1S7B4_6UP series

1W - Single/Dual Output DC-DC converter - Isolated & Unregulated

DC-DC Converter 1 Watt

- SIP7 package
- Short circuit protection (SCP)
- Leakage current <2µA
- Isolation capacitance as low as 4pF
- Creepage & clearance distance >5mm
- Up to 83% efficiency
- Ultra high I/O 5kVAC or 6kVDC reinforced isolation (300Vrms working voltage)
- Operating temperature: -40°C to +105°C
- Industry standard pinout
- Meets IEC60601 standard

Introducing our new high-performance SIP7 power module 1S7B4_6UP series designed to meet the most demanding medical and industrial requirements. With robust short circuit protection (SCP), ultra-low leakage current (<2µA), and exceptional isolation characteristics (up to 5000VAC / 6000VDC), this compact solution ensures both safety and efficiency. It features industry-standard pinout, operates reliably across a wide temperature range (-40°C to +105°C), and delivers up to 83% efficiency. Engineered with creepage and clearance distances >5mm and isolation capacitance as low as 4pF, it fully complies with the IEC60601 standard — making it the trusted choice for critical applications.

UL62368 - E347551

Common specifications

Short circuit protection	Continuous
Switching frequency	Full load, nominal input @3.3V, 5V = 215/370kHz Full load, nominal input @other Vin = 250KHz
Operating temperature	-40°C - +105°C (with derating)
Storage temperature	-55°C - +125°C
Patient leakage current	2µA (max.) 250VAC, 50/60Hz
Relative humidity	95% (non condensing)
Cooling	Free air convection
Case material	DAP
MTBF (MIL-HDBK-217F@25°C)	3,500,000 hours
Weight	4g (typ.)
Dimensions	19.5 x 9.8 x 12.5 mm
Altitude rating	5000M

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage Tolerance	Vo, Io (nom)		±10		%
Filter	Capacitor				

Example:
1S7B4_1215S6UP
1 = 1Watt; S7 = SIP; B4 = Pinning; 12 = 12Vin; 15 = 15Vout;
S = Single Output; 6 =6kVDC isolation; U = Unregulated Output;
P = Short circuit protection

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage tolerance	100% full Load			±5	%
Temperature coefficient	100% load		±0.02		%/°C
Line regulation	For 1.0% of Vin		1.2		%
Load regulation	3.3V, 5V (10% to 100% full load) Other output (10% to 100% full load)			20 15	%
Ripple & noise	BW = DC to 20MHz@Vo:3.3V BW = DC to 20MHz@ Other		100 80	150 120	mVp-p

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation resistance	500VDC	1000			MΩ
Isolation capacitance	Input-output, 100kHz/0.1V		4		pF

EMC Characteristic

EMI	CE	EN60601-1-2/CISPR 11 GROUP1 CLASS B (see Fig. 1 for recommended circuit)
EMI	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

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Product Selection Guide

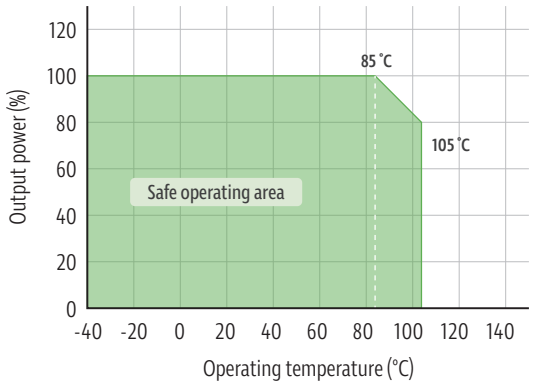
Approval	Part number	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)Typ.	Capacitive Load(µF) Max.
UL	1S7B4_0303S6UP	3.3	303	75	2200
UL	1S7B4_0305S6UP	5	200	80	2200
UL	1S7B4_0309S6UP	9	112	80	1000
UL	1S7B4_0312S6UP	12	84	81	470
UL	1S7B4_0315S6UP	15	67	81	330
UL	1S7B4_0324S6UP	24	42	81	100
UL	1S7B4_0503S6UP	3.3	303	75	2200
UL	1S7B4_0505S6UP	5	200	80	2200
UL	1S7B4_0509S6UP	9	112	80	1000
UL	1S7B4_0512S6UP	12	84	81	470
UL	1S7B4_0515S6UP	15	67	81	330
UL	1S7B4_0524S6UP	24	42	81	100
UL	1S7B4_1203S6UP	3.3	303	75	2200
UL	1S7B4_1205S6UP	5	200	80	2200
UL	1S7B4_1209S6UP	9	112	80	1000
UL	1S7B4_1212S6UP	12	84	83	680
UL	1S7B4_1215S6UP	15	67	83	330
UL	1S7B4_1224S6UP	24	42	82	220
UL	1S7B4_1503S6UP	3.3	303	75	2200
UL	1S7B4_1505S6UP	5	200	80	2200
UL	1S7B4_1509S6UP	9	112	80	1000
UL	1S7B4_1512S6UP	12	84	83	680
UL	1S7B4_1515S6UP	15	67	83	330
UL	1S7B4_1524S6UP	24	42	82	220
UL	1S7B4_2403S6UP	3.3	303	75	2200
UL	1S7B4_2405S6UP	5	200	80	2200
UL	1S7B4_2409S6UP	9	112	80	1000
UL	1S7B4_2412S6UP	12	84	83	680
UL	1S7B4_2415S6UP	15	67	83	330
UL	1S7B4_2424S6UP	24	42	82	220

Product Selection Guide

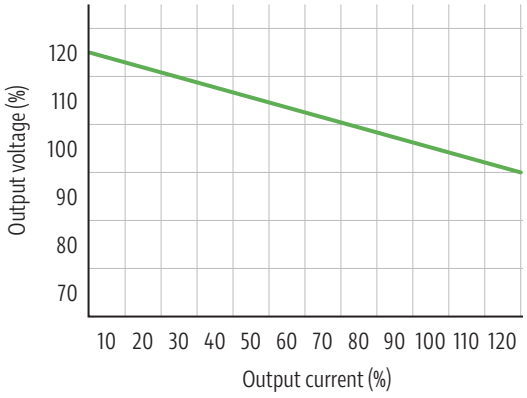
Approval	Part number	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)Typ.	Capacitive Load(μF) Max.
UL	1S7B4_0303D6UP	±3.3	±151	75	±1200
UL	1S7B4_0305D6UP	±5	±100	80	±1200
UL	1S7B4_0309D6UP	±9	±56	80	±470
UL	1S7B4_0312D6UP	±12	±42	81	±220
UL	1S7B4_0315D6UP	±15	±34	81	±220
UL	1S7B4_0324D6UP	±24	±21	81	±47
UL	1S7B4_0503D6UP	±3.3	±151	75	±1200
UL	1S7B4_0505D6UP	±5	±100	80	±1200
UL	1S7B4_0509D6UP	±9	±56	80	±470
UL	1S7B4_0512D6UP	±12	±42	81	±220
UL	1S7B4_0515D6UP	±15	±34	81	±220
UL	1S7B4_0524D6UP	±24	±21	81	±47
UL	1S7B4_1203D6UP	±3.3	±151	75	±1200
UL	1S7B4_1205D6UP	±5	±100	80	±1200
UL	1S7B4_1209D6UP	±9	±56	80	±680
UL	1S7B4_1212D6UP	±12	±42	83	±330
UL	1S7B4_1215D6UP	±15	±34	83	±220
UL	1S7B4_1224D6UP	±24	±21	81	±100
UL	1S7B4_1503D6UP	±3.3	±151	75	±1200
UL	1S7B4_1505D6UP	±5	±100	80	±1200
UL	1S7B4_1509D6UP	±9	±56	80	±680
UL	1S7B4_1512D6UP	±12	±42	83	±330
UL	1S7B4_1515D6UP	±15	±34	83	±220
UL	1S7B4_1524D6UP	±24	±21	81	±100
UL	1S7B4_2403D6UP	±3.3	±151	75	±1200
UL	1S7B4_2405D6UP	±5	±100	80	±1200
UL	1S7B4_2409D6UP	±9	±56	80	±680
UL	1S7B4_2412D6UP	±12	±42	83	±330
UL	1S7B4_2415D6UP	±15	±34	83	±220
UL	1S7B4_2424D6UP	±24	±21	81	±100

Product characteristic curve

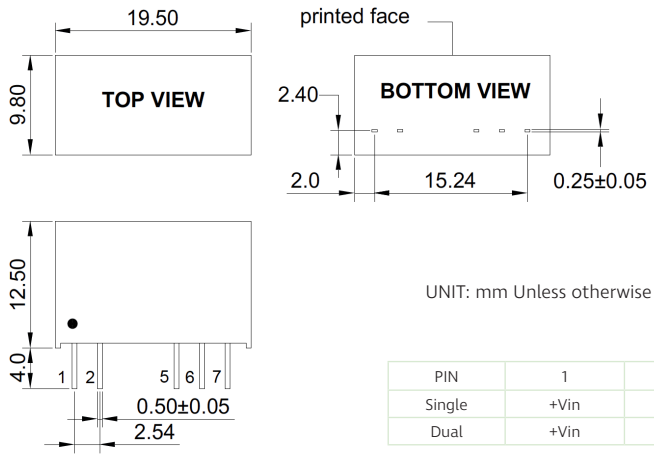
Temperature derating graph



Tolerance envelope graph



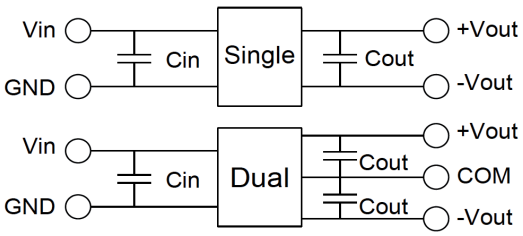
Mechanical dimensions



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

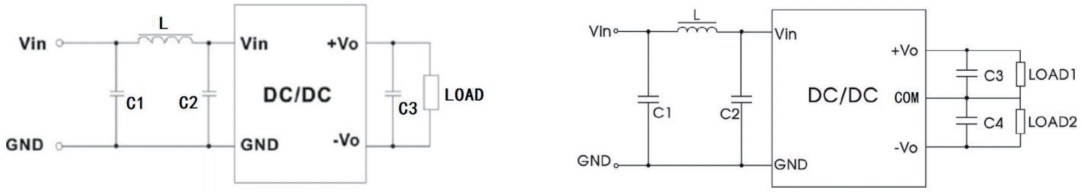
PIN	1	2	5	6	7
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout

Design and application circuit recommended



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

Recommended EMC Circuit



EMC recommended circuit value table		
EMI	C1	22μF /50V
	C2	22μF /50V
	C3, C4	Recommended Test Circuit
	L	22μH