



Features

- Industrial standard 1/8 brick package and footprint:
57.9×22.8×9.8mm(2.28*0.90*0.38inch)
- Operating temperature:-40~85°C
- input voltage range: 2:1
- Output voltage adjustment: -10%~+10%
- Isolation voltage: 1500Vdc (input-output)
- High efficiency at least 91%
- High power density
- Low output voltage ripple and noise
- Remote On/Off
- Under-voltage protection
- Over-voltage protection
- Thermal shutdown protection

Options:

- Remote on/off Logic
- RoHS

Numbering Convention

ESR 06 - 48 S 12 - L G
 ① ② ③ ④ ⑤ ⑥ ⑦

No	Features	Descriptions
①	Product Series	ESR-1/8brick
②	Output current	6-Max. output current 6A
③	Typical input voltage	Input voltage is 48V
④	Number of Outputs	S-single Output
		D-double Output
⑤	Output voltage	12-output voltage is 12V
⑥	Remote on/off Logic	L-Negative
		H or Default-positive
⑦	RoHS feature	G – lead-free products, RoHS6
		Default -lead

1. Description

The converters are in an industry 1/8 brick packaging & footprint and open-frame design, and provide up to 12.0V output voltage and 6A output current. All components of the converter are surface mounted. The converters feature high power density, remote on/off, over-temperature protection and current limit, etc.

2. Technical Specifications

Parameter		Test Condition	Min	Typ	Max	unit
2.1 Absolute Maximum Ratings						
Typical Input Voltage (Vinom)				48		Vdc
Input Voltage Range ①			36		75	Vdc
Input Under-voltage protection (V)			31		35	Vdc
Remote	On	Low level or short connect to -Vin				
	Off	High level or open circuit\				
2.2 Output Specifications						
Output Voltage Set-point (Vonom)		Vinom, Ionom	11.88	12.00	12.12	V
Typical Output Current (A)		Ionom		6		A
MAX. Output Power (W)		Po		72		W
Output Voltage Trim Range (Voadj)		Vinom	-10		+10	%Vo
Line Regulation (Vov)		Vimin~Vimax, Ionom			±0.2	%Vo
Load Regulation (Vol)		0~100%Ionom, Vinom			±0.5	%Vo
Output Over-voltage Protection		Po<Pomax	13.8		15	V
Output Over-current Protection			105		140	%Io
Output Short-circuit Protection		Hiccup, Automatic Recovery				
Dynamic Load Response ②③	Peak Deviation	25%-50%-25%Ionom			300	mV
	Settling Time	50%-75%-50%Ionom			100	µs
Output Ripple & Noise ③		20MHz			100	mV(p-p)
External Output Capacitance			0		1000	µF

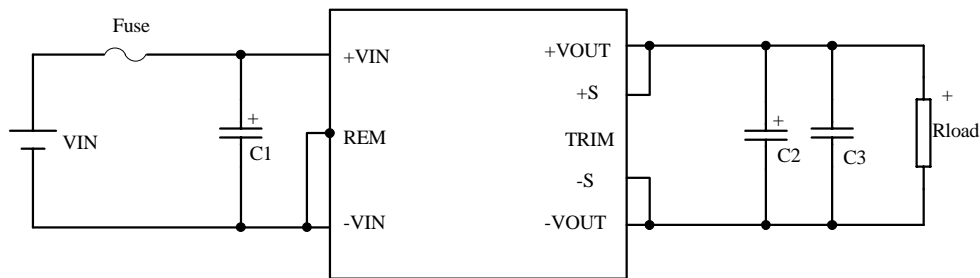
Note :

- ① Keep input voltage up to 80Vdc for long time or reverse input polarity would cause the module damaged.
- ② $\Delta I_o/\Delta t$: 1A/µS .
- ③ Add an external 22µF tantalum capacitor and an external 1µF ceramic capacitor.
- ④ All specifications are typical at nominal input, full load at 25°C and air speed is 1m/s (200ft./min) unless otherwise stated.

3 General Specifications					
Temperature Coefficient (Tcoeff)				±0.02	%/°C
Efficiency (η)		Vinom, Ionom	92.5		%
Over-temperature Protection		105°C (Auto-recovery, see test points shown in Figure 3.5)			
Isolation Voltage	Input to output	Leak Current ≤ 5mA, T=1min	1500		Vdc
Isolation Resistance		Normal atmospheric conditions	50 50		MΩ
Storage Temperature (Tst)		—————	-55	+125	°C
Operating Temperature		See the derating curves	-40	+85	°C
MTBF		MIL-HDBK-217	2×10 ⁵ h		
ROHS		According to 2002/95/EC Directive			

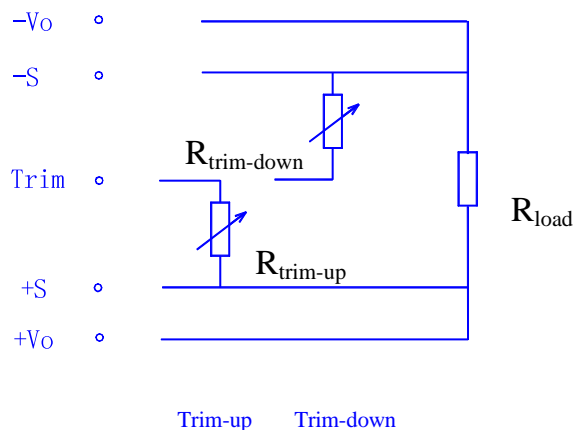
3. Instruction for Use

3.1 Basic Application Circuit



Fuse: 6.3A; C1≥33μF/100V (Low ESR capacitor) C2: 22μF/25V (tantalum capacitor)
C3: 1μF /16V (Monolithic Capacitor)

3.2 Output Voltage Adjustment (trim)



To increase the output voltage, the value of the external resistor should be

$$R_{Trim-up} = \left(\frac{5.11 \times V_o(100(\%) + \Delta(\%))}{1.225 \times \Delta(\%)} - \frac{5.11 \times 100(\%)}{\Delta(\%)} - 10.22 \right) (k\Omega)$$

To decrease the output voltage, the value of the external resistor should be

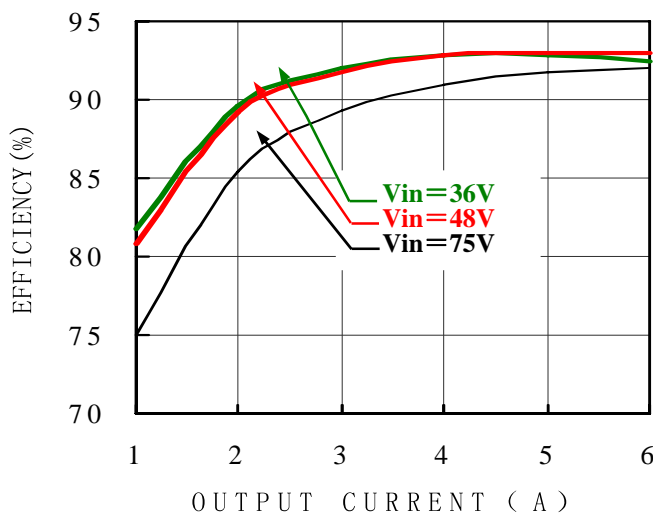
$$R_{Trim-down} = \left(\frac{5.11 \times 100(\%)}{\Delta(\%)} - 10.22 \right) (k\Omega)$$

Where $\Delta(\%) = (V_o - V_e) / V_o$

V_o : Rated output voltage; V_e : adjusted voltage

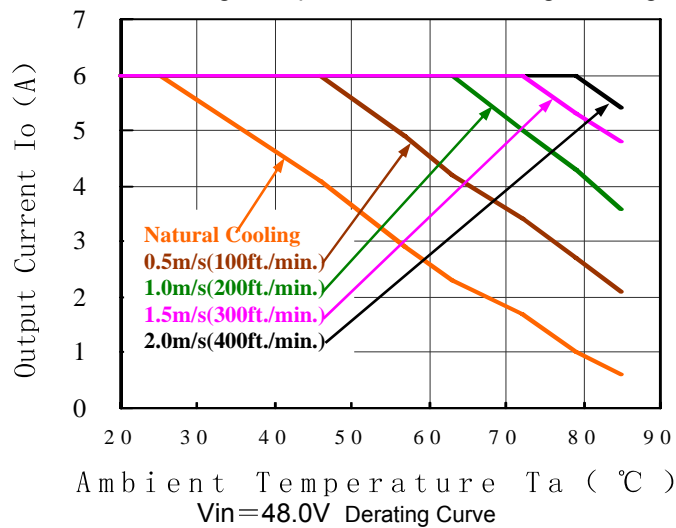
$R_{Trim-up}$ 、 $R_{Trim-down}$: External adjusting resistance;

3.3 Efficiency Data: $T_a = +25^\circ\text{C}$, airflow is 1m/S (200ft./min.)



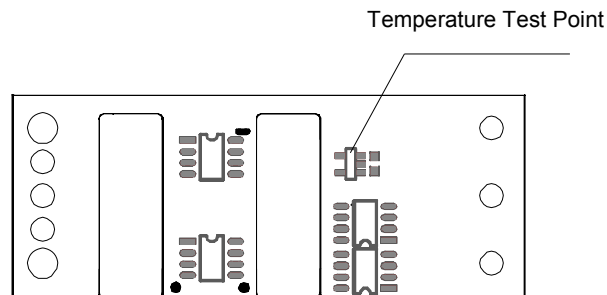
3.4 Derating Curve

When the converter works at high temperature, the following derating curves shall be used:

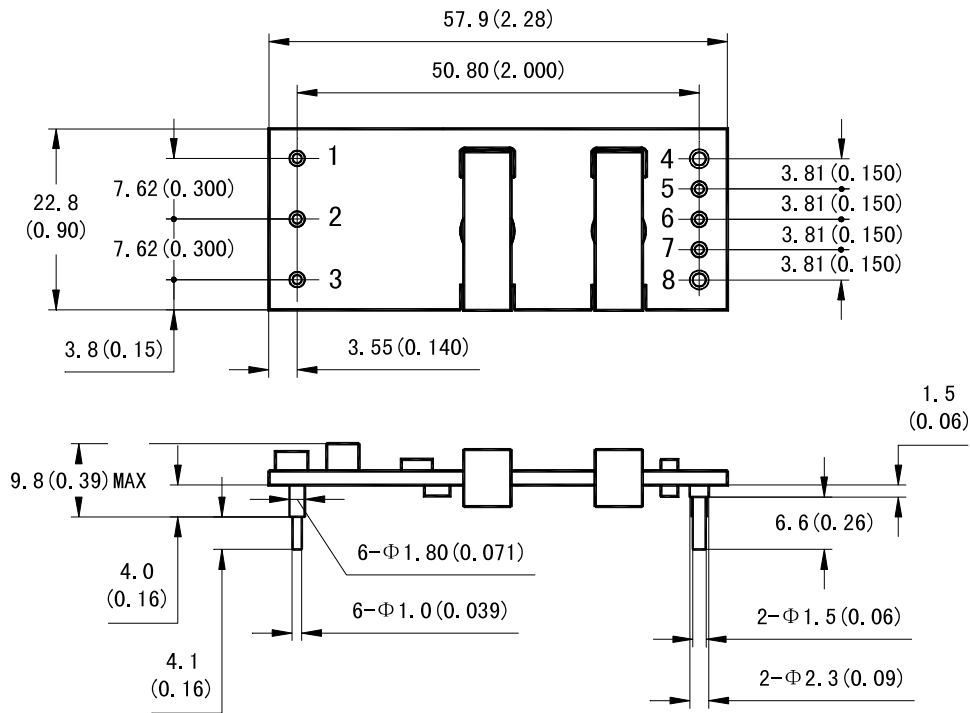


Note : Natural Cooling refers air speed of 0.05m/ S to 0.1m/S.

3.5. Temperature Test Point: Ta= +25°C, air speed is 1m/S (200ft./min.)



4. Dimensions and Pin definition (unit: mm)



Unit :mm(inch) Tolerances: .X±0.5 ; .XX±0.13(.X X±0.02; .X X X ±0.005)

No	1	2	3	4	5	6	7	8
Symbol	-Vin	Rem	+Vin	-Vout	-S	Trim	+S	+Vout
Definition	Negative input	Remote	Positive input	Negative output	Negative Remote Sense	Trim	Positive Remote Sense	Positive output