		
Temperature Drift	100% full load		±0.03		±0.05	%/°C
Input Filter			C Filter			

Environmental Specifications

Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing			95	%
Temp. rise at full load			25		℃
Operating Temperature	Power derating (above 85℃)	-40		+85	
Storage Temperature		-55		+125	
Soldering Temperature	1.5mm from case for 10 seconds			300	
Isolation Capacitance			150		pF
Cooling		Free air convection			

Common Specifications

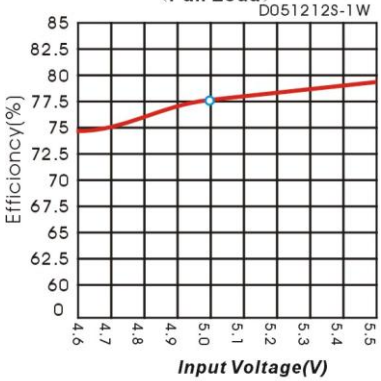
Item	Test Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Tested for 1 minute and leakage current less than 1 mA	1000			VDC
Switching Frequency	Full load, nominal input		100		KHz
MTBF	MIL-HDBK-217F@25℃	1000			K hours
Isolation Resistance	Test at 500VDC	1000			MΩ
Weight			2.0		g

Input Specifications

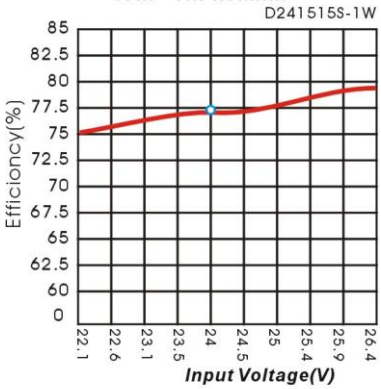
Item	Test Conditions	Min.	Typ.	Max.	Unit
Input Max. voltage	5 VDC Input (4.5~5.5V)			6	VDC
	12 VDC Input (10.8~13.2V)			15	
	24 VDC Input (21.6~26.4V)			28	
Input surge voltage (1 sec. Max.)	5 VDC Input (4.5~5.5V)			9	
	12 VDC Input (10.8~13.2V)			18	
	24 VDC Input (21.6~26.4V)			30	

Product typical Curve

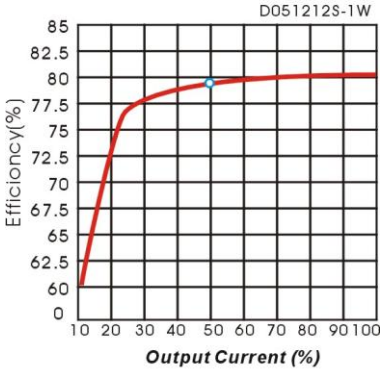
Efficiency VS Input Voltage curve
(Full Load)



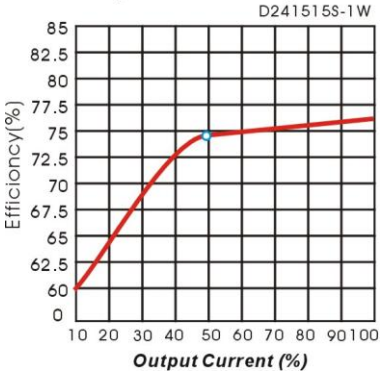
Efficiency VS Output Voltage curve
(Vin=Vin-nominl)



Output Load VS Efficiency curve
(Vin=Vin-nominal)



Efficiency VS Output Load curve
(Vin=Vin-nominal)



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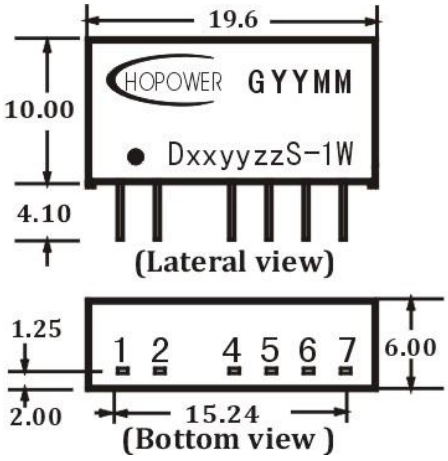
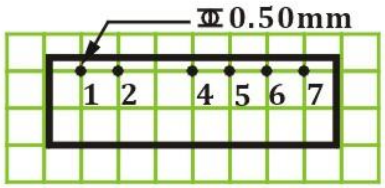
Mechanical Dimensions & Recommended Footprint

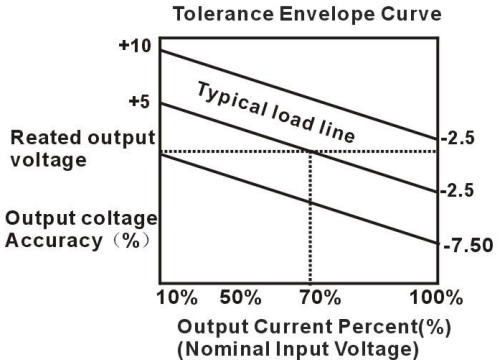


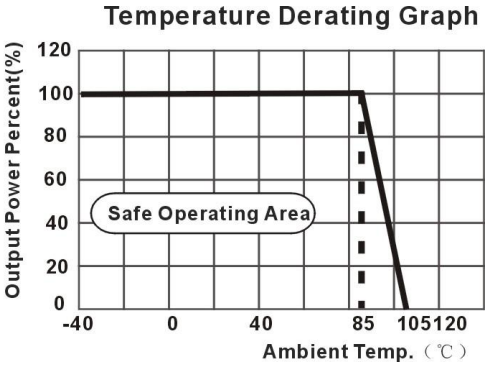


Note: Grid 2.54*2.54mm
Unit: mm
General tolerances : 0.20mm

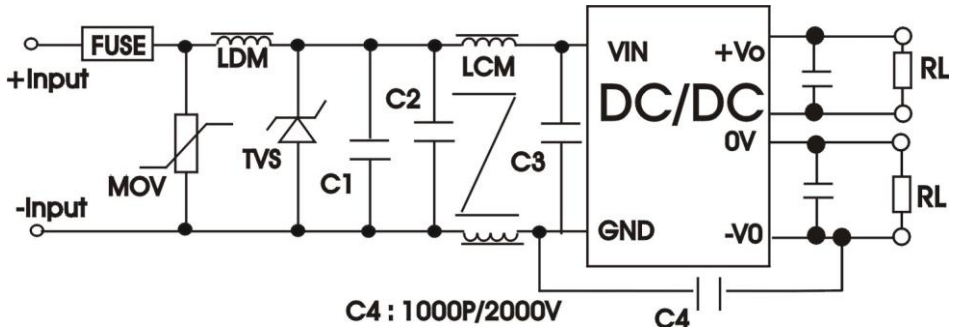
Package	Vin	GND	0V1	+Vo1	0V2	+Vo2	NC
DS	1	2	4	5	6	7	-

Tolerance Envelope Curve & Temperature Derating Graph





EMC Recommended Circuit



EMC Module Application Circuit