

FEATURES :

- 18PIN&22PIN SMD Package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 3KVDC Isolation
- Operating Temperature:-40°C to +105°C
- Industry Standard Pinout
- Design refer to IEC62368, UL62368, EN62368

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

Part Number	Output Voltage	Output Current	Efficiency	Capacitive Load(μF)	Package Style
	Vdc	mA	%TYP	Max.	
13DS1C-YY03N*P(H3)	3.3	303	76	2400	1/2/3
13DS1C-YY05N*P(H3)	5	200	82	2400	1/2/3
13DS1C-YY09N*P(H3)	9	112	83	1000	1/2/3
13DS1C-YY12N*P(H3)	12	84	84	470	1/2/3
13DS1C-YY15N*P(H3)	15	67	84	330	1/2/3
13DS1C-YY24N*P(H3)	24	42	85	100	1/2/3
13DS1C-YYD03N*P(H3)	±3.3	±151	76	±1200	1/2/3
13DS1C-YYD05N*P(H3)	±5	±100	82	±1200	1/2/3
13DS1C-YYD09N*P(H3)	±9	±56	83	±470	1/2/3
13DS1C-YYD12N*P(H3)	±12	±42	84	±220	1/2/3
13DS1C-YYD15N*P(H3)	±15	±34	84	±1000	1/2/3
13DS1C-YYD24N*P(H3)	±24	±21	85	±47	1/2/3
13DS1C-XXS03N*P(H3)	3.3	303	78	2400	1/2/3
13DS1C-XXS05N*P(H3)	5	200	82	2400	1/2/3
13DS1C-XXS09N*P(H3)	9	112	85	1000	1/2/3
13DS1C-XXS12N*P(H3)	12	84	85	680	1/2/3
13DS1C-XXS15N*P(H3)	15	67	87	330	1/2/3
13DS1C-XXS24N*P(H3)	24	42	85	220	1/2/3
13DS1C-XXD03N*P(H3)	±3.3	±151	78	±1200	1/2/3
13DS1C-XXD05N*P(H3)	±5	±100	82	±1200	1/2/3
13DS1C-XXD09N*P(H3)	±9	±56	85	±680	1/2/3
13DS1C-XXD12N*P(H3)	±12	±42	85	±330	1/2/3
13DS1C-XXD15N*P(H3)	±15	±34	87	±220	1/2/3
13DS1C-XXD24N*P(H3)	±24	±21	85	±100	1/2/3

Note:

1. No suffix is standard isolation (1.5KVDC) e.g, 13DS1C-12S05NP , *add suffix "H3" for 3KVDC isolation, e.g, 13DS1C-12S05NPH3, 13DS1C-15S12NPH3, Y = 1 or 2 or 3 for package, No suffix Y package1, When Y=2, package2, and so on, e.g,13DS1C-24S05N2P,13DS1C-15S12N3PH3
2. " * " = 1 or 2 or 3 for package , No suffix * package1 , When * =2 , package2 , and so on, e.g,13DS1C-24S05N2P, 13DS1C-15S12N3PH3
3. "YY" is input Voltage : 03=3.3Vdc,05=5Vdc, 09=9Vdc e.g,13DS1C-05S12N3PH3, 13DS1C-09S09NP
4. "XX" is input Voltage : 12=12Vdc,15=15Vdc, 24=24Vdc e.g, 13DS1C-12S05N3P, 13DS1C-15S12NPH3.

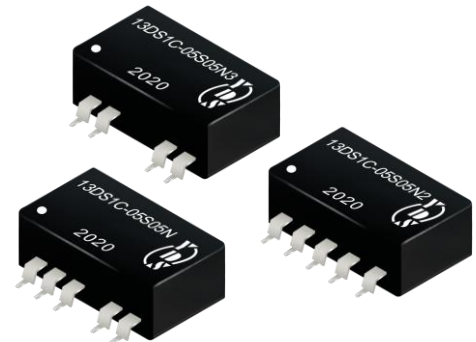
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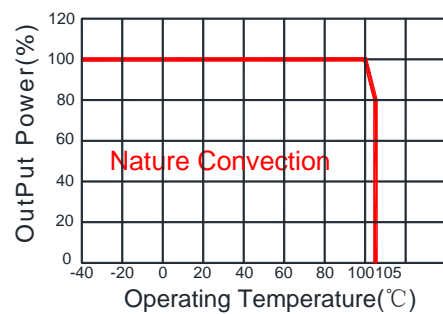
DC-DC Converter
13DS1C SERIES

1Watt

1.5KV ~ 3KV Isolated
Single & Dual Output
SMD18 & SMD22



Temperature Derating Graph



Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,Io Nom @Vin:3.3V,5V,9V		±10		%
	Vo,Io Nom@ Vin:12V,15V,24V		±20		%
Filter	Capacitor				

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection			Continuous		
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	3.3V (10% To 100% F.L)		15	20	%
	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
Ripple & Noise	BW=DC To 20MHz @Vo:3.3V,5V,9V,12V,15V		30	75	mVp-p
	BW=DC To 20MHz @ Vo:24V		50	100	mVp-p

General Specifications

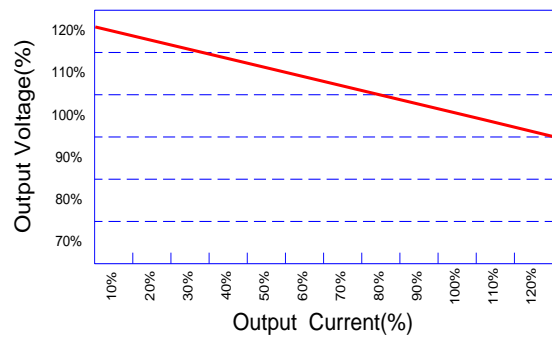
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @3.3V, 5V Vin		215/370		KHz
	Full load, nominal input @other Vin		250		KHz
Operation Temperature		-40		+105	°C
Storage Temperature		-55		+125	°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		1.36		g
Dimensions	Package 1/2/3	15.24x8.0x7.3			mm

Part Number

13DS1C - 15 S 12 N 3 P H3
 A B C D E F G H

A:Series
 B:Input Voltage
 C:Single(S)/Dual(D)Output
 D:Output Voltage
 E:Unregulated(N)
 F:Packge
 G:Protection
 H:Isolation Voltage

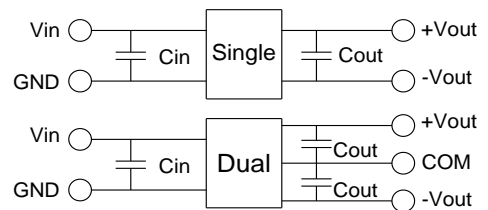
Tolerance Envelope Graph



Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±6kV perf. Criteria B

Recommended Test Circuit



Vin	Cin	Single Vout	Cout	Dual Vout	Cout
3.3Vdc	4.7μF/25V	3.3Vdc	10μF/16V	±3.3Vdc	±4.7μF/16V
5Vdc	4.7μF/25V	5Vdc	10μF/16V	±5Vdc	±4.7μF/16V
9Vdc	4.7μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
12Vdc	2.2μF/25V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
15Vdc	2.2μF/25V	15Vdc	1μF/25V	±15Vdc	±1μF/25V
24Vdc	1μF/50V	24Vdc	1μF/50V	±24Vdc	±1μF/50V

EMC (CLASS B) compliance circuit

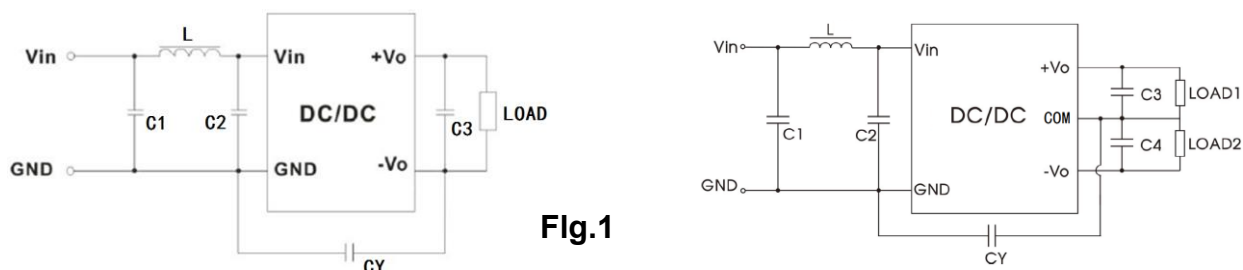
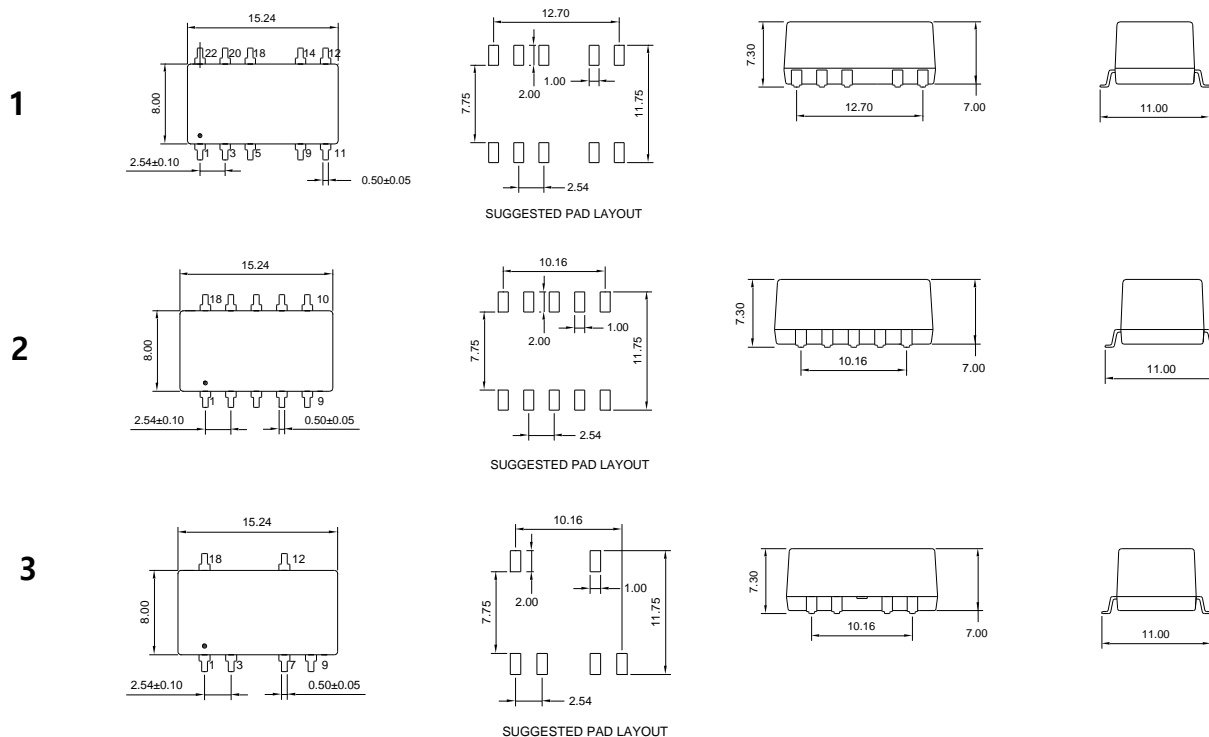


Fig.1

EMC recommended circuit value table

EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3, C4	Recommended Test Circuit
	L	6.8μH

Markings and Dimensions



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

PIN Connection

PIN	1	3	5	7	9	10	11	12	14	16	18	20	22
Package1 (Single)	-Vin	+Vin	NC*	--	-Vout	--	NC	NC	+Vout	--	NC	NC	NC
Package1 (Dual)	-Vin	+Vin	NC*	--	Com	--	-Vout	NC	+Vout	--	NC	NC	NC
Package2/3 (Single)	-Vin	+Vin	NC*	-Vout	-Vout	NC*	--	+Vout	NC*	NC*	NC	--	--
Package2/3 (Dual)	-Vin	+Vin	NC*	Com	-Vout	NC*	--	+Vout	NC*	NC*	NC	--	--

NOTE: NC* Means When the Package 2 is NC, When the Package 3 is NO PIN

