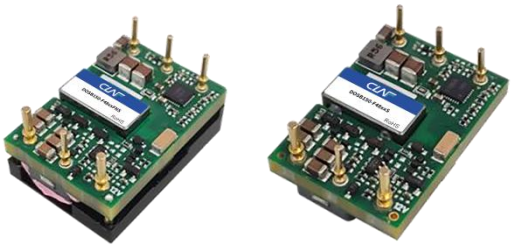
Descriptions

150W isolated，DC/DC Converter



RoHS

Features

- Wide input voltage range: 36-75VDC
- High efficiency up to 92%
- I/O isolation test voltage 2250VDC, meet basic insulation
- Input under-voltage protection, output over-current, short circuit, over-voltage protection, over-temperature protection
- Operating ambient temperature range:-40℃ to +85℃
- Industry standard package: 1/16 brick, meet DOSA standard

Applications

- Communication
- Switch
- Repeater
- Intelligent communication gateway
- GPS clock synchronization
- 4G/5G base station related DC power supply equipment.

Selection Guide

Certification	Part No.①	CTRL logic②	Input Voltage (VDC)		Output		Efficiency(%)④ 100%Io/50%Io	Max. Capacitive Load(μF)
			Nominal (Range)	Max.③	Voltage (VDC)	Current (mA) Max./Min.		
--	DOSB150-F4812(F)S	P	48 (36-75)	80	12	12500/0	92/90	5000
	DOSB150-F4812(F)NS	N						
	DOSB150-F4815(F)S	P			15	10000/0	91/90	4000
	DOSB150-F4815(F)NS	N						

Notes:
① Use suffix "F" for heat sink;
② "P" indicates that Ctrl is positive logic, "N" indicates that Ctrl is negative logic;
③ The input voltage cannot exceed this value, otherwise, permanent damage may be caused;
④ The above efficiency values are measured at the input nominal voltage and output rated load, full load efficiency Min(%)=Typ.(%)-2%, half load efficiency Min(%)=Typ.(%)-3%.

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	Room temperature, nominal input voltage (12V)		--	3400/30	3473/50	mA
		Room temperature, nominal input voltage (15V)		--	3434/30	3515/50	
	Reflected Ripple Current	Room temperature, nominal input voltage, full load		--	200	--	
	Surge Voltage (1sec. max.)			-0.7	--	100	VDC
	Start-up Voltage			--	--	36	
	Input Under-voltage Protection	Vin=48V	Module under-voltage turn-on	--	--	36	
			Module under-voltage turn-off	26	30	--	
	Start-up time	Nominal input voltage & constant resistance load		--	--	100	ms
	Input Filter			Pi filter			
	Hot Plug			Unavailable			
	Ctrl ①	DOSB150-F48xx(F)S	Module turn-on	Ctrl pin open or pulled high (TTL 4.5-12VDC)			
			Module turn-off	Ctrl pin pulled low to -Vin (0-1.2VDC)			
			Input current during shutdown	--	13	25	mA
		DOSB150-F48xx(F)NS	Module turn-on	Ctrl pin pulled low to -Vin (0-1.2VDC)			
			Module turn-off	Ctrl pin open or pulled high (TTL 4.5-12VDC)			
			Input current during shutdown	--	13	25	mA
Output Specifications	Voltage Accuracy	Room temperature, input voltage range, 0%Io-100%Io		--	±2	±3	%Vo
	Linear Regulation	Room temperature		--	±0.2	±0.5	
	Load Regulation②	Room temperature, input voltage range, 5%-100% load		--	±0.5	±0.75	
	Transient Recovery Time	25% load step change, nominal input voltage		--	--	450	μs
	Transient response deviation			--	±3	±5	%Vo
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Ripple & Noise③	Room temperature, 20MHz,, 5%-100% load		--	150	200	mVp-p
	Trim	Input voltage range		90	--	110	%Vo
	Over-voltage Protection			110	125	160	
	Over-current Protection④			110	140	170	%Io
	Short-circuit Protection			Hiccup, continuous, self-recovery			

General Specifications	Isolation	Electric Strength Test for 1 minute with a leakage current of 1mA max.	Input-output	2250	--	--	VDC
			Input-case	1500	--	--	
			Output-case	750	--	--	
	Insulation Resistance	Input-output resistance at 500VDC		1000	--	--	MΩ
	Isolation Capacitance	Input-output, 100KHz/0.1V		--	4700	--	pF
	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-55	--	+125	
	Storage Humidity	Non-condensing		5	--	95	%RH
	Shock and Vibration Test			10-500Hz, 0.07g2/Hz, 10 Min. along X, Y and Z			
	Switching Frequency	PWM mode		--	333	--	KHz
	MTBF	Telcordia SR-332@25℃		1000	--	--	K hours
Mechanical Specifications	Dimensions	DOSB150-F48xxNS		33.02 × 22.86 × 12.5 mm			
		DOSB150-F48xxFNS		33.02 × 22.86 × 13.2 mm			
	Weight	DOSB150-F48xxNS		16.6 g(typ)			
		DOSB150-F48xxFNS		26.6 g(typ)			
	Cooling Method	Natural air cooling or forced air cooling					

Note:

①Ctrl control pin voltage is relative to input pin -Vin;

② According to the load working conditions of 0%-100% test, the load adjustment rate index is ±3%;

③ 0% - 5% load ripple & noise is less than or equal to 3%Vo. Ripple and noise are measured by the measurement method. For details;

④ Under high and low temperature conditions, it meets the over-current protection function, and does not control the over-flow point.

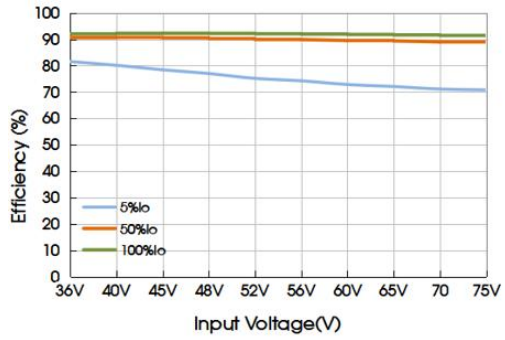
Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS A (See Fig. 4 for recommended circuits) / CLASS B (See Fig. 5 for recommended circuits)	
	RE	CISPR32/EN55032 CLASS A (See Fig. 4 for recommended circuits) / CLASS B (See Fig. 5 for recommended circuits)	
EMS	ESD	IEC/EN61000-4-2 Contact ±6KV, Air ±8KV	perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m (See Fig.5 for recommended circuits)	perf.Criteria B
	EFT	IEC/EN61000-4-4 100kHz ±2KV (See Fig. 5 for recommended circuits)	perf.Criteria B
	Surge	IEC/EN61000-4-5 line to line ±2KV (See Fig. 5 for recommended circuits)	perf.Criteria B
	CS	IEC/EN61000-4-6 3Vr.m.s (See Fig. 5 for recommended circuits)	perf.Criteria B

Characteristic Curve

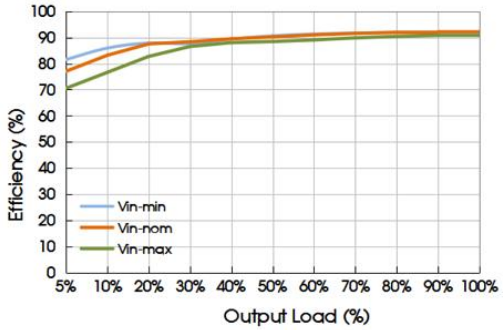
DOSB150-F4812(F)(N)S

Efficiency Vs Input Voltage



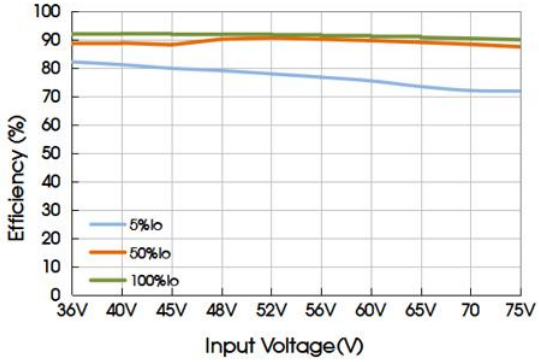
DOSB150-F4812(F)(N)S

Efficiency Vs Output Load



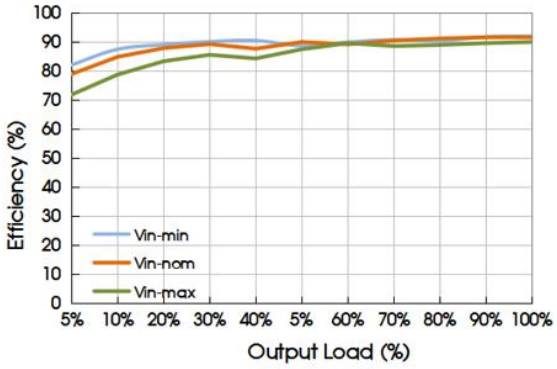
DOSB150-F4815(F)(N)S

Efficiency Vs Input Voltage



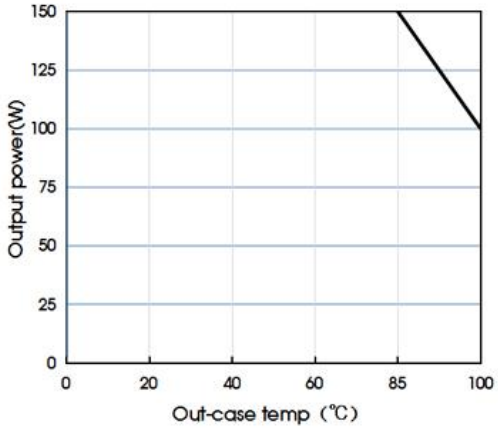
DOSB150-F4815(F)(N)S

Efficiency Vs Output Load



DOSB150-F4812(F)(N)S

Temperature Derating Curve(Vin=48V)



DOSB150-F4815(F)(N)S

Temperature Derating Curve(Vin=48V)

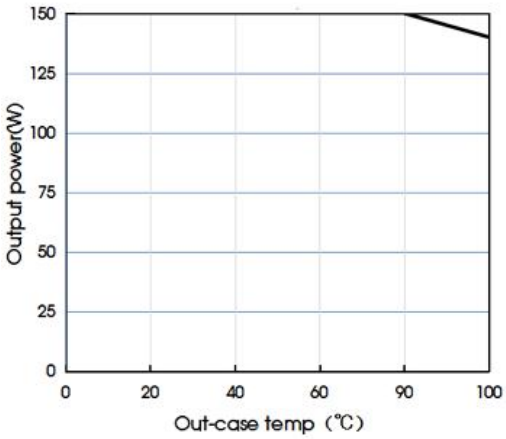


Fig.1

Note:

①For reference only;

②Test conditions: The allowable load of the product under the corresponding conditions is evaluated by the maximum temperature rise of the shell, and the maximum temperature of the shell should be controlled below the corresponding abscission temperature at the corresponding load point;

③Products without radiator: it is recommended to add heat dissipation measures by yourself. You can refer to the hot spot in the recommended thermal test program to control the hot spot temperature.

Design Reference

1. Ripple & Noise

All DC/DC converters of this series are tested according to the test circuit recommended in Figure 2 before leaving the factory.

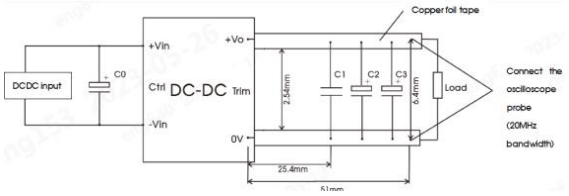


Fig.2

Capacitance Values / Output Voltage	C0	C1	C2	C3
12V/15VDC	220μF/250V	1μF/50V	10μF/35V	680μF/35V (Solid state)

2. Typical circuit

If the customer does not use our recommended circuit, the input must be connected with an electrolytic capacitor of at least 220μF to suppress the potential surge voltage generated by the input.

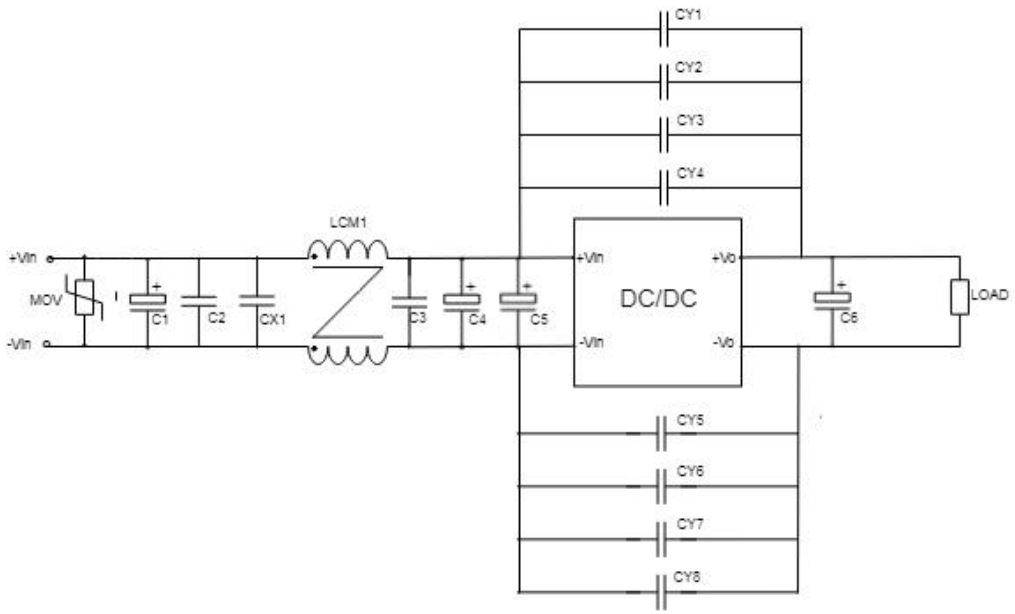
If it is required to further reduce the input/output ripple, the external input/output capacitors Cin and Cout can be increased or a capacitor with small series equivalent impedance value can be selected, but the capacitance value should not be greater than the maximum capacitive load of the product.



Fig.3

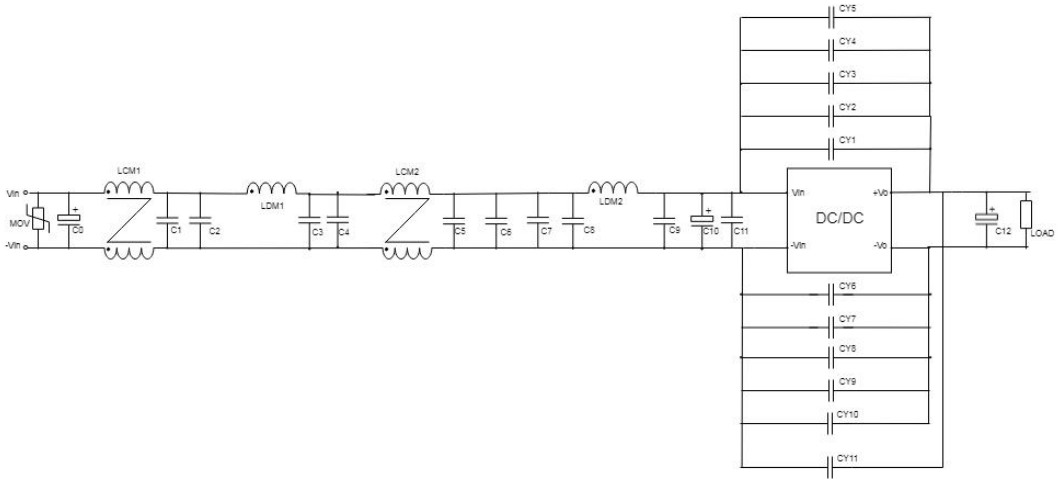
Capacitance Values / Output Voltage	Cin	C1	C2	Cout
12V/15VDC	220μF	1μF	10μF	680μF (Solid state)

3. EMC compliance recommended circuit



Device	Value	Parameter Description
MOV1	10D821K	Voltage sensitive resistor
C1	470uF	Electrolytic capacitor, withstand pressure≥100V
C2/C3	2.2nF	Ceramic capacitor, withstand pressure≥250V
CX1	2.2uF	X capacitor, withstand pressure≥450V
C4/C5	330uF	Electrolytic capacitor, withstand pressure≥200V
C6	680uF	Solid state capacitor, withstand pressure≥35V
CY4	2.2nF	Y capacitor
CY1/CY2/CY3/CY5/CY6/CY7	4.7nF	Y capacitor
LCM1	10mH	CM inductoror
CY8	0.22nF	Y capacitor

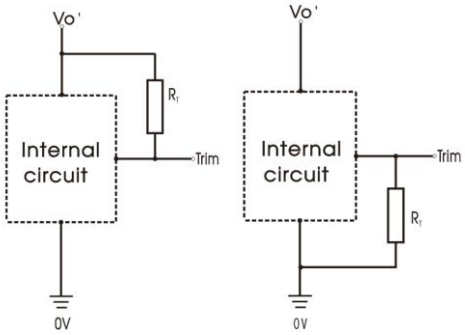
Fig.4



Device	Value	Parameter Description
MOV1	14D561K	Voltage sensitive resistor
C0	470uF	Electrolytic capacitor,Withstand pressure≥100V
LCM1/LCM2	10mH	CM inductoror
C1/C2/C3/C4/C5/C6/C7/C8/C9/C11	2.2nF	Ceramic capacitor，Withstand pressure≥250V
C10	330uF	Electrolytic capacitor,Withstand pressure≥200V
LDM1	5uH	DM inductor
LDM2	10uH	DM inductor
CY1/CY2/CY3/CY4/CY6/CY7/CY8/CY9/CY10	4.7nF	Y capacitor
CY5/CY11	10nF	Y capacitor
C12	680uF	Solid state capacitor，Withstand pressure≥35V

Fig.5

4. Trim function for output voltage adjustment (open if unused)



Trim up Trim down

TRIM resistor connection (dashed line shows internal resistor network)

Calculating Trim resistor values:

Trim up

$$R_T = \left(\frac{5.11 V_{nom}(100+\Delta\%)}{1.225\Delta\%} - \frac{511}{\Delta\%} - 10.22 \right)(k\Omega)$$

Trim down

$$R_T = \left(\frac{511}{\Delta\%} \right) - 10.22(k\Omega)$$

Note:

RT = Trim Resistor value

$$\Delta\% = \left| \frac{V_{nom} - V_{out}}{V_{nom}} \right| \times 100$$

V_{nom} = nominal output voltage

V_{out} = desired output voltage

5. Recommended solution for thermal test

During the application process, the thermal design of the product can be evaluated in combination with the product temperature derating curve, or the stable working range of the product can be determined by testing the temperature at point AB in Figure 6 (model with radiator, test at the same point). The temperature of point A is belowe120 ℃, which is the stable working range of DOSB150-F48_(F)(N)S; The temperature of point B is belowe125℃, which is the stable working range of DOSB150-F48_(F)(N)S.

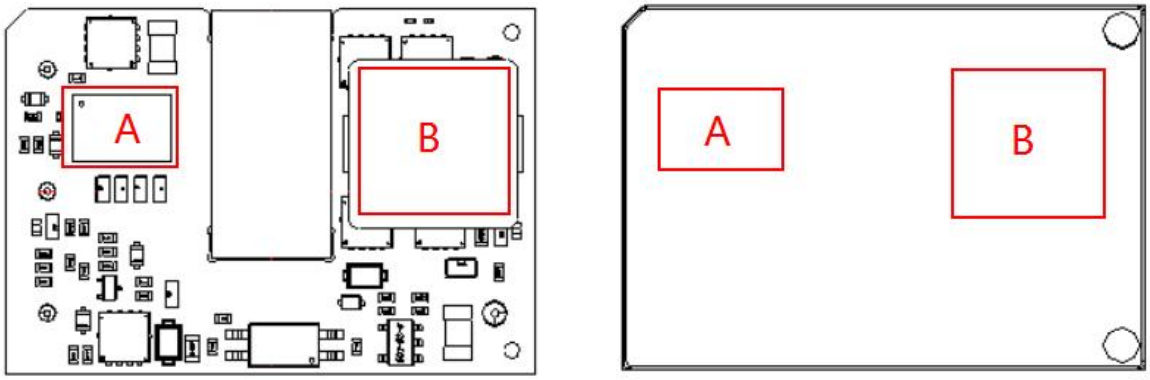
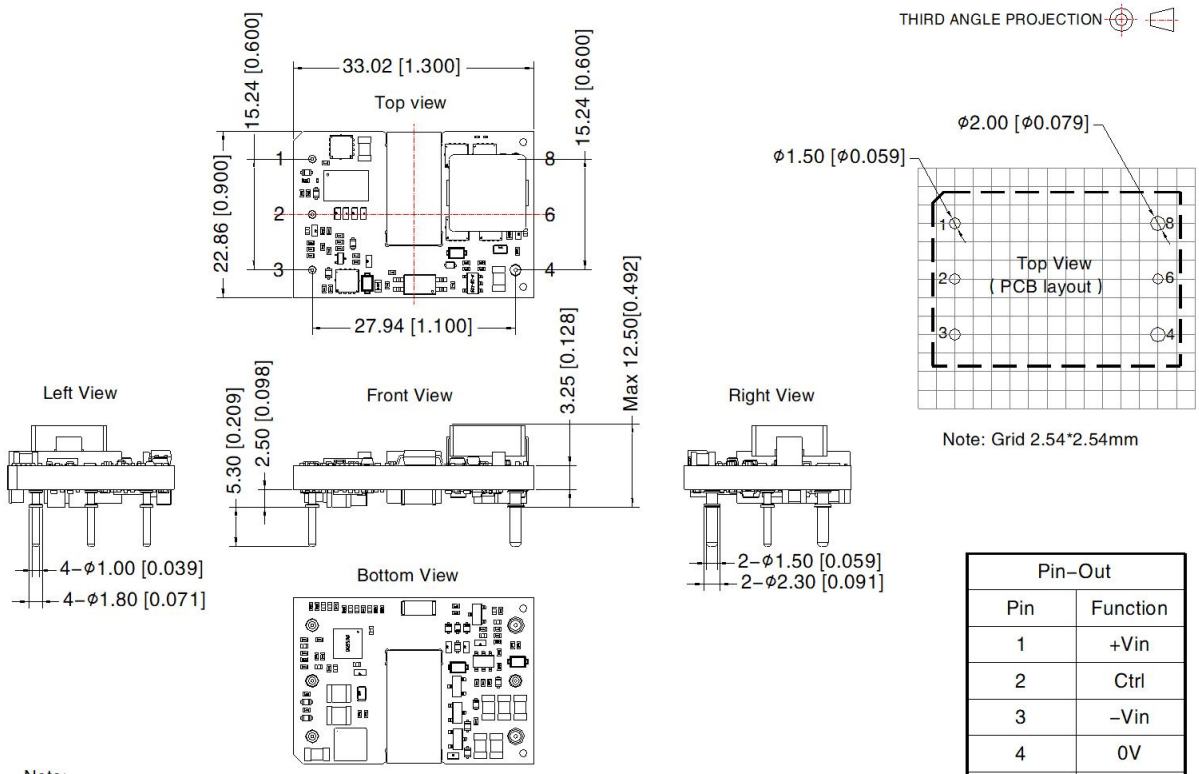


Fig.6

6. The products do not support parallel connection of their output

Dimensions and Recommended Layout

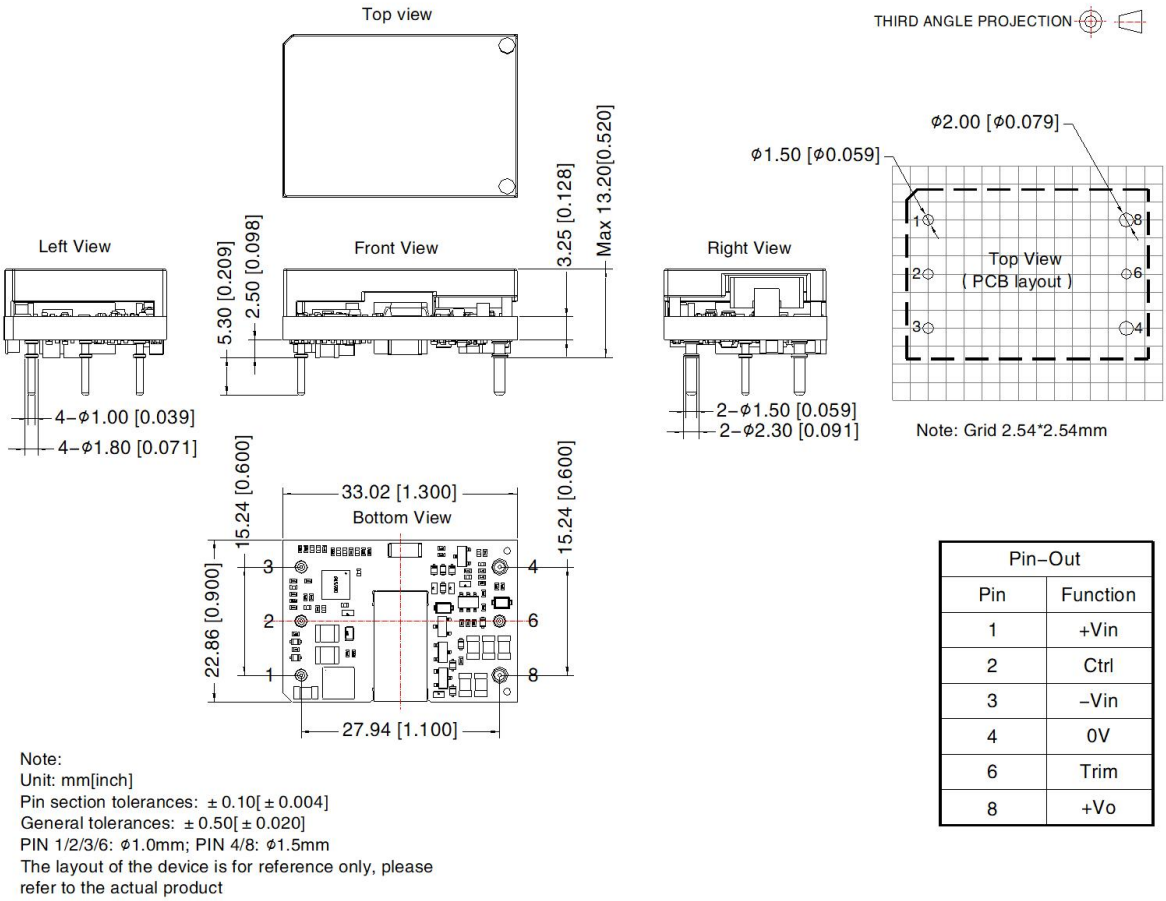


Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	+Vin
2	Ctrl
3	-Vin
4	0V
6	Trim
8	+Vo

Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]
PIN 1/2/3/6: ϕ1.0mm; PIN 4/8: ϕ1.5mm
The layout of the device is for reference only, please refer to the actual product

F Dimension



Pin–Out	
Pin	Function
1	+Vin
2	Ctrl
3	–Vin
4	0V
6	Trim
8	+Vo

Note:
Unit: mm[inch]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]
PIN 1/2/3/6: φ1.0mm; PIN 4/8: φ1.5mm
The layout of the device is for reference only, please refer to the actual product

Note:

1. It is recommended to use more than 5% load. If less than 5% load, the ripple index of the product may exceed the specification, but it will not affect the reliability of the product;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the data sheet;
3. The maximum capacitive load offered were tested at nominal input voltage and full load;
4. Unless otherwise specified, parameters in this data sheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
5. All index test methods in this manual are based on the enterprise standards of the company
6. We can provide product customization, specific needs can directly contact our technical staff;
7. The product involves laws and regulations: see "Product Features" and "EMC Features";
8. After scrapping, our products shall be classified and stored in accordance with ISO14001 and relevant environmental laws and regulations, and handed over to qualified units.