Typical Features

- ◆ Wide input voltage range 4:1
- ◆ Efficiency up to 90%
- ◆ Low no-load power consumption
- ◆ Operating temperature from -40℃ to +105℃
- ◆ High isolation voltage: 2100VDC (input-output) & 2100VDC (input-case)
- ◆ Input under voltage protection, output over voltage, short circuit, over current & over temp protections
- ◆ Standard 1/4 brick size

The **ZCD150-24S19A** is a high-performance quarter-brick DC-DC converter with a 24VDC nominal input and a regulated 19V/150W single output. It features an ultra-wide input voltage range of 9-40VDC with no minimum load requirement. With high isolation and an allowable baseplate operating temperature of up to 105° C, the module provides comprehensive protection against input under-voltage, output over-current, over-voltage, over-temperature, and short circuit. It also includes remote control, remote sense, and output voltage trim functions.

Selection Guide

Part No.	Input voltage range (VDC)	Output power (W)	Output voltage (VDC)	Output current (A)	Ripple & Noise (mVp-p)	Full load efficiency (%) Min/Typ.	Remarks
ZCD150-24S19AC	9-36	150	19	7.9	190	88/90	Standard Positive Logic
ZCD150-24S19AN							Standard Negative Logic
ZCD150-24S19AC-H							Heatsink Positive Logic
ZCD150-24S19AN-H							Heatsink Negative Logic

Input Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Max input current	Input voltage 9V, full load	--	--	23	A
No load input current	Rated input voltage	--	--	30	mA
Input Inrush voltage (1sec. max.)	The unit could be permanently damaged by input over this Voltage	-0.7	--	50	VDC
Start-up voltage		--	--	9	
Input under voltage protection	50% Load Test	--	--	8.5	
ON/OFF Control (CNT)	Positive logic: CNT no connection or connected to 3.5-15V to turn ON, connected to 0-1.2V to turn OFF the converter				Reference voltage -Vin
	Negative logic: CNT no connection or connected to 3.5-15V to turn OFF, connected to 0-1.2V to turn ON the converter				

Output Specifications

Item	Operating conditions	Min.	Typ.	Max.	Unit
Output voltage accuracy	Nominal input voltage, 0%-100% load	--	±0.5	±1.0	%
Line regulation	Full load, input voltage from low to high	--	±0.2	±0.5	
Load regulation	Nominal input voltage, 10%-100% load	--	±0.2	±0.5	
Transient recovery time	25% load step change (step rate 1A/50uS)	--	200	250	uS
Transient response deviation		-5	--	+5	%
Temperature drift coefficient	Full load	-0.02	--	+0.02	%/℃
Ripple & Noise	20M bandwidth, with external capacitor >470μF	--	150	190	mVp-p
Output voltage adjustment（TRIM）		-10	--	+10	%
Output Voltage Remote Sense (Sense)		--	--	5	%
Over temperature protection	Maximum temperature of the metal base	105	115	125	℃
Over voltage protection		125	--	140	%
Over current protection		8.7	--	15	A
Short circuit protection		Hiccup, continuous, self-recovery			

General Specifications

Item	Operating conditions		Min.	Typ.	Max.	Unit
Isolation voltage	I/P-O/P	Test 1min, leakage current <3mA	2100	--	--	VDC
	I/P-Case	Test 1min, leakage current <3mA	2100	--	--	VDC
	O/P-Case	Test 1min, leakage current <3mA	500	--	--	VDC
Insulation resistance	I/P-O/P	@ 500VDC	100	--	--	MΩ
Switching frequency			--	210	--	KHz
MTBF			150	--	--	K hours

Environmental characteristics

Item	Operating conditions	Min.	Typ.	Max.	Unit
Operating temperature	Refer to the temperature derating graph	-40	--	+105	℃
Storage humidity	No condensing	5	--	95	%RH
Storage temperature		-40	--	+125	℃
Pin soldering temperature	1.5mm from the case, soldering time <1.5S	--	--	+350	
Cooling requirement		EN60068-2-1			
Dry heat requirement		EN60068-2-2			
Damp heat requirement		EN60068-2-30			
Shock and vibration		IEC/EN 61373 C1/Body Mounted Class B			

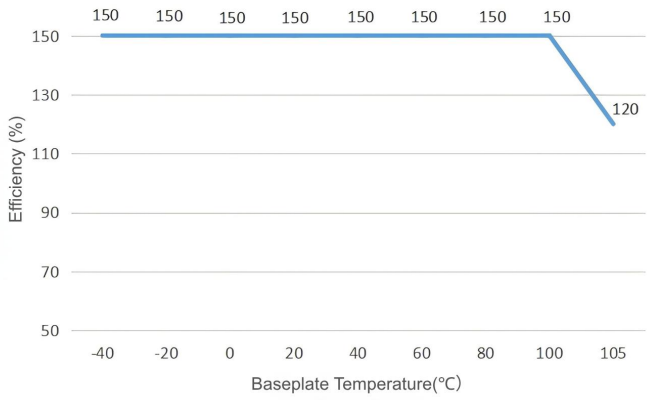
EMC Performances

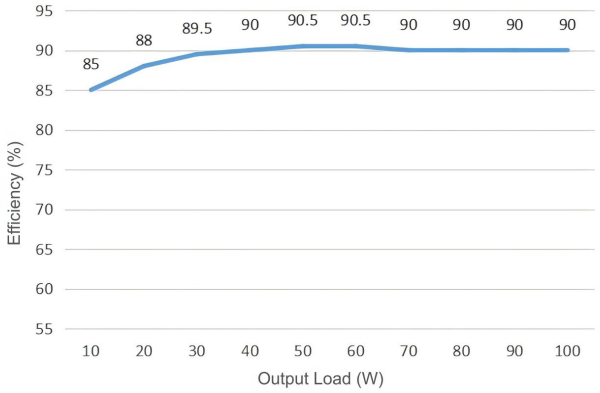
EMI	CE	EN55032-3-2	150kHz-500kHz 66dBuV	
		EN55032-2-1	500kHz-30MHz 60dBuV	
	RE	EN55032-3-2	30MHz-230MHz 50dBuV/m at 3m	
		EN55032-2-1	230MHz-1GHz 57dBuV/m at 3m	
EMS	ESD	IEC/EN61000-4-2/GB/T 17626.2-2006	Contact ±6KV/Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3/GB/T 17626.3-2006	10V/m	Perf.. Criteria A
	EFT	IEC/EN61000-4-4/GB/T 17626.4-2008	±2kV 5/50ns 5kHz	Perf. Criteria A
	Surge	IEC/EN61000-4-5/GB/T 17626.5-2008	line to line ± 2KV	Perf.. Criteria B
	CS	IEC/EN61000-4-6/GB/T 17626.6-2008	0.15MHz-80MHz 10 Vr.m.s	Perf. Criteria A

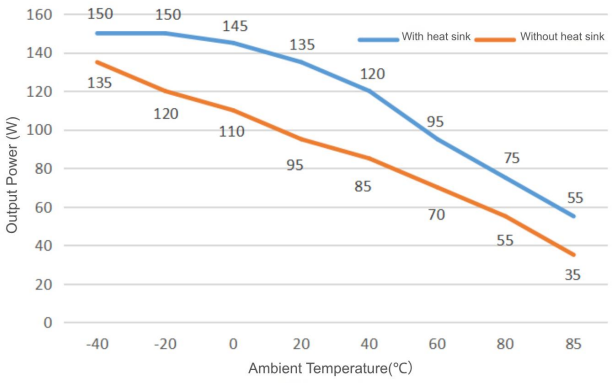
Physical Characteristics

Case materials	Metal base + plastic case in black, flame class UL94-V0
Heat sink	Dimension 61.5x39.0x15.0 mm, weight 52g, aluminum, anodized black
Cooling method	Conduction cooling or forced air cooling
Unit weight	Standard 72g, with heatsink 125g

Product Characteristics Curves



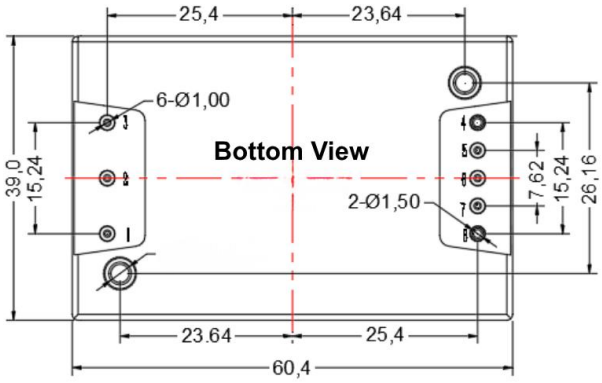


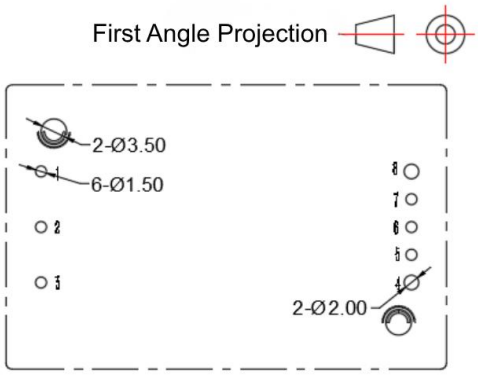


Notes:

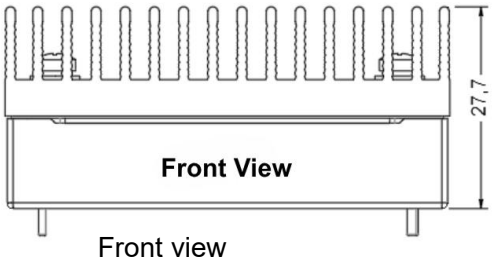
1.Both Temperature Derating and Efficiency curves represent typical test results.
2.Temperature Derating curves are tested under our laboratory conditions. If actual application environments differ, ensure the aluminum case temperature does not exceed 100° C; the product can then be used within any rated load range.

Mechanical Dimensions and Pin-Out Function Description

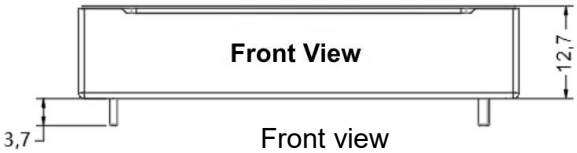




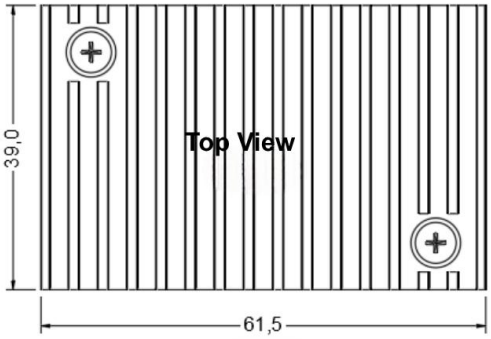
Recommended PCB Slot Dimensions



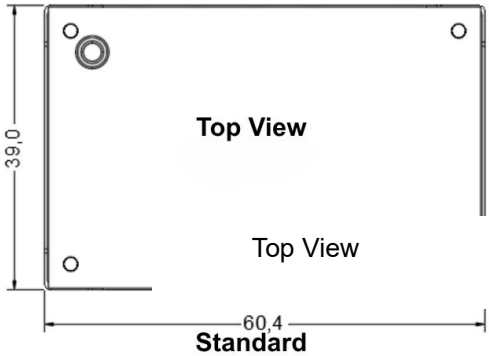
Front view



Front view



Standard + Heat sink
61.5*39.0*27.7mm

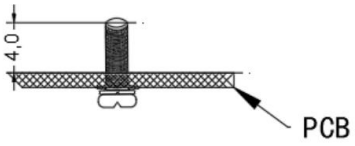


Top View

Standard
61.0*57.9*12.7mm

Note:

- **Unit: mm**
- **Pin 1, 2, 3, 5, 6, 7 diameter: 1.00mm**
- **Pin 4, 8 diameter: 1.5mm**
- **Tolerance: X.X ±0.50 mm, X.XX ±0.10 mm**
- **Mounting Torque: 0.4 N·m (Max.)**

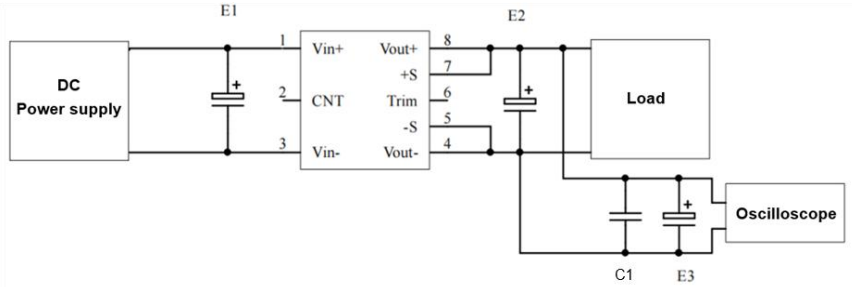


Pin Length L=3.7mm

Pin No.	1	2	3	4	5	6	7	8
Function	Vin+	CNT	Vin-	Vout-	-S	TRIM	+S	Vout+
Description	Input Positive	Remote Control	Input Negative	Output Negative	Remote Sense Negative	Output Voltage Trim	Remote Sense Positive	Output Positive

Recommended circuits for application

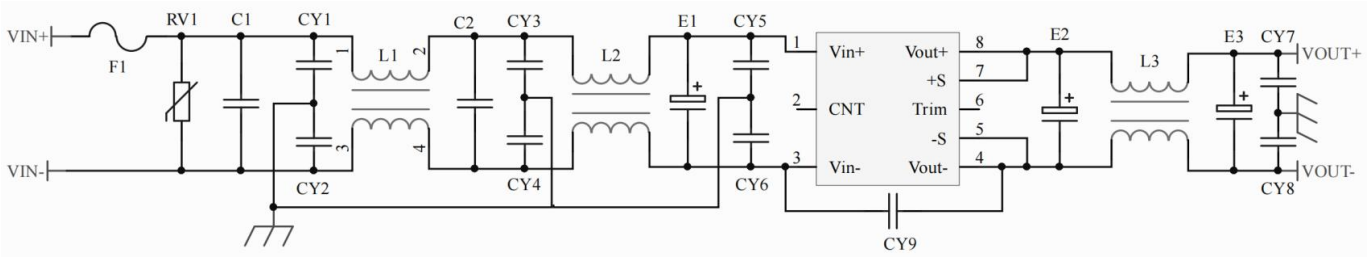
1. All this series of converters will be tested according to the circuit diagram below before shipping.



Output Volt. \ Capacitance	E1 (μF)	E2 (μF)	C1(μF)	E3 (μF)
3.3VDC	100	1000	1	10
5VDC		680		
12VDC		470		
.....				
48VDC				
.....	68	68		
110VDC				

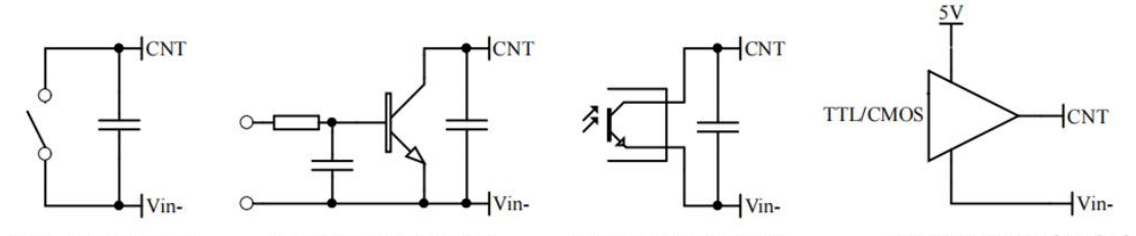
2. Typical application circuit

If this circuit recommended is not adopted, please connect an electrolytic capacitor ≥100 μF in parallel at the input to suppress the possible surge voltage.



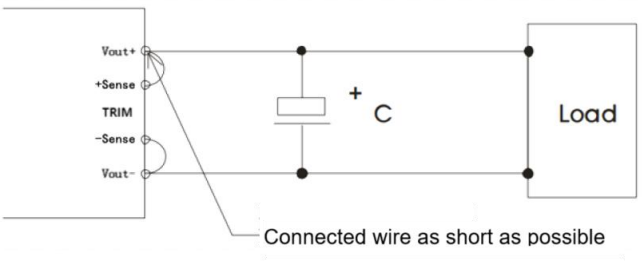
F1	T40A/63V Time-delay fuse
RV1	14D 62V Varistor
C1, C2	105/63V Polyester Film Capacitor
CY1, CY2, CY3, CY4, CY5, CY6	102/250Vac Y2 capacitors
CY7, CY8	103/2KV Ceramic SMD Capacitor
CY9	471/250Vac Y1 capacitor
E1	220μF/50V Electrolytic Capacitor
E2，E3	220μF/25V Electrolytic Capacitors
L1, L2	>1mH, temperature rise less than 25°@23A
L3	>100μH, temperature rise less than 25°K@8A

3. ON/OFF control (CNT) application



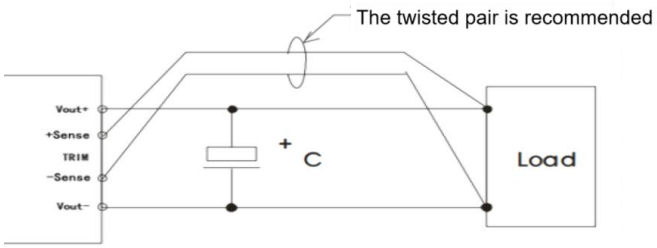
4. Application for Sense

1) **If remote sense is not used:**



Notes:
1. If remote sense is not used, ensure that +Vout is shorted to +Sense, and -Vout is shorted to -Sense.
2. The connections between +Vout to +Sense and -Vout to -Sense should be as short as possible and placed close to the pins; otherwise, module instability may occur.

2) **If remote sense is used:**



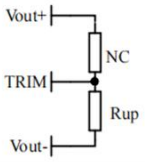
Notes:
1. Long remote sense leads may cause output voltage instability.
2. When using remote sense, use twisted-pair or shielded cables and keep the leads as short as possible.
3. Use wide PCB traces or thick wires between the power module and the load; ensure the line voltage drop is below 0.3V to maintain the output voltage within the specified range.
4. Lead impedance may cause output voltage oscillation or excessive ripple; please verify the performance before final application.

5. TRIM & TRIM resistance calculation

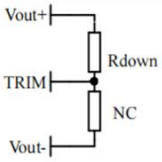
The calculation of △U and Rup & Rdown:

Rup=50/△U-5.1(KΩ)

Rdown=20*(19-2.5-△U)/△U – 5.1(KΩ)



Voltage-up: Add Rup between Trim and Vout-



Voltage-down: Add Rdown between Trim and Vout+

6. This product does not support direct parallel connection for power expansion. For parallel applications, please consult our technical team.

Others

1. The product warranty period is two years. We offer free repair for any damage under normal use. Paid services are available for damage caused by improper application or technical mishandling.
2. Customized products and matching filter modules are available. Please contact Aipupower technical team for specific details.

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