



## 6W 1"x1" Package DC-DC Regulated Converter **SKMW06 & DKMW06** series



### ■ Features

- DIP 1"x1" package with industry standard pinout
- 4:1 ultrawide input range
- Operating temperature range -40 ~ +85°C
- No minimum load required
- Comply to EN55032 radiated Class A without additional components
- High efficiency up to 86%
- Protections: Short circuit (Continuous) / Overload / Over voltage / Input under voltage
- 1.5KVDC I/O isolation
- 3 years warranty

### ■ Applications

- Telecom/datacom system
- Wireless network
- Industrial control facility
- Instrument
- Analyzer
- Detector
- Data switch

### ■ Description

SKMW06 and DKMW06 series are 6W isolated and regulated module type DC-DC converter with DIP 1"x1" package. It features international standard pins, a high efficiency up to 86%, wide working temperature range -40~+85°C, 1.5KVDC I/P-O/P isolation voltage, compliance to EN55032 radiated Class A without additional components, continuous-mode short circuit, overload, over temperature, input under voltage protection etc. The models account for different input voltage 9~36V and 18~75V 4:1 ultrawide input range, and various output voltage, 3.3V/5V/9V/12V/15V/24V for single output and  $\pm 5V/\pm 12V/\pm 15V/\pm 24V$  for dual outputs, which are suitable for all kinds of systems, Such as industrial control, telecommunication field, distributed power architecture, and so on.

### ■ Model Encoding

**SKMW06F-12**

Output voltage (3.3/5/9/12/15/24Vdc,  $\pm 5/\pm 12/\pm 15/\pm 24Vdc$ )

Input voltage (F: 9~36Vdc, G: 18~75Vdc)

Rated wattage

Series name { S:Single output  
D: Dual output

| MODEL SELECTION TABLE |                          |               |           |                   |                   |                      |                          |
|-----------------------|--------------------------|---------------|-----------|-------------------|-------------------|----------------------|--------------------------|
| ORDER NO.             | INPUT                    |               |           | OUTPUT            |                   | EFFICIENCY<br>(TYP.) | CAPACITOR LOAD<br>(MAX.) |
|                       | INPUT VOLTAGE<br>(RANGE) | INPUT CURRENT |           | OUTPUT<br>VOLTAGE | OUTPUT<br>CURRENT |                      |                          |
|                       |                          | NO LOAD       | FULL LOAD |                   |                   |                      |                          |
| SKMW06F-03            | Normal 24V<br>(9 ~ 36V)  | 5mA           | 268mA     | 3.3V              | 0~1500mA          | 77%                  | 1800μF                   |
| SKMW06F-05            |                          | 5mA           | 309mA     | 5V                | 0~1200mA          | 81%                  | 1000μF                   |
| SKMW06F-09            |                          | 7mA           | 309mA     | 9V                | 0~667mA           | 83%                  | 680μF                    |
| SKMW06F-12            |                          | 7mA           | 309mA     | 12V               | 0~500mA           | 85%                  | 470μF                    |
| SKMW06F-15            |                          | 8mA           | 309mA     | 15V               | 0~400mA           | 85%                  | 220μF                    |
| SKMW06F-24            |                          | 13mA          | 309mA     | 24V               | 0~250mA           | 86%                  | 100μF                    |
| DKMW06F-05            |                          | 7mA           | 309mA     | ±5V               | ±0~600mA          | 81%                  | *470μF                   |
| DKMW06F-12            |                          | 9mA           | 309mA     | ±12V              | ±0~250mA          | 85%                  | *100μF                   |
| DKMW06F-15            |                          | 11mA          | 309mA     | ±15V              | ±0~200mA          | 85%                  | *100μF                   |
| DKMW06F-24            |                          | 17mA          | 309mA     | ±24V              | ±0~125mA          | 85%                  | *100μF                   |
| SKMW06G-03            | Normal 48V<br>(18 ~ 75V) | 13mA          | 134mA     | 3.3V              | 0~1500mA          | 77%                  | 1800μF                   |
| SKMW06G-05            |                          | 2mA           | 155mA     | 5V                | 0~1200mA          | 81%                  | 1000μF                   |
| SKMW06G-12            |                          | 3mA           | 155mA     | 12V               | 0~500mA           | 85%                  | 470μF                    |
| SKMW06G-15            |                          | 3mA           | 155mA     | 15V               | 0~400mA           | 86%                  | 220μF                    |
| SKMW06G-24            |                          | 5mA           | 155mA     | 24V               | 0~250mA           | 86%                  | 100μF                    |
| DKMW06G-05            |                          | 3mA           | 155mA     | ±5V               | ±0~600mA          | 81%                  | *470μF                   |
| DKMW06G-12            |                          | 4mA           | 155mA     | ±12V              | ±0~250mA          | 85%                  | *100μF                   |
| DKMW06G-15            |                          | 5mA           | 155mA     | ±15V              | ±0~200mA          | 86%                  | *100μF                   |

\* For each output

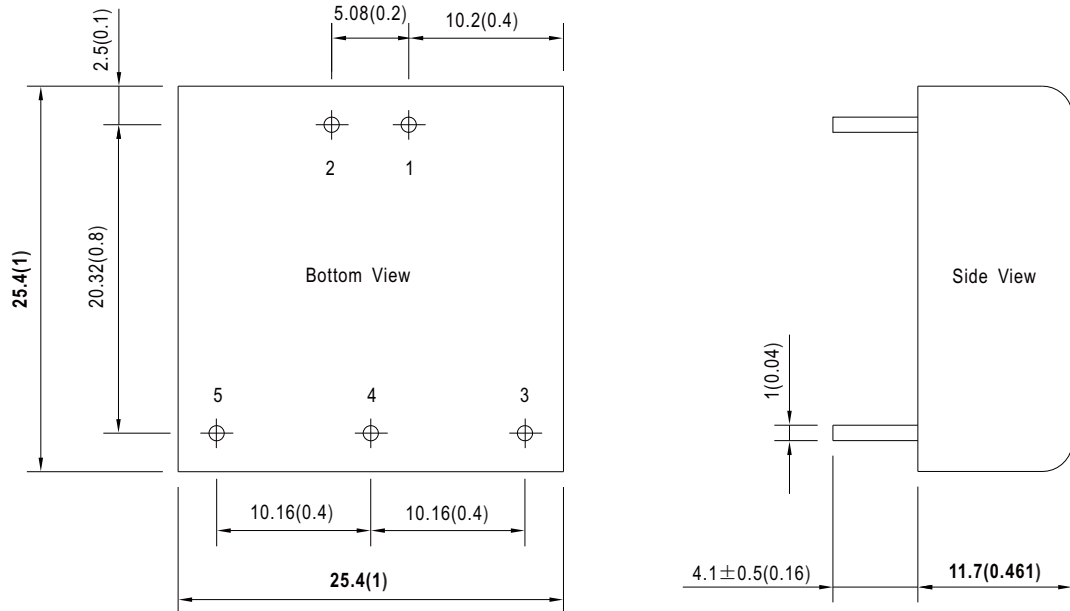


# 6W 1"x1" Package DC-DC Regulated Converter **SKMW06 & DKMW06** series

| SPECIFICATION             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          |                                                 |                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------|
| INPUT                     | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | F: 9~36Vdc , G: 18~75Vdc                                                                 |                                                 |                                                                         |
|                           | SURGE VOLTAGE (100ms max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 24Vin models : 50Vdc, 48Vin models : 100Vdc                                              |                                                 |                                                                         |
|                           | FILTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Pi type                                                                                  |                                                 |                                                                         |
|                           | PROTECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fuse recommended. 24Vin models: 1.5A delay time Type, 48Vin models: 0.8A delay time Type |                                                 |                                                                         |
|                           | INTERNAL POWER DISSIPATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.12W                                                                                    |                                                 |                                                                         |
| OUTPUT                    | VOLTAGE ACCURACY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ±1%                                                                                      |                                                 |                                                                         |
|                           | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6W                                                                                       |                                                 |                                                                         |
|                           | RIPPLE & NOISE   Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 60mVp-p(typ.), 85mVp-p(max.)                                                             |                                                 |                                                                         |
|                           | LINE REGULATION   Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ±0.2%                                                                                    |                                                 |                                                                         |
|                           | LOAD REGULATION   Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Single output models: ±1%, Dual output models: Main road ±1%, Side road ±1.5%            |                                                 |                                                                         |
|                           | SWITCHING FREQUENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 300KHz                                                                                   |                                                 |                                                                         |
| PROTECTION                | SHORT CIRCUIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Protection type : Continuous, automatic recovery                                         |                                                 |                                                                         |
|                           | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 110 ~ 190% rated output power                                                            |                                                 |                                                                         |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Protection type : Recovers automatically after fault condition is removed                |                                                 |                                                                         |
|                           | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Protection type : Clamp by diode                                                         |                                                 |                                                                         |
|                           | UNDER VOLTAGE LOCKOUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Start-up voltage                                                                         | 24Vin (F-type): 6.5Vdc, 48Vin (G-type): 15.5Vdc |                                                                         |
| Shutdown voltage          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 24Vin (F-type): 5.5Vdc, 48Vin (G-type): 12Vdc                                            |                                                 |                                                                         |
| ENVIRONMENT               | COOLING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Free-air convection                                                                      |                                                 |                                                                         |
|                           | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -40 ~ +85℃ (Refer to "Derating Curve")                                                   |                                                 |                                                                         |
|                           | CASE TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | +105℃ max.                                                                               |                                                 |                                                                         |
|                           | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5% ~ 95% RH non-condensing                                                               |                                                 |                                                                         |
|                           | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -55 ~ +125℃, 10 ~ 95% RH non-condensing                                                  |                                                 |                                                                         |
|                           | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.03% / °C (0 ~ 71℃)                                                                     |                                                 |                                                                         |
|                           | SOLDERING TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.5mm from case of 1 ~ 3sec./260℃ max.                                                   |                                                 |                                                                         |
|                           | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                  |                                                 |                                                                         |
| SAFETY & EMC<br>( Note.5) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | UL60950-1, EAC TP TC 004 approved                                                        |                                                 |                                                                         |
|                           | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | I/P-O/P:1.5KVDC                                                                          |                                                 |                                                                         |
|                           | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH                                                |                                                 |                                                                         |
|                           | ISOLATION CAPACITANCE (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1000pF                                                                                   |                                                 |                                                                         |
|                           | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Parameter                                                                                | Standard                                        | Test Level / Note                                                       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted                                                                                | EN55032(CISPR32)                                | N/A                                                                     |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Radiated                                                                                 | EN55032(CISPR32)                                | Class A without external components<br>Class B with external components |
|                           | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Parameter                                                                                | Standard                                        | Test Level / Note                                                       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ESD                                                                                      | EN61000-4-2                                     | contact ±4KV                                                            |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Radiated Susceptibility                                                                  | EN61000-4-3                                     | 10V/m                                                                   |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EFT/Burest                                                                               | EN61000-4-4                                     | ±2KV(see page 4)                                                        |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Surge                                                                                    | EN61000-4-5                                     | Line-Line±2KV                                                           |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conducted                                                                                | EN61000-4-6                                     | 3Vrms                                                                   |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                          |                                                 |                                                                         |
| OTHERS                    | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1000Khrs MIL-HDBK-217F(25℃)                                                              |                                                 |                                                                         |
|                           | DIMENSION (L*W*H)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 25.4*25.4*11.7mm (1*1*0.461 inch)                                                        |                                                 |                                                                         |
|                           | CASE MATERIAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Black coated copper with non-conductive base                                             |                                                 |                                                                         |
|                           | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 12.5g; 19pcs/per tube, 912pcs/48 tube/per carton                                         |                                                 |                                                                         |
| NOTE                      | 1.All parameters are specified at normal input(F:24Vdc, G:48Vdc), rated load, 25℃ 70% RH ambient.<br>2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 47μf capacitor.<br>3.Line regulation is measured from low line to high line at rated load.<br>4.Load regulation is measured from 5% to 100% rated load.<br>5.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.”(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> )<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |                                                                                          |                                                 |                                                                         |

## Mechanical Specification

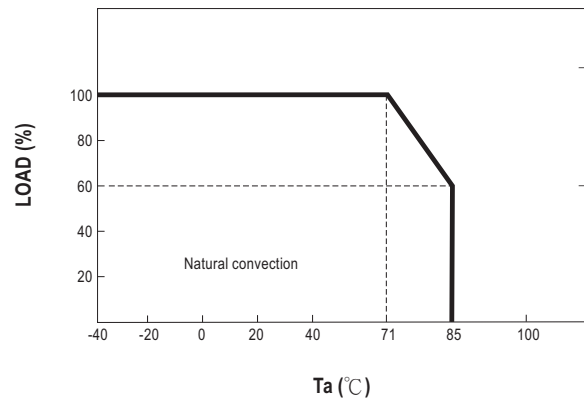
- All dimensions in mm(inch)
- Tolerance:  $x.x \pm 1\text{mm}$  ( $x.xx \pm 0.25"$ )
- Pin size is  $1 \pm 0.1\text{mm}$  ( $0.04" \pm 0.004"$ )



## Plug Assignment

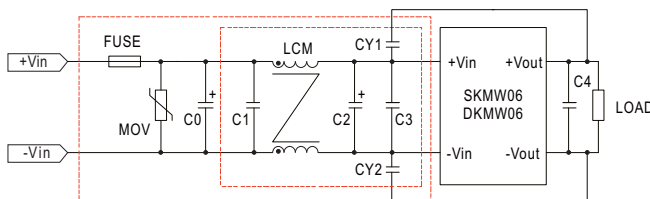
| Pin-Out |                           |                         |
|---------|---------------------------|-------------------------|
| Pin No. | SKMW06<br>(Single output) | DKMW06<br>(Dual output) |
| 1       | +Vin                      | +Vin                    |
| 2       | -Vin                      | -Vin                    |
| 3       | +Vout                     | +Vout                   |
| 4       | N.P                       | Common                  |
| 5       | -Vout                     | -Vout                   |

## Derating Curve



## EMC Suggest Circuit

\* Required external componets to meet EN55032 radiated Class B emission as below:



| Model   | EN55032 Class B                          |               |
|---------|------------------------------------------|---------------|
|         | Vin:24V                                  | Vin:48V       |
| FUSE    | Choose according to actual input current |               |
| MOV     | S20K30                                   | S14K60        |
| C0      | 680μf / 50V                              | 680μf / 100V  |
| C1      | 1μf / 50V                                | 1μf / 100V    |
| C2      | 330μf / 50V                              | 330μf / 100V  |
| C3      | 4.70μf / 50V                             | 4.70μf / 100V |
| C4      | 10μf / 50V                               |               |
| LCM     | 4.7mH                                    |               |
| CY1、CY2 | 1nF / 2KV                                |               |

## Installation Manual

Please refer to : <http://www.meanwell.com/manual.html>