



## Specifications

	Parameter	Conditions	Min.	Typ.	Max.	Unit	
Input	Input filter			Pi type			
	Input voltage range		14	110	160	VDC	
	No load input current				15	mA	
	Under voltage lockout	0%~100% load		12		VDC	
	Start-up voltage	0%~100% load			13.2	VDC	
	Remote ON/OFF		DC-DC ON		Open or 3V < Vr < 12V		
			DC-DC OFF		Short or 0V < Vr < 1.2V		
	Input surge voltage	0.1s max.			200	VDC	
	Start-up time	100% Load at Nominal Vin		100		300	mS
Output	Voltage accuracy		-1		+1	%	
	Operating frequency	100% Load at Nominal Vin		250		KHz	
	Voltage adjustability	0%~100% load at Vin range Pout ≤ max rated power			±10	%	
	Line regulation	LL to HL at 100% load	-0.2		+0.2	%	
	Load regulation	0% to 100% load	-0.5		+0.5	%	
	Temperature coefficient				0.05	%/°C	
	Transient response recovery time	25% load step change (75% to 100% load)			500	μs	
Environment	Operating baseplate temperature	At Nominal Vin	-40		105	°C	
	Storage temperature		-55		125	°C	
	Over temperature protection	Tc (Case Temperature)			115	°C	
	Relative humidity		5		95	%RH	
	Altitude				4000M		
	Safety approval				EN62368, basic insulation		
Function	Isolation voltage	1 minute, Input to Output Cut-off current: 5mA for VAC	3000			VAC	
		1 minute, Input (Output) to case Cut-off current: 5mA for VAC	1500			VAC	
	Isolation resistance	500VDC	1000			MΩ	
	Isolation capacitance				3000	pF	
	Short circuit protection				Continuous, automatic recovery		
	Over load protection	110VDC			150	%	
	Over voltage protection Shutdown	110VDC, 12V output	13.4		18.0	VDC	
		110VDC, 24V output	26.9		36.0	VDC	
		110VDC, 48V output	53.8		72.0	VDC	
		Over voltage 112~150%, 54V output	60.5		81.0	VDC	
MTBF	25°C	185			KHrs		
Vibration				EN61373			
Physical	Dimension			57.9(L) x 36.8(W) x 12.7(H) mm			
	Weight			75	g		
	Case material			Aluminum base-plate with plastic case			
	Potting material			Silicon			
	Cooling method			Nature Convection			
EMC	EMI <sup>(1)</sup>	EN50121-3-2/ EN55032		Class A/B			

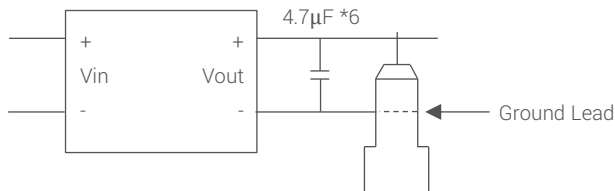
CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

Parameter	Conditions	Min.	Typ.	Max.	Unit
ESD	EN61000-4-2, air±8kV, contact±6kV				Criteria A
Radiated immunity	EN61000-4-3, 10V/m				Criteria A
Fast transient <sup>(2)</sup>	EN61000-4-4, ±2kV				Criteria A
Surge <sup>(2)</sup>	EN61000-4-5, ±2kV				Criteria A
Conducted immunity	EN61000-4-6, 10Vrms				Criteria A
Magnetic field immunity	EN61000-4-8, 10 A/m				Criteria A

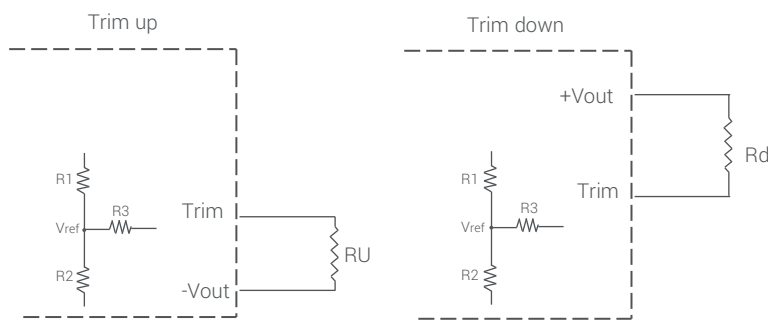
- <sup>(1)</sup> The EMI need external filter circuit for class A/B.
- <sup>(2)</sup> External input capacitor required 100µF/200V x3
- All specifications valid at nominal input voltage, full load and 25°C after warm-up time unless otherwise stated.
- The product information and specifications are subject to change without prior notice.

## Ripple & Noise Measure Method



Measured with 20MHz bandwidth and 4.7µF \*6 ceramic capacitor.

## Trim Application



Formula for trim resistor:

$$\text{UP: } R_U = \frac{aR_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V'_0 - V_{ref}} \cdot R_1$$

$$\text{DOWN: } R_d = \frac{bR_1}{R_1 - b} - R_3 \quad b = \frac{V'_0 - V_{ref}}{V_{ref}} \cdot R_2$$

Note:

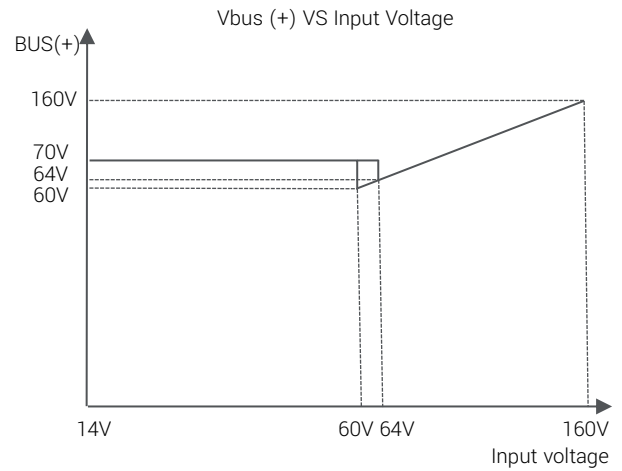
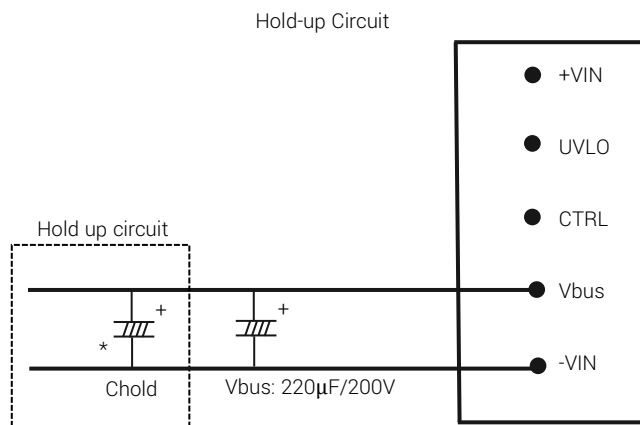
- R<sub>u</sub>, R<sub>d</sub> is mean trim resistor, please check the formula.
- a & b: user define parameter, no actual meanings.
- V'<sub>0</sub> is mean trim up/down voltage.
- Value for R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and V<sub>ref</sub> refer to the table below.

Vout	Vref	R1	R2	R3
12V	2.50V	38K	10K	68K
24V	2.50V	86K	10K	76.8K
48V	2.50V	182K	10K	80.6K
54V	2.50V	206.1K	10K	82K

CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

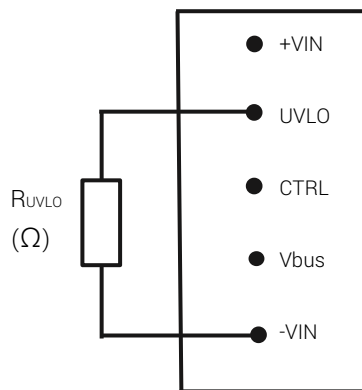
## Hold Up Time



### Chold table

V <sub>in</sub>	24V	36V	48V	72V	96V	110V
10ms	1800µF	1800µF	1800µF	1800µF	600µF	500µF
30ms	4800µF	4800µF	4800µF	4800µF	1800µF	1200µF

## UVLO External Resistor



The under voltage threshold can set by external resistor placed between the UVLO and -VIN.

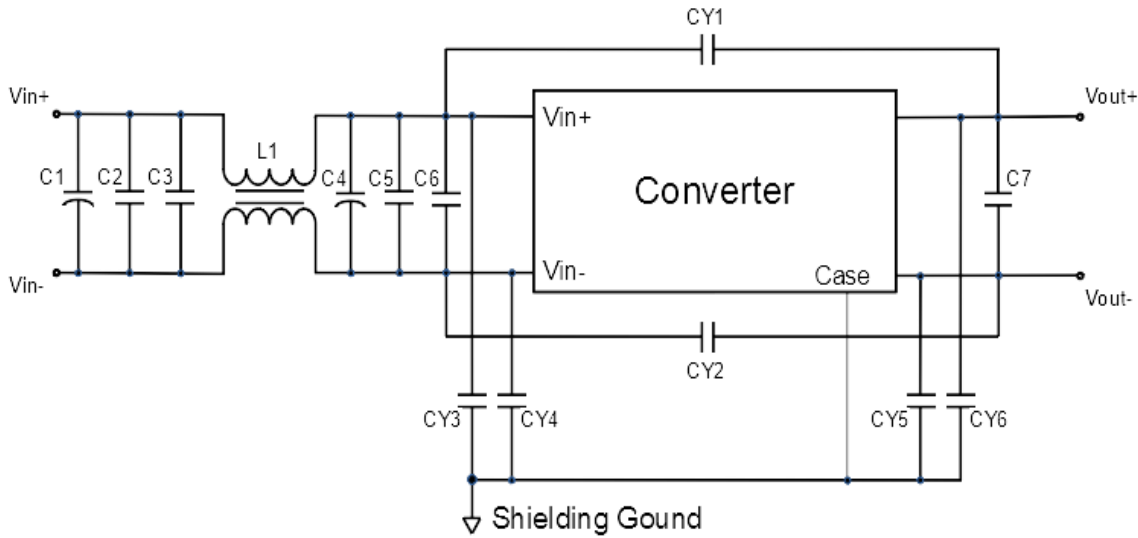
### UVLO table

UVLO External Resistor R <sub>UVLO</sub> (Ω)	OPEN	125K	62K	27K
Turn-off Threshold	12V	19.9V	26.3V	39.8V
Turn-on Threshold	13.1V	20.9V	27.9V	42V

CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

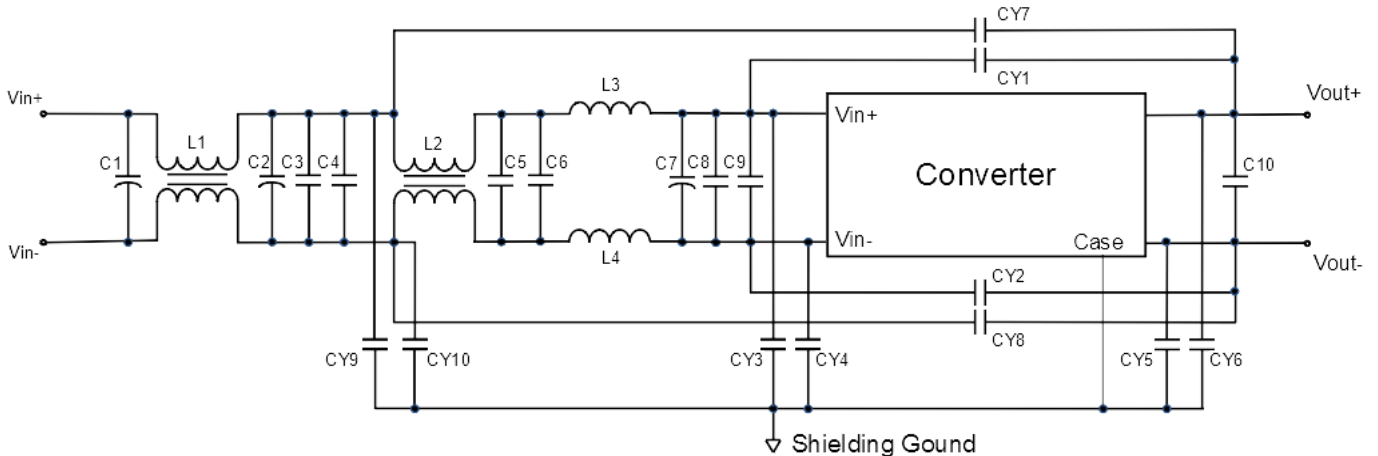
The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

## EMI filtering-suggestion for EN50121-3-2/ EN55032 Class A



Vout	C1, C4	C2, C3, C5, C6	C7	CY1, CY2	CY3, CY4, CY5, CY6	L1
12V	100 $\mu$ F 200V Aluminum Cap KXJ Series	0.68 $\mu$ F 1210 250V Ceramic Cap	4.7 $\mu$ F 1210 100V x 6 parallel Ceramic Cap	1000pF 2211 5KV Ceramic Cap	1200pF 2211 3KV x 4 parallel Ceramic Cap	CommomChoke A10 T18X12X8C 2.0mH $\pm$ 35%
24V	220 $\mu$ F 200V Aluminum Cap KXJ Series	0.68 $\mu$ F 1210 250V Ceramic Cap	4.7 $\mu$ F 1210 100V x 6 Parallel Ceramic Cap	1000pF 2211 5KV eramic Cap	1200pF 2211 3KV x 4 parallel Ceramic Cap	CommomChoke A10 T18X12X8C 2.0mH $\pm$ 35%
48V	220 $\mu$ F 200V Aluminum Cap	0.68 $\mu$ F 1210 250V	4.7 $\mu$ F 1210 100V x 6 Parallel	1000pF 2211 5KV	1200pF 2211 3KV x 5 parallel	CommomChoke A10 T18X12X8C
54V	KXJ Series	Ceramic Cap	Ceramic Cap	eramic Cap	Ceramic Cap	2.0mH $\pm$ 35%

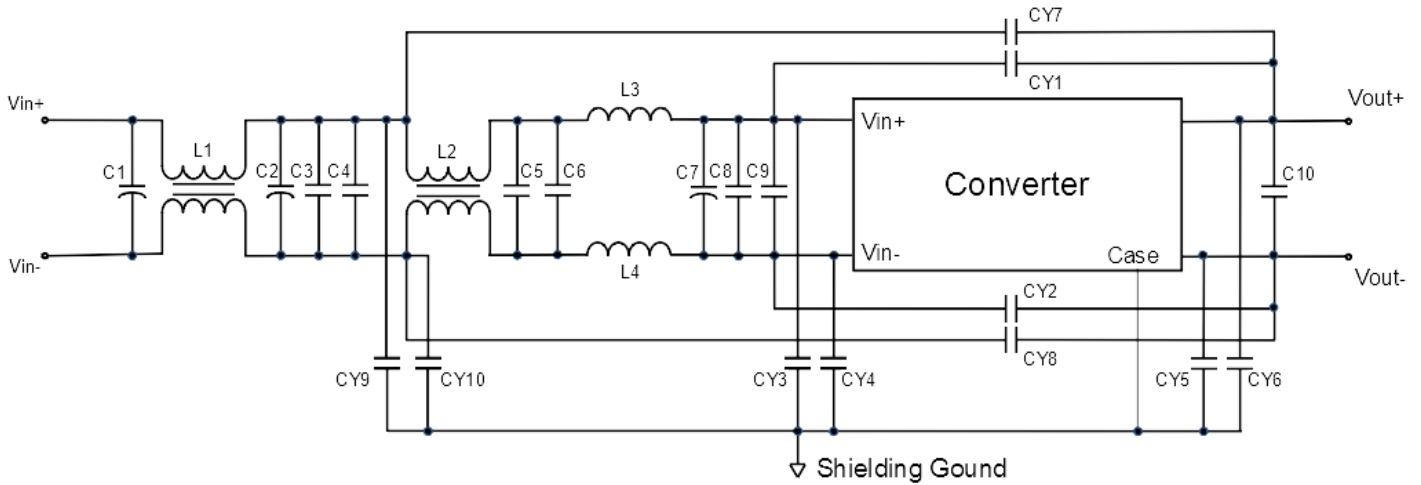
## EMI filtering-suggestion for EN50121-3-2/ EN55032 Class B



Vout	C1, C2, C7	C3, C4, C5, C6, C8, C9	C10	CY1	CY2	CY3, CY4, CY5, CY6	CY7, CY8	L1, L2	L3, L4
12V	100 $\mu$ F 200V Aluminum Cap KXJ Series	0.68 $\mu$ F 1210 250V Ceramic Cap	4.7 $\mu$ F 1210 100V x 6 parallel Ceramic Cap	2200pF 2211 5KV Ceramic Cap	1000pF 2211 5KV Ceramic Cap	2200pF 2211 3KV x 4 parallel Ceramic Cap	470pF 2211 5KV Ceramic Cap	CommomChoke A10 T18X12X8C 2.0mH $\pm$ 35%	4.7 $\mu$ H GSTD 1265PE- 4R7M

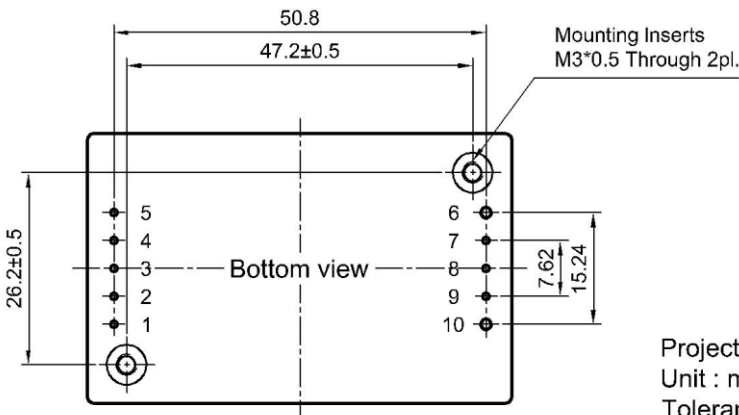
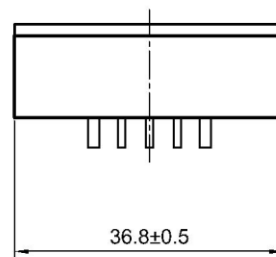
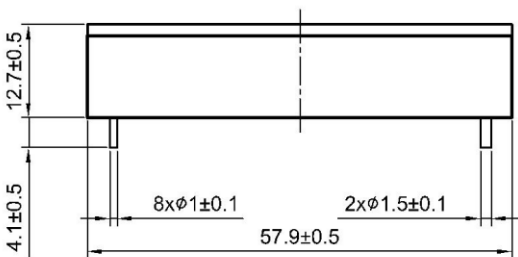
CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.



Vout	C1, C2, C7	C3, C4, C5, C6, C8, C9	C10	CY1	CY2	CY3, CY4, CY5, CY6	CY9, CY10	L1, L2	L3, L4
24V	100μF 200V	0.68μF 1210	4.7μF 1210	2200pF 2211	1000pF 2211	2200pF 2211	330pF 2211	CommonChoke	4.7μH
48V	Aluminum Cap	250V	100V x 6	5KV	5KV	3KV x 6 parallel	3KV	A10 T18X12X8C	GSTD
54V	KXJ Series	Ceramic Cap	Parallel	Ceramic Cap	Ceramic Cap	Ceramic Cap	Ceramic Cap	2.0mH ±35%	1265PE-4R7M

## Mechanical Dimension & Pinning



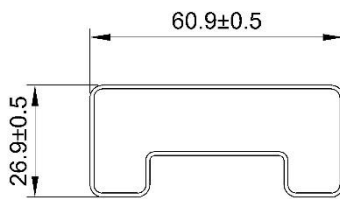
Projection : Third angle projection  
 Unit : mm  
 Tolerance : ±0.25mm

Pin	Function
1	+Vin
2	UVLO
3	Ctrl
4	Vbus
5	-Vin
6	-Vout
7	-S
8	Trim
9	+S
10	+Vout

CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

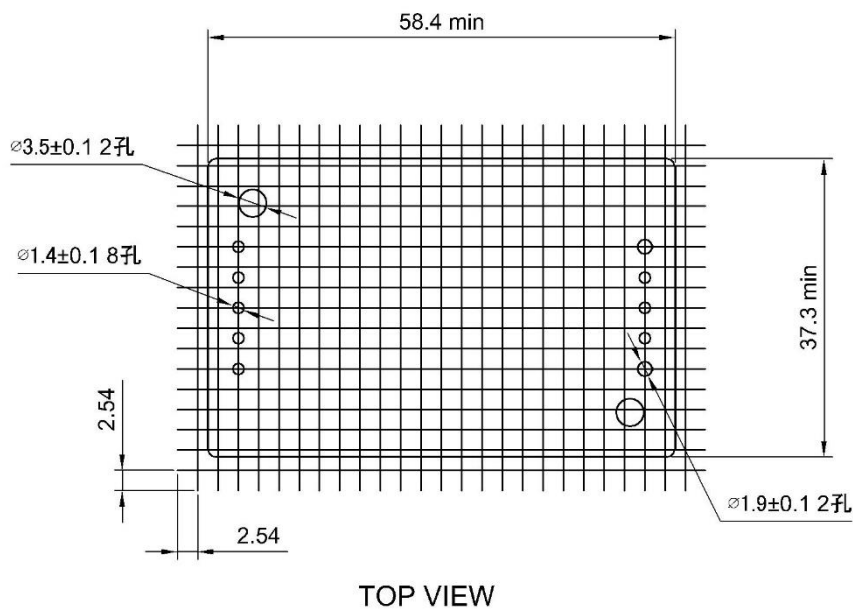
The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

## Package



UNIT:mm  
 1 Tube = 11 pcs  
 Length:  $520 \pm 2$ mm

## Recommended Footprint



CTC is the professional and one among world's leading manufacturers of DC-DC/ AC-DC converters.

The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.