

**FEATURES :**

- 4 PIN SIP and 8 PIN DIL Package
- High Efficiency up to 85%
- Unregulated Output Types
- Internal SMD Construction
- No External Component Required
- Operating Temperature:-40°C TO +85°C
- Industry Standard Pinout
- Output 3.3/5/9/12/15V Approved by UL60950-1

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Output Voltage	Output Current	Efficiency	Package Style
	Vdc	mA	%TYP	
★13D-XXS03NNL	3.3	303	70	1
★13D-XXS05NNL	5	200	70	1
★13D-XXS09NNL	9	110	75	1
★13D-XXS12NNL	12	84	78	1
★13D-XXS15NNL	15	67	80	1
★13D-XXS24NNL	24	42	82	1
13D-XXS03N2NL	3.3	303	70	2
13D-XXS05N2NL	5	200	70	2
13D-XXS09N2NL	9	110	75	2
13D-XXS12N2NL	12	84	78	2
13D-XXS15N2NL	15	67	80	2
13D-XXS24N2NL	24	42	82	2
13D-XXS03N3NL	3.3	303	70	3
13D-XXS05N3NL	5	200	70	3
13D-XXS09N3NL	9	110	75	3
13D-XXS12N3NL	12	84	78	3
13D-XXS03N4NL	3.3	303	70	4
13D-XXS05N4NL	5	200	70	4
13D-XXS09N4NL	9	110	75	4
13D-XXS12N4NL	12	84	78	4
13D-XXS15N4NL	15	67	80	4
13D-XXS24N4NL	24	42	82	4

**Note:**  
 1."XX" Is Input Voltage:03=3.3Vdc,05=05Vdc,09 =9Vdc,12=12Vdc,15=15Vdc,24=24Vdc  
 2. The input voltage increases, there will be an increase in efficiency.  
 3." ★" marked as recognized by UL 60950-1.

**Input Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Vo,Io Nom			±10	%
Filter	Capacitor				

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DC-DC Converter

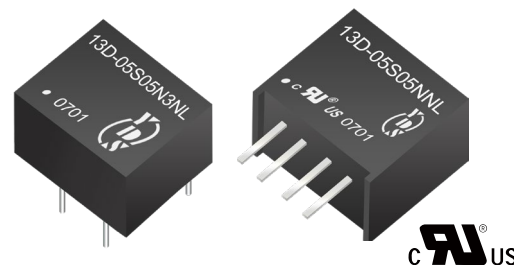
13D SERIES

1Watt

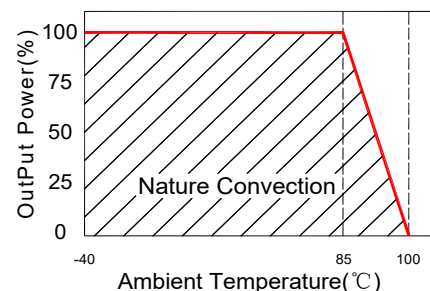
1KV Isolated

Single Output

SIP4 & DIL8



Temperature Derating Graph



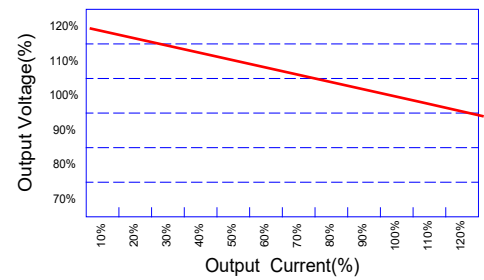
Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	Short Term			1	Sec
Line Regulation	For 1.0% of Vin		1.2		%
Load Regulation	3.3V,5V (10% To 100% F.L)			15	%
Load Regulation	9V,12V,15V,24V (10% To 100% F.L)			10	%
Ripple & Noise	BW=DC To 20MHz			100	mVp-p
Transient response setting time	50% load step change		350		us

General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load, nominal input		100		KHz
Operating Temperature		-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	DAP				
MTBF	MIL-HDBK-217F @25°C	3500000			Hours
Weight	Package 1/2/3/4	1.5/1.9/1.5/2.7			g
Dimensions	Package 1	11.50x6.00x10.00			mm
Dimensions	Package 2	11.50x7.50x10.00			mm
Dimensions	Package 3	12.70x10.16x6.80			mm
Dimensions	Package 4	12.70x12.70x9.50			mm

Tolerance Envelope Graph

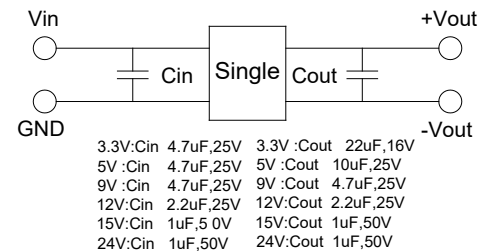


Part Number

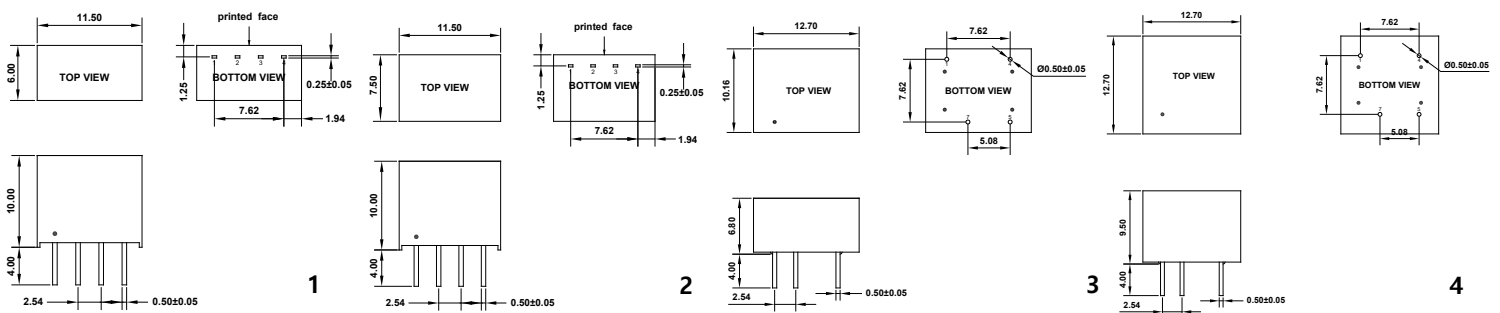
13D - 05 S 05 N 2 NL  
A B C D E F G

- A:Series
- B:Input Voltage
- C:Single Output
- D:Output Voltage
- E:Unregulated(N)
- F:Packge
- G:RoHS Version

Recommended Test Circuit



Markings and Dimensions



PIN Connection

PIN	1	2	3	4	5	7
4in	-Vin	+Vin	-Vout	+Vout		
8in	-Vin			+Vin	+Vout	-Vout

Unit: mm Unless otherwise specified, all tolerances are ±0.25

