

FEATURES:

- 7PIN SIP package
- Continuous short-circuit protection
- The leakage current < 1.5μA
- Isolation capacitance as low as 4pF
- Creepage & clearance distance > 5mm
- High efficiency up to 83%
- Unregulated output types
- 5000Vac or 6000Vdc isolation
- Operating temperature:-40°C to +105°C
- Industry standard pinout
- UL/cUL/IEC/EN 62368-1 approved, CB-Report
- UL/cUL/IEC/EN 60601-1 approved, CB-Report
- EMC Standard of EMI EN55032:2015 Approved
- EMC Standard of EMS EN55035:2017 Approved
- Medical EMC Standard of EMI EN 60601-1-2:2014+A1:2020 Approved.
- Medical EMC Standard of EMS EN 60601-1-2:2015+A1:2021 Approved

YUAN DEAN SCIENTIFIC



DC-DC Converter

12D1C-NM SERIES

1 Watt

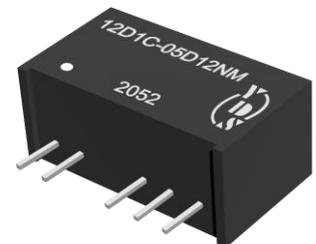
5KVac or 6KVdc Isolated

Single & Dual Output

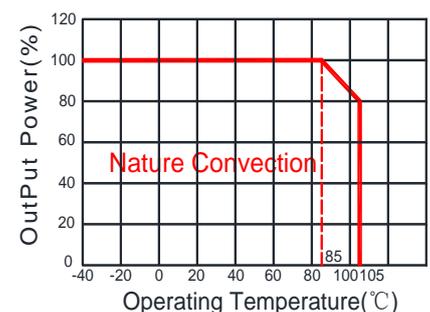
SIP7

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)
	Vdc	mA	%TYP	Max.
12D1C-YY03NM	3.3	303	75	2200
12D1C-YY05NM	5	200	80	2200
12D1C-YY09NM	9	112	80	1000
12D1C-YY12NM	12	84	81	470
12D1C-YY15NM	15	67	81	330
12D1C-YY24NM	24	42	81	100
12D1C-YYD03NM	±3.3	±151	75	±1200
12D1C-YYD05NM	±5	±100	80	±1200
12D1C-YYD09NM	±9	±56	80	±470
12D1C-YYD12NM	±12	±42	81	±220
12D1C-YYD15NM	±15	±34	81	±220
12D1C-YYD24NM	±24	±21	81	±47
12D1C-XXS03NM	3.3	303	75	2200
12D1C-XXS05NM	5	200	80	2200
12D1C-XXS09NM	9	112	80	1000
12D1C-XXS12NM	12	84	83	680
12D1C-XXS15NM	15	67	83	330
12D1C-XXS24NM	24	42	82	220
12D1C-XXD03NM	±3.3	±151	75	±1200
12D1C-XXD05NM	±5	±100	80	±1200
12D1C-XXD09NM	±9	±56	80	±680
12D1C-XXD12NM	±12	±42	83	±330
12D1C-XXD15NM	±15	±34	83	±220
12D1C-XXD24NM	±24	±21	81	±100



Temperature Derating



Note:

- 1: "YY" is input voltage : 03=3.3Vdc,05=5Vdc, e.g, 12D1C-03S05NM, 12D1C-05S12NM.
- 2: "XX" is input voltage : 12=12Vdc,15=15Vdc, 24=24Vdc e.g, 12D1C-12S05NM, 12D1C-15S12NM, 12D1C-24S15NM

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Input Specifications

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

Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% Full Load			±5	%
Short Circuit Protection		Continuous			
Temperature Coefficient	100% load		±0.02		%/°C
Line Regulation	For 1.0% of Vin		1.2		%
Load Regulation	3.3V, 5V (10% To 100% F.L)			20	%
	Other output (10% To 100% F.L)			15	%
Ripple & Noise	BW=DC To 20MHz@Vo:3.3V		100	150	mVp-p
	BW=DC To 20MHz@ Other		80	120	mVp-p

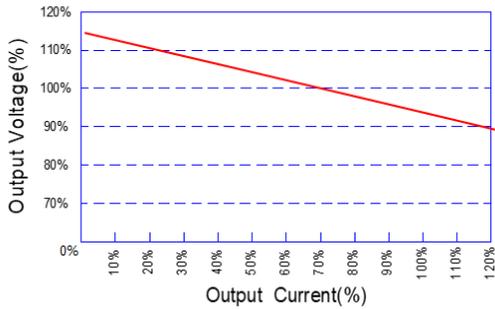
General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load,nominal input @3.3V, 5V Vin		215/370		KHz
	Full load,nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Patient Leakage Current	250VAC, 50/60Hz			1.5	μA
Isolation Capacitance	Input-output, 100KHz/0.1V		4		pF
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material	DAP				
MTBF	MIL-HDBK-217F@25°C		6800000		Hours
Weight			4		g
Dimensions			19.5x9.8x12.5		mm
altitude rating		5000M			

Electromagnetic Compatibility (EMC)

EMI	CE	EN60601-1-2/CISPR 11 GROUP1 CLASS B (see Fig. 1 for recommended circuit)
	RE	EN60601-1-2/CISPR 11 GROUP1 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	EN60601-1-2 (IEC/EN61000-4-2) Air ±15kV, Contact ±8kV perf. Criteria B

Tolerance Envelope Graph

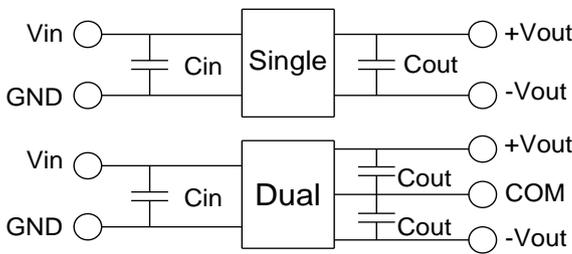


Part Number

12D1C	-	05	D	12	N	M
A	B	C	D	E	F	

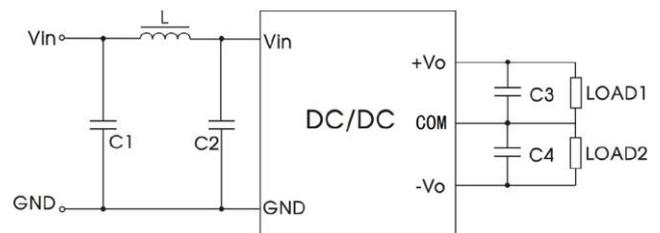
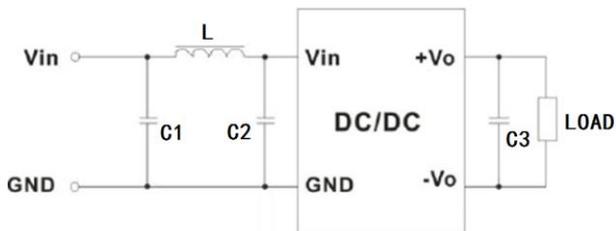
- A : Series
- B : Input Voltage
- C : Single(S)/Dual(D) Output
- D : Output Voltage
- E : Unregulated(N)
- F : Medical

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
12Vdc	2.2μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
15Vdc	2.2μF/25V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
24Vdc	1μF/50V	15Vdc	1μF/25V	±15Vdc	±1μF/25V
--	--	24Vdc	1μF/50V	±24Vdc	±1μF/50V

EMC (CLASS B) Compliance Circuit

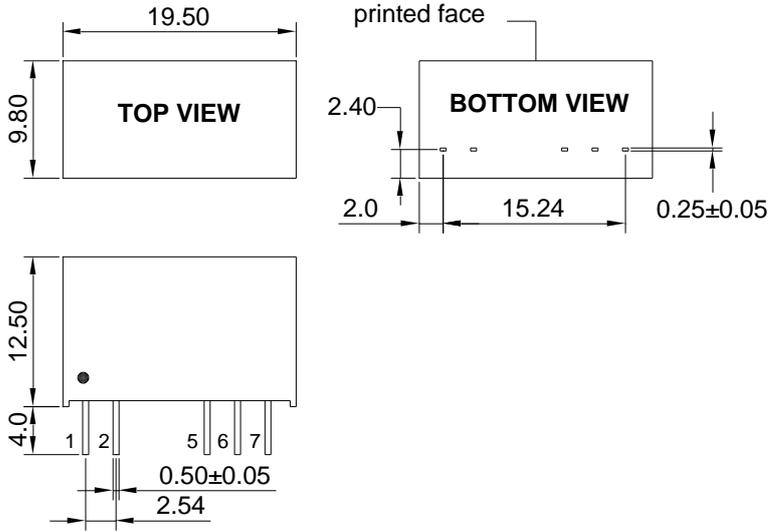


Flg.1

EMC recommended circuit value table

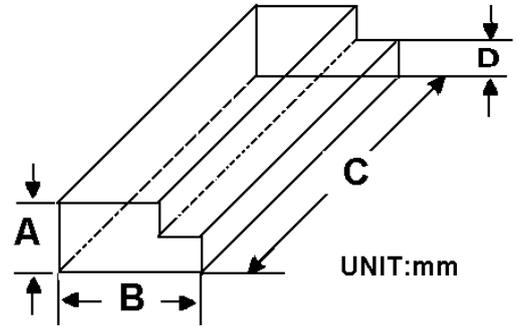
EMI		Value
C1		22μF /50V
C2		22μF /50V
C3, C4		Recommended Test Circuit
L		22μH

Markings and Dimensions



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

Packaging



TUBE-----25pcs

Size(mm)			
A	B	C	D
12.0	28.55	550	6.0

PIN Connection

PIN	1	2	5	6	7
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout