




## ■ 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 BS EN/EN55032 radiated Class A without additional components
- High efficiency up to 89%
- Protections: Short circuit (Continuous) / Overload / Over voltage / Input under voltage
- 3KVDC I/O isolation
- 3 years warranty

## ■ Applications

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

## ■ GTIN CODE

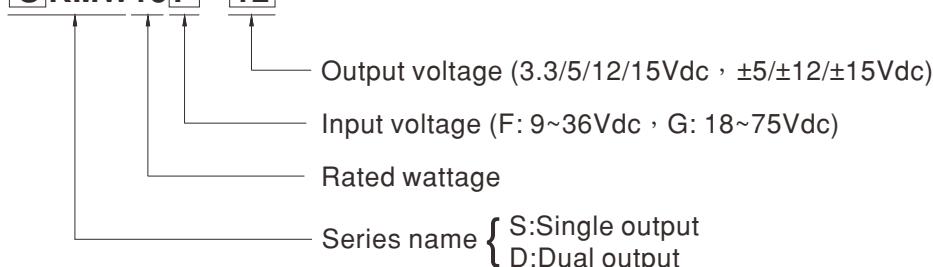
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

## ■ Description

SKMW15 and DKMW15 series are 15W isolated and regulated module type DC-DC converter with DIP 1"x1" package. It features international standard pins, a high efficiency up to 89%, wide working temperature range -40~+85°C, 3KVDC I/P-O/P isolation voltage, compliance to BS EN/EN55032 radiated Class A without additional components, continuous-mode short circuit, overload, 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/12V/15V for single output and ±5V/±12V/±15V 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

**SKMW15F-12**





# 15W 1"x1" Package DC-DC Regulated Converter **SKMW15 & DKMW15** series

MODEL SELECTION TABLE									
ORDER NO.	INPUT			OUTPUT		EFFICIENCY (TYP.)	CAPACITOR LOAD (MAX.)		
	INPUT VOLTAGE (RANGE)	INPUT CURRENT		OUTPUT VOLTAGE	OUTPUT CURRENT				
		NO LOAD	FULL LOAD						
SKMW15F-03	Normal 24V (9 ~ 36V)	70mA	500mA	3.3V	0~3000mA	85%	820µF		
SKMW15F-05		80mA	730mA	5V	0~3000mA	85%	820µF		
SKMW15F-12		30mA	710mA	12V	0~1250mA	89%	220µF		
SKMW15F-15		30mA	720mA	15V	0~1000mA	87%	120µF		
DKMW15F-05		35mA	750mA	±5V	±0~1500mA	85%	*1000µF		
DKMW15F-12		35mA	730mA	±12V	±0~625mA	88%	*470µF		
DKMW15F-15		35mA	700mA	±15V	±0~500mA	89%	*330µF		
SKMW15G-03	Normal 48V (18 ~ 75V)	70mA	255mA	3.3V	0~3000mA	85%	820µF		
SKMW15G-05		80mA	365mA	5V	0~3000mA	86%	820µF		
SKMW15G-12		30mA	355mA	12V	0~1250mA	89%	220µF		
SKMW15G-15		30mA	360mA	15V	0~1000mA	88%	120µF		
DKMW15G-05		25mA	380mA	±5V	±0~1500mA	86%	*1000µF		
DKMW15G-12		25mA	360mA	±12V	±0~625mA	88%	*470µF		
DKMW15G-15		25mA	360mA	±15V	±0~500mA	89%	*330µF		

\* For each output



SPECIFICATION			
INPUT	VOLTAGE RANGE	F: 9~36Vdc , G: 18~75Vdc	
	FILTER	Pi type	
	PROTECTION	Fuse recommended. 24Vin models: 4.0A delay time Type, 48Vin models: 2.0A delay time Type	
OUTPUT	VOLTAGE ACCURACY	±2%	
	RATED POWER	10W for 3.3V output ; 15W for other output	
	RIPPLE & NOISE Note.2	50mVp-p(max.)	
	LINE REGULATION Note.3	±0.5%	
	LOAD REGULATION Note.4	±0.5%	
	SWITCHING FREQUENCY (Typ.)	300KHz	
PROTECTION	EXTERNAL TRIM ADJ. RANGE (Typ.)	Single output only; ±10% for 3.3V/5V, -20%~+10% for 12V/15V	
	SHORT CIRCUIT	Protection type : Continuous, automatic recovery	
	OVERLOAD	110 ~ 220% rated output power	
		Protection type : Recovers automatically after fault condition is removed	
	OVER VOLTAGE	Protection type : Clamp by diode for single output ; Hiccup mode for dual output	
	UNDER VOLTAGE LOCKOUT	Start-up voltage	24Vin (F-type): 9.0Vdc, 48Vin (G-type): 17.3Vdc
		Shutdown voltage	24Vin (F-type): 8.6Vdc, 48Vin (G-type): 16.5Vdc
FUNCTION	REMOTE CONTROL	Power ON: R.C. ~ -Vin >2.5Vdc or open circuit ; Power OFF: R.C. ~ -Vin <0.5Vdc or short	
ENVIRONMENT	COOLING	Free-air convection	
	WORKING TEMP.	-40 ~ +85°C (Refer to "Derating Curve")	
	CASE TEMPERATURE	+110°C max.	
	WORKING HUMIDITY	5% ~ 95% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-55 ~ +125°C, 10 ~ 95% RH non-condensing	
	TEMP. COEFFICIENT	0.03% / °C (0 ~ 71°C)	
	SOLDERING TEMPERATURE	1.5mm from case of 3 ~ 5sec./265°C (max.)	
SAFETY & EMC ( Note.5 )	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes	
	SAFETY STANDARDS	EAC TP TC 020/2011 (EAC TP TC 004 for 48Vin type only) approved	
	WITHSTAND VOLTAGE	I/P-O/P:3KVDC	
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH	
	ISOLATION CAPACITANCE (Typ.)	1200pF	
	EMC EMISSION	Parameter	Standard
		Conducted	BS EN/EN55032(CISPR32)
		Radiated	BS EN/EN55032(CISPR32)
	EMC IMMUNITY	Parameter	Standard
		ESD	BS EN/EN61000-4-2
		Radiated Susceptibility	BS EN/EN61000-4-3
		EFT/Bursts	BS EN/EN61000-4-4
		Surge	BS EN/EN61000-4-5
		Conducted	BS EN/EN61000-4-6
OTHERS	MTBF	220Khrs MIL-HDBK-217F(25°C)	
	DIMENSION (L*W*H)	25.4*25.4*10.2mm (1*1*0.4 inch)	
	CASE MATERIAL	Black coated metal with non-conductive base	
	PACKING	20g; 10pcs/per tube, 600pcs/60 tube/per carton	
NOTE	<p>1.All parameters are specified at normal input, rated load, 25°C 70% RH ambient. 2.Ripple &amp; noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µF &amp; 47µF capacitor. 3.Line regulation is measured from low line to high line at rated load. 4.Load regulation is measured from 10% to 100% rated load. 5.The final equipment must be re-confirmed that it still meets 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>) ※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p>		

### External Output Trimming

In order to trim the voltage up or down one needs to connect the trim resistor either between the trim pin and -Vo for trim-up and between trim pin and +Vo for trim-down. This is shown in Figures 1 and 2:

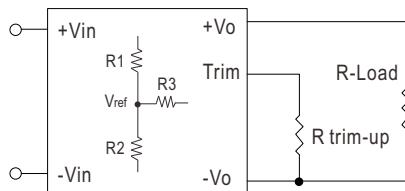


Figure 1. Trim-up Voltage Setup

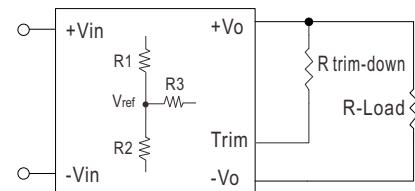


Figure 2. Trim-down Voltage Setup

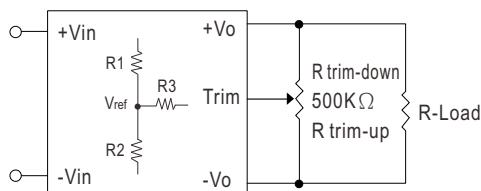


Figure 3. Trim-Connections

Table 1 – Trim up and Trim down Resistor Values

Vout	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref
3.3	1.69	1	5.6	1.25
5	1	1	3.6	2.5
12	3.83	1	7.5	2.5
15	7.5	1.5	11	2.5

#### 1. The value of Rtrim-up defined as:

$$A = [V_{ref}/(V_o' - V_{ref})] * R1$$

$$R_{trim-up} = [(A * R2) / (R2 - A)] - R3$$

Where

$R_{trim-up}$  is the external resistor in Kohm.

$V_o$ , nom is the nominal output voltage.

$V_o'$  is the desired output voltage.

$R1$ ,  $R2$ ,  $R3$  and  $V_{ref}$  are internal to the unit and defined in Table 1.

For example, to trim-up the output voltage of 12V model (SKMW15F-12) by 10% to 13.2V,  $R_{trim-up}$  is calculated as follows:

$$V_o' - V_{o,nom} = 13.2V - 12V = 1.2V$$

$$R1 = 3.83 \text{ K}\Omega$$

$$R2 = 1 \text{ K}\Omega$$

$$R3 = 7.5 \text{ K}\Omega$$

$$V_{ref} = 2.5V$$

$$A = [V_{ref}/(V_o' - V_{ref})] * R1$$

$$= [2.5/(13.2-2.5)] * 3.83$$

$$= 0.894$$

$$R_{trim-up} = [(A * R2) / (R2 - A)] - R3$$

$$= [(0.894 * 1) / (1 - 0.894)] - 7.5$$

$$= (0.894 / 0.106) - 7.5$$

$$= 8.433 - 7.5$$

$$= 0.933 \text{ K}\Omega$$

**2. The value of Rtrim-down defined as:**

$$A = [(V_o' - V_{ref}) / V_{ref}] * R2$$

$$R_{trim-down} = [(A * R1) / (R1 - A)] - R3$$

Where

$R_{trim-down}$  is the external resistor in Kohm.

$V_o$ , nom is the nominal output voltage.

$V_o'$  is the desired output voltage.

$R1$ ,  $R2$ ,  $R3$  and  $V_{ref}$  are internal to the unit and defined in Table 1.

For example, to trim-down the output voltage of 12V model (SKMW15F-12) by 10% to 10.8V,  $R_{trim-down}$  is calculated as follows:

$$V_{o,nom} - V_o' = 12V - 10.8V = 1.2V$$

$$R1 = 3.83 \text{ K}\Omega$$

$$R2 = 1 \text{ K}\Omega$$

$$R3 = 7.5 \text{ K}\Omega$$

$$V_{ref} = 2.5V$$

$$A = [(V_o' - V_{ref}) / V_{ref}] * R2$$

$$= [(10.8 - 2.5) / 2.5] * 1$$

$$= 3.32$$

$$R_{trim-down} = [(A * R1) / (R1 - A)] - R3$$

$$= [(3.32 * 3.83) / (3.83 - 3.32)] - 7.5$$

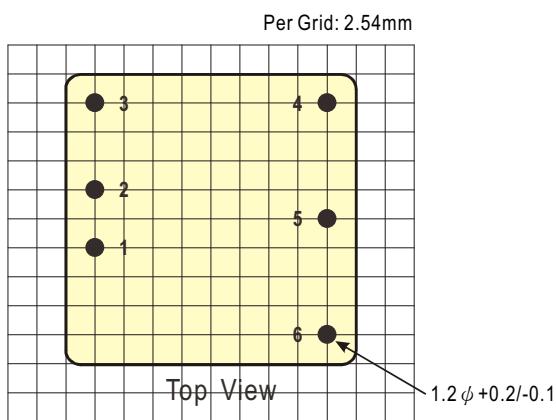
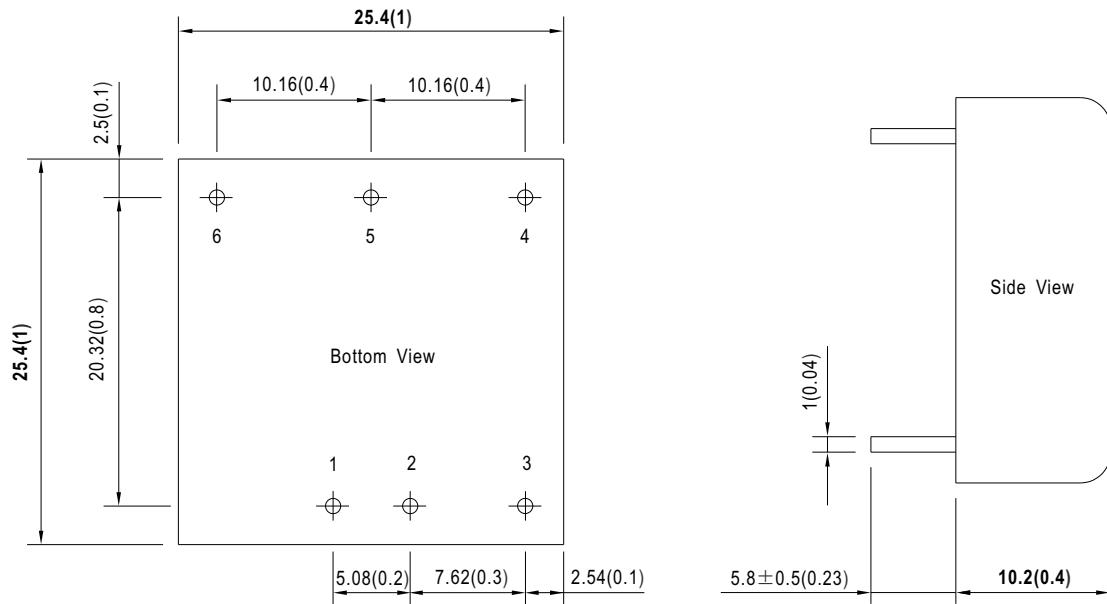
$$= (12.715 / 0.51) - 7.5$$

$$= 24.931 - 7.5$$

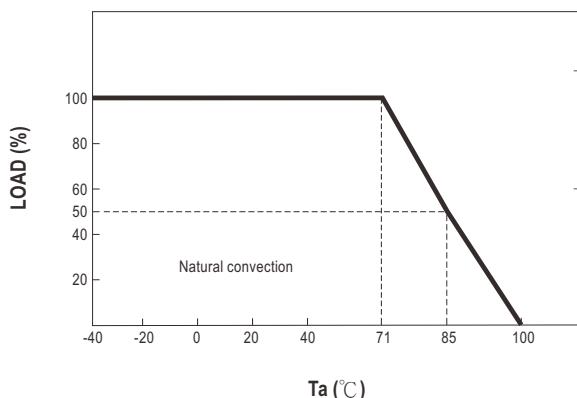
$$= 17.431 \text{ K}\Omega$$

**■ Mechanical Specification**

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

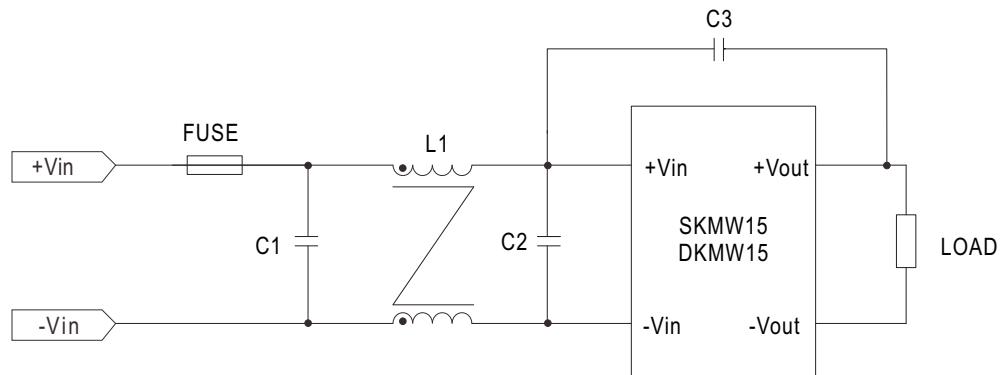

**■ Plug Assignment**

Pin-Out		
Pin No.	SKMW15 (Single output)	DKMW15 (Dual output)
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	
4	-Vout	-Vout
5	Trim	Common
6	+Vout	+Vout

**■ Derating Curve**


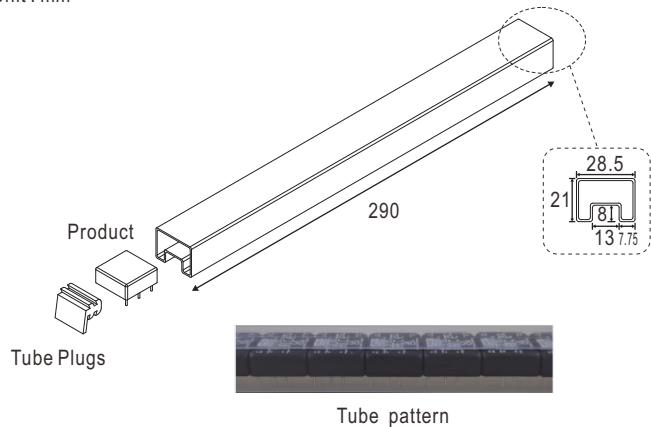
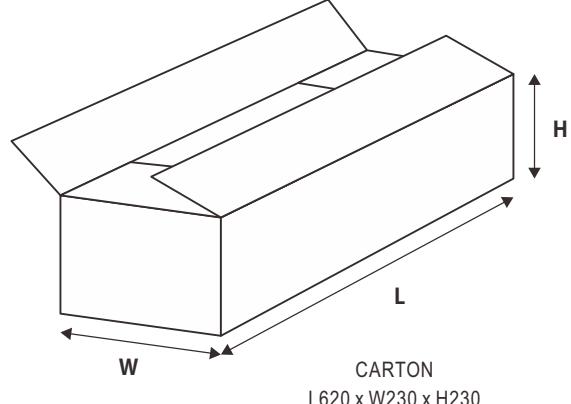
**■ EMC Suggest Circuit**

\* Required external components to meet BS EN/EN55032 radiated Class B emission as below:



Model No.	C1	C2	C3	L1
SKMW15F DKMW15F	4.7μF/50V MLCC	4.7μF/50V MLCC	1000pF/3KV MLCC	325μH Common Choke
SKMW15G DKMW15G	2.2μF/100V MLCC	2.2μF/100V MLCC	1000pF/3KV MLCC	325μH Common Choke

**Packing**

Standard Tube Packing	MPQ Per Tube (PCS)	One Tube G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  <p>Product Tube Plugs Tube pattern</p>				
 <p>CARTON L620 x W230 x H230</p>	10	243g	600	15.38Kg

**Installation Manual**

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