

## HSK5130-00 Series weapon DC-DC converter

### 1.1 Absolute maximum rated of weapon DC-DC converter

Pulse input voltage  $V_{INP}$

(Positive pulse width 100ms, positive duty cycle 1%)  $\cdots -20V \sim +60V$ ;

Input voltage  $V_{IN}$   $\cdots \cdots \cdots 26V$ ;

Output current limit  $\cdots \cdots \cdots 3A$ ;

Storage temperature  $T_{stg}$   $\cdots \cdots \cdots -65^{\circ}C \sim 150^{\circ}C$ ;

Lead welding temperature (10s)  $T_h$   $\cdots \cdots \cdots 300^{\circ}C$ ;

Junction temperature  $T_j$   $\cdots \cdots \cdots 175^{\circ}C$ ;

Thermal resistance  $R_{(th)J-C}$   $\cdots \cdots \cdots 3.5^{\circ}C/W$ ;

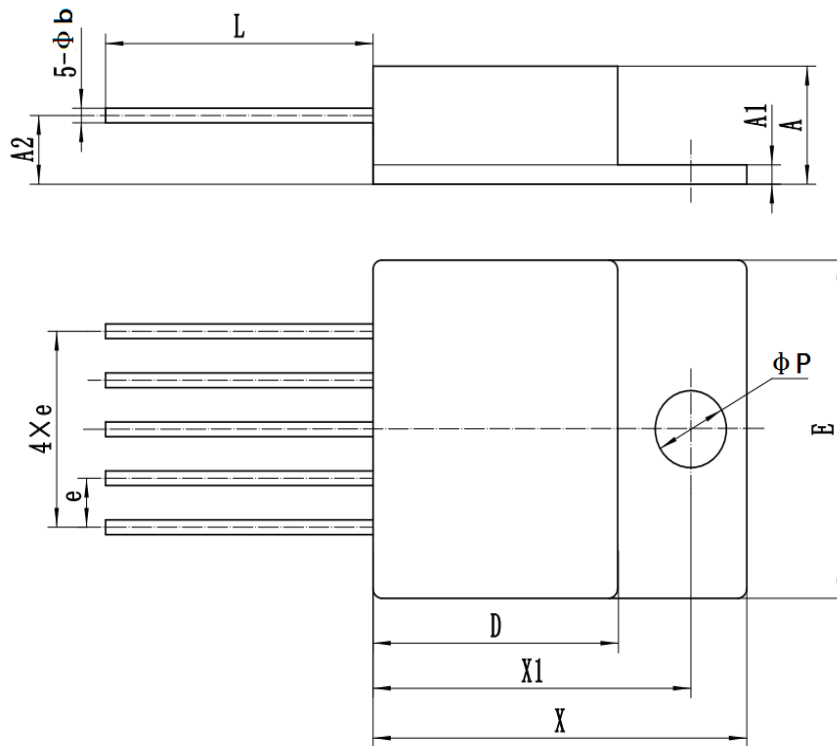
Power consumption  $P_b$  (Without heat sink)  $\cdots \cdots \cdots 1W$ .

### 1.2 Recommended operating conditions of weapon DC-DC converter

Input voltage  $V_{IN}$   $\cdots \cdots \cdots (V_{OUT}+1)V$ ;

Operating temperature  $T_c$   $\cdots \cdots \cdots -55^{\circ}C \sim 125^{\circ}C$ 。

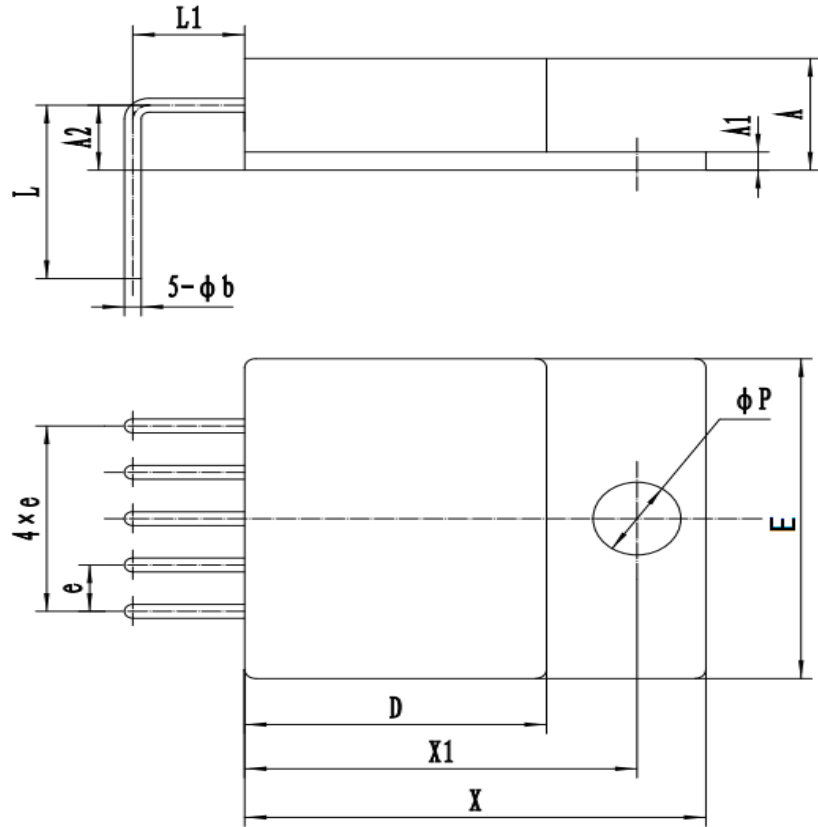
### 1.3 Package Specifications of weapon DC-DC converter



Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
$A$	-	-	6.70
$A1$	0.70	-	1.30
$A2$	3.20	-	3.80
$D$	-	-	14.22
$E$	-	-	18.03
$X$	-	-	21.30
$X1$	17.33	-	18.33
$L$	12.0	-	-
$e$	-	2.54	-
$\phi b$	0.63	-	0.89
$\phi P$	3.70	-	4.30

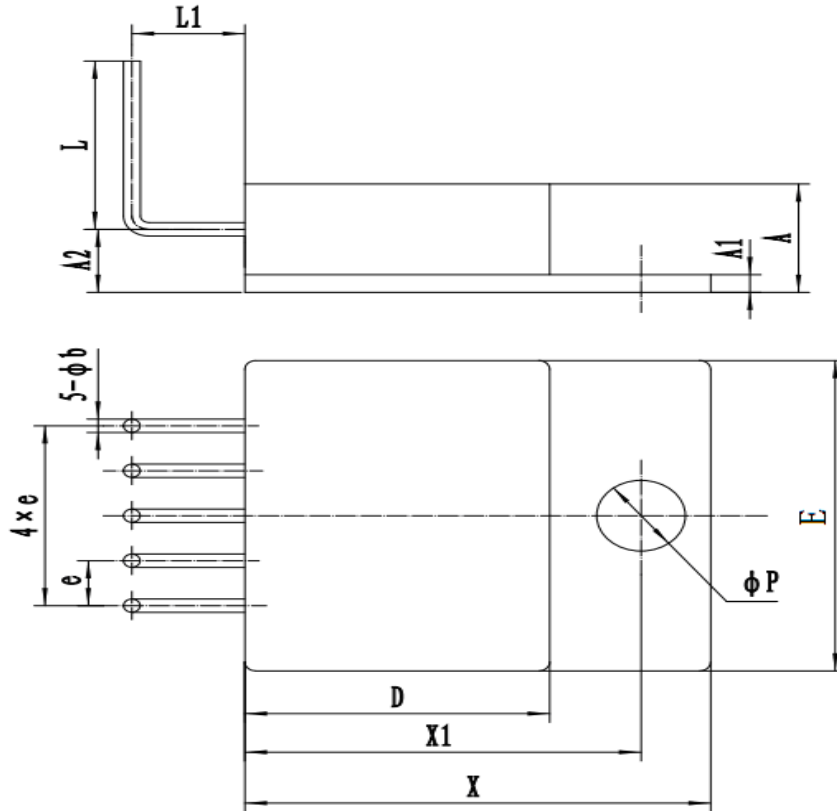
Fig 10a TS Package outline drawing



Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
$A$	-	-	6.70
$A1$	0.70	-	1.30
$A2$	3.20	-	3.80
$D$	-	-	14.22
$E$	-	-	18.03
$X$	-	-	21.30
$X1$	17.33	-	18.33
$L$	9.0	-	-
$L1$	4.58	-	5.58
$e$	-	2.54	-
$\phi b$	0.63	-	0.89
$\phi P$	3.70	-	4.30

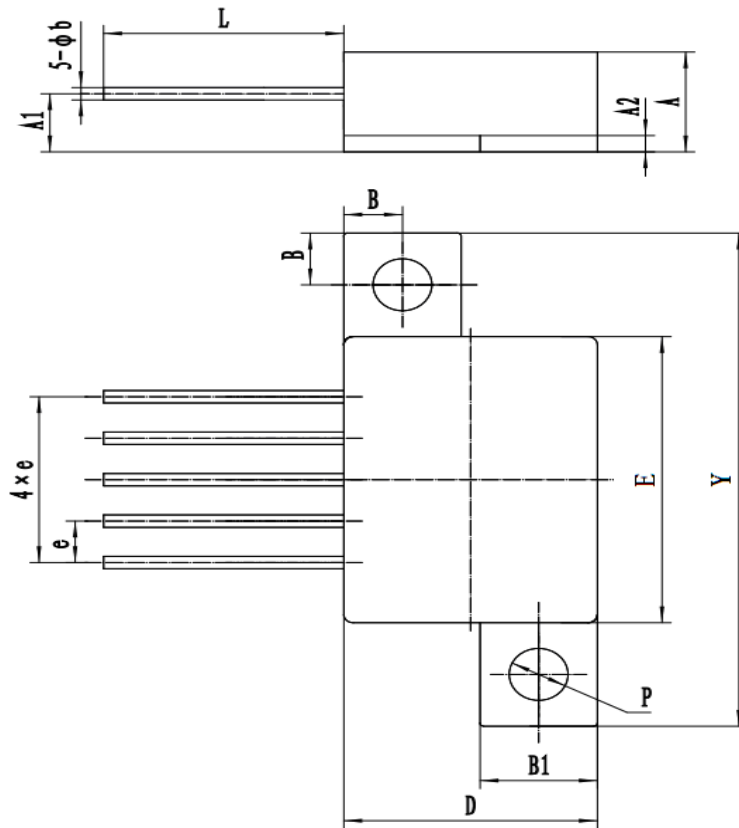
Fig 10b TD Package outline drawing



Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
<i>A</i>	-	-	6.70
<i>A1</i>	0.70	-	1.30
<i>A2</i>	3.20	-	3.80
<i>D</i>	-	-	14.22
<i>E</i>	-	-	18.03
<i>X</i>	-	-	21.30
<i>X1</i>	17.33	-	18.33
<i>L</i>	9.0	-	-
<i>L1</i>	4.58	-	5.58
<i>e</i>	-	2.54	-
$\varphi b$	0.63	-	0.89
$\varphi P$	3.70	-	4.30

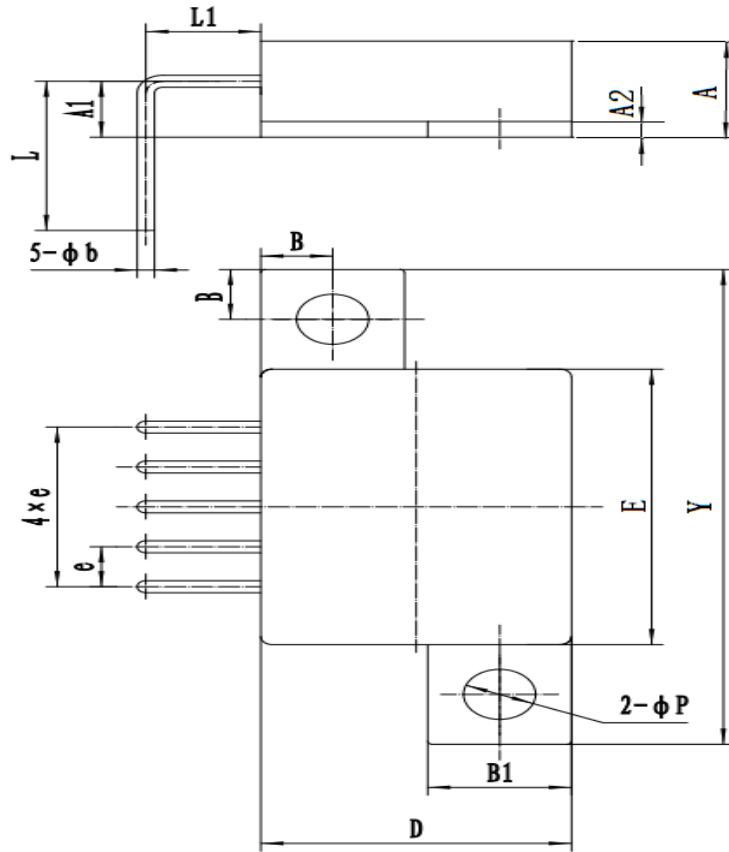
Fig 10c TU Package outline drawing



Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
$A$	-	-	6.70
$A1$	3.20	-	3.80
$A2$	0.70	-	1.30
$B$	2.87	-	3.48
$B1$	6.05	-	6.65
$D$	-	-	14.22
$E$	-	-	18.03
$Y$	-	-	30.72
$L$	12.0	-	-
$e$	-	2.54	-
$\phi b$	0.63	-	0.89
$\phi P$	2.90	-	3.50

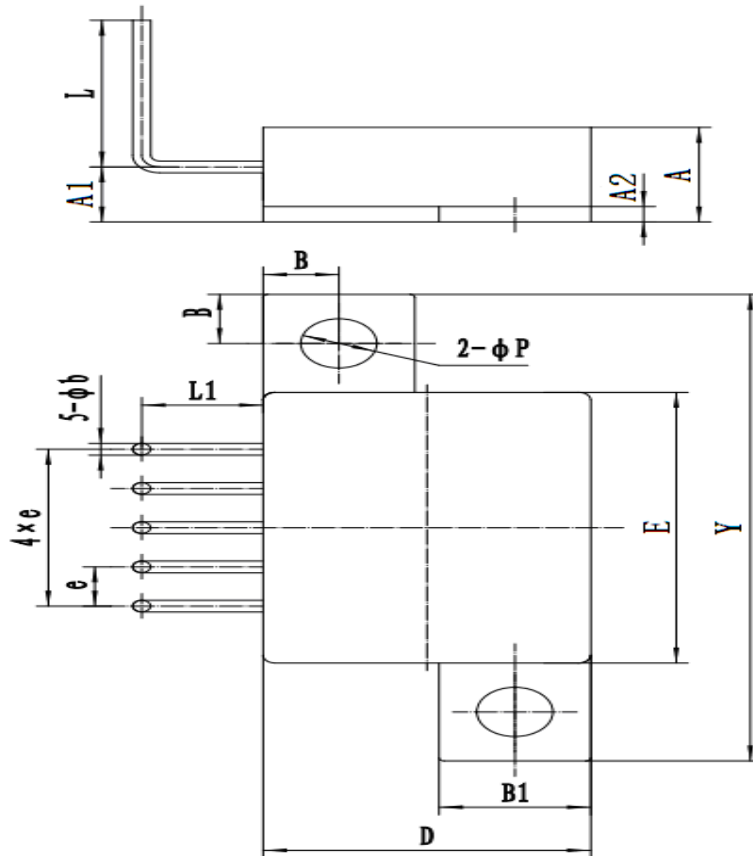
Fig 10d ZS Package outline drawing



Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
<i>A</i>	-	-	6.70
<i>A1</i>	3.20	-	3.80
<i>A2</i>	0.70	-	1.30
<i>B</i>	2.87	-	3.48
<i>B1</i>	6.05	-	6.65
<i>D</i>	-	-	14.22
<i>E</i>	-	-	18.03
<i>Y</i>	-	-	30.72
<i>L</i>	9.0	-	-
<i>L1</i>	4.58	-	5.58
<i>e</i>	-	2.54	-
$\varphi b$	0.63	-	0.89
$\varphi P$	2.90	-	3.50

Fig 10e ZD Package outline drawing



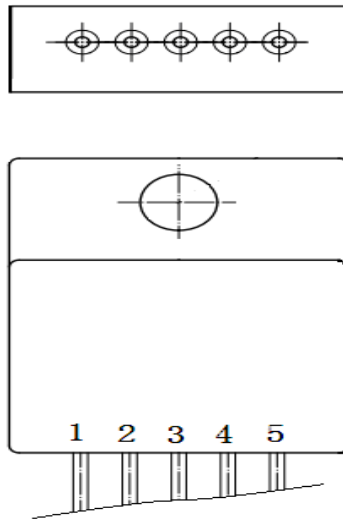
Unit:mm

Symbols	Data		
	Minimum	Typical	Maxim
$A$	-	-	6.70
$A1$	3.20	-	3.80
$A2$	0.70	-	1.30
$B$	2.87	-	3.48
$B1$	6.05	-	6.65
$D$	-	-	14.22
$E$	-	-	18.03
$Y$	-	-	30.72
$L$	9.0	-	-
$L1$	4.58	-	5.58
$e$	-	2.54	-
$\phi b$	0.63	-	0.89
$\phi P$	2.90	-	3.50

Fig 10f ZU Package outline drawing

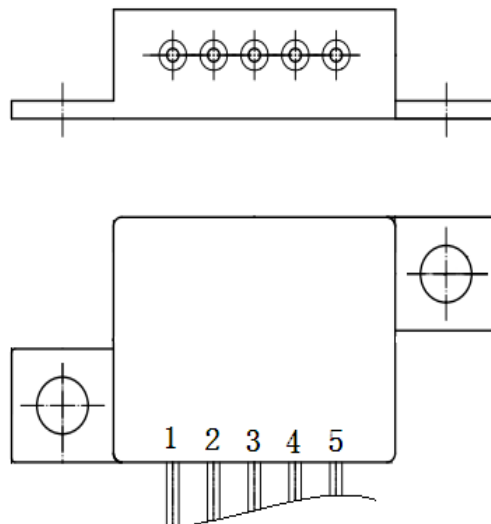
## 1.4 Pin Designations of weapon DC-DC converter

The leading end arrangement shall be as specified in Fig 11. Fig 11a shows the product leading ends in the form of TS, TD, TU package type. Fig 11b shows the product leading ends in the form of ZS, ZD, ZU package type.



Pin	Symbol	Designation
1	En	Enable
2	$V_{IN}$	Input
3	GND	GND
4	$V_{OUT}$	Output
5	NC	NC

Fig 11a Pin Designations (Apply for TS, TD, TU package type)



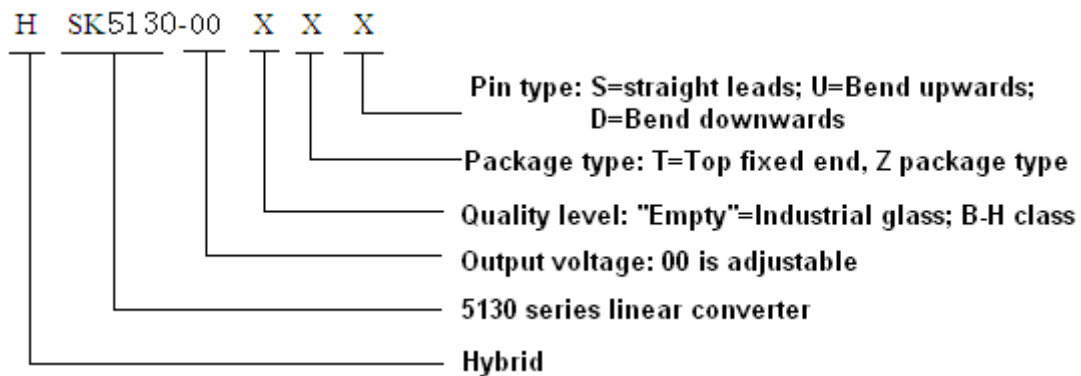


Pin	Symbol	Designation
1	En	Enable
2	$V_{IN}$	Input
3	GND	GND
4	$V_{OUT}$	Output
5	ADJ	Adjustment voltage

Fig 11b Pin Designations (Apply for ZS, ZD, ZU package type)

## 1.5 Ordering Information of weapon DC-DC converter

Part number contains the use of the production process, serial number, output voltage, quality level and other information. As shown below:



## 1.6 Technical Specifications of weapon DC-DC converter

Table 4a HSK5130-00 Electrical characteristics

Items	Symbol	Condition (Unless otherwise specified, $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$ )	A Group	Limited value		Unit
				Min	Max	
Input and output voltage difference	$V_{DO}$	$T_A=25^{\circ}\text{C}; \Delta V_{OUT}=-1\%; I_{OUT}=100\text{mA}$	1	—	600	mV
		$T_A=25^{\circ}\text{C}; \Delta V_{OUT}=-1\%; I_{OUT}=3.0\text{A}$		—	700	
Static (ground) current	$I_0$	$T_A=25^{\circ}\text{C}; V_{IN}=4.3\text{V}, I_{OUT}=1.5\text{A}$	1	—	40	mA
		$T_A=25^{\circ}\text{C}; V_{IN}=4.3\text{V}, I_{OUT}=3.0\text{A}$		—	60	
Load regulation	$S_L$	$I_{OUT}=10\text{mA} \rightarrow 2.5\text{A}, V_{IN}=4.3\text{V}$	1, 2, 3	—	2	%
Voltage regulation	$S_V$	$V_{IN}=4.3\text{V} \rightarrow 26\text{V}, I_{OUT}=10\text{mA}$	1, 2, 3	—	1	%
Output noise voltage	$V_N$	$T_A=25^{\circ}\text{C}; C_L=33\mu\text{F}; f \leq 300\text{KHz}$	4	—	700	$\mu\text{V}$
Output current limit	$I_{LIM}$	$T_A=25^{\circ}\text{C}; V_{IN}=4.3\text{V}; \text{duty cycle}=70\%$	1	—	10	A

Thermal shutoff temperature	$T_{SD}$	$T_A=25^{\circ}\text{C}; V_{IN}=5.3\text{V}; I_{OUT}=3.0\text{A}$	4	—	165	$^{\circ}\text{C}$
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Table 4b HSK5130-00 function form

Items	Condition	Group	Function representation
Output voltage adjustable function	$T_A=25^{\circ}\text{C}$ , Shows in fig 7, R3 adjust during 0~3k $\Omega$	7	The output voltage can be adjustable from 1.5V~12V
Enable function	$T_A=25^{\circ}\text{C}, V_{IN}=V_{OUT}+1\text{V}, I_{OUT}=1\text{A}, E_n=0\text{V}$	7	Output voltage off
	$T_A=25^{\circ}\text{C}, V_{IN}=V_{OUT}+1\text{V}, I_{OUT}=1\text{A}, E_n=V_{IN}$		Output voltage on

### 1.7 Typical Connection Diagram of weapon DC-DC converter

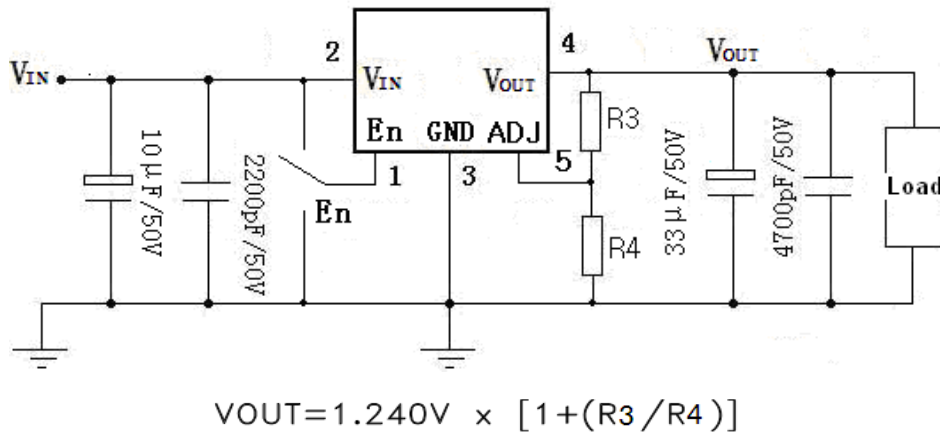


Fig 12 HSK5130-00 Electrical test line connection diagram

### 1.8 Application Notes of weapon DC-DC converter

- ☆ The electronic inspection point should be kept as close as possible at the root of the pin;
- ☆ It is strictly forbidden to bend the pins;
- ☆ To prevent the application of two or more absolute maximum ratings on the device at the same time;
- ☆ To prevent the device from falling off;
- ☆ To prevent the output and ground short circuit;
- ☆ To prevent the device from being reversed or dislocated;
- ☆ During assembly, the bottom of the product should be attached as close as possible to the circuit board to avoid damage to the pin, take shockproof measures for necessary ;
- ☆ Focus on device power consumption, the power consumption

$P_D = I_O (V_{IN} - V_{OUT})$ , When the input/output voltage difference ( $V_{IN}-V_{OUT}$ ) is large, output current  $I_O$  should be smaller; When the input/output voltage difference ( $V_{IN}-V_{OUT}$ ) is small, output current  $I_O$  should be larger; When the device power consumption is

large, be sure to configure the appropriate heat sink to prevent the device damaged due to overheating or into the overheating protection status;

- ☆ Both positive and negative terminals of power supply shall be correctly connected when power is applied so as to avoid permanent damage to the device.;
- ☆ Anti-static measures should be taken during storage and transportation.