



### ■ Features

- DIP 2"x1" package with industry standard pinout
- 4:1 ultrawide input range
- Operating temperature range -40 ~ +90°C (-40 ~ +60°C no derating)
- 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
- 3KVDC I/O isolation
- Remote ON/OFF control and Trimming output ( $\pm 10\%$ )
- 3 years warranty

### ■ Applications

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

### ■ GTIN CODE

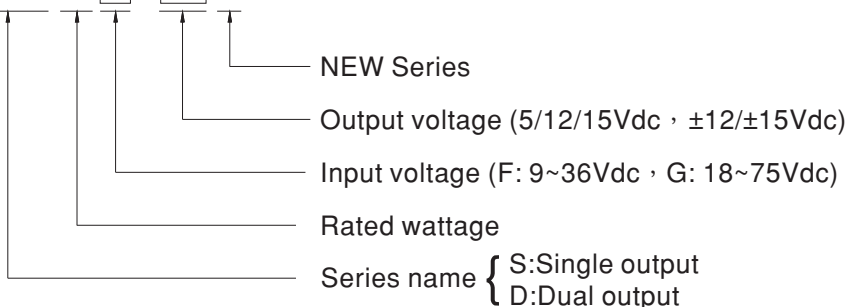
MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

### ■ Description

SKM30-N and DKM30-N series are 30W isolated and regulated module type DC-DC converter with DIP 2"x1" package. It features international standard pins, a high efficiency up to 89%, wide working temperature range -40~+90°C, 3KVDC I/P-O/P isolation voltage, compliance to BS EN/EN55032 radiated Class A without additional components, continuous-mode short circuit, overload, over voltage protection, remote ON/OFF and trimmable output voltage etc. The models account for different input voltage 9~36V and 18~75V 4:1 ultrawide input range, and various output voltage, 5V/12V/15V for single output and  $\pm 12V/\pm 15V$  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

**S** **KM 30** **F** - **12** **N**





# 30W 2"x1" Package DC-DC Regulated Converter **SKM30-N & DKM30-N** 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				
SKM30F-05N	Nominal 12V, 24V (9 ~ 36V)	120mA	2941mA	5V	0~6000mA	85%	820μF
SKM30F-12N		30mA	2907mA	12V	0~2500mA	87%	330μF
SKM30F-15N		30mA	2874mA	15V	0~2000mA	87.5%	220μF
DKM30F-12N		28mA	2850mA	±12V	±0~1250mA	87%	*150μF
DKM30F-15N		38mA	2800mA	±15V	±0~1000mA	88%	*100μF
SKM30G-05N		Nominal 24V, 48V (18 ~ 75V)	100mA	1453mA	5V	0~6000mA	86%
SKM30G-12N	25mA		1437mA	12V	0~2500mA	87.5%	330μF
SKM30G-15N	25mA		1420mA	15V	0~2000mA	88.5%	220μF
DKM30G-12N	25mA		1400mA	±12V	±0~1250mA	89%	*150μF
DKM30G-15N	25mA		1400mA	±15V	±0~1000mA	89%	*100μF

\* For each output



# 30W 2"x1" Package DC-DC Regulated Converter **SKM30-N & DKM30-N** series

SPECIFICATION				
INPUT	VOLTAGE RANGE	F: 9~36Vdc, G: 18~75Vdc		
	FILTER	Pi network		
	PROTECTION	Fuse recommended (24Vin : 6A Slow-Blow type, 48Vin: 4A Slow-Blow)		
OUTPUT	VOLTAGE ACCURACY	±2% max.		
	RATED POWER	30W		
	RIPPLE & NOISE <small>Note.2</small>	150mVp-p max.		
	LINE REGULATION <small>Note.3</small>	±0.2%		
	LOAD REGULATION <small>Note.4</small>	±0.5%		
	SWITCHING FREQUENCY (Typ.)	380KHz		
	EXTERNAL TRIM ADJ. RANGE (Typ.)	±10% (Single output model only)		
PROTECTION	SHORT CIRCUIT	Protection type : Continuous, automatic recovery		
	OVERLOAD	110 ~ 230%		
		Protection type : Recovers automatically after fault condition is removed		
	OVER VOLTAGE	INPUT	Protection type : Shutdown output voltage (F type : 40Vdc typ. , G type: 86Vdc typ.)	
OUTPUT		Clamp by TVS diodes		
FUNCTION	REMOTE CONTROL	Power ON: R.C. ~ -Vin >2.5~5Vdc or open circuit ; Power OFF: R.C. ~ -Vin <1Vdc or short		
ENVIRONMENT	COOLING	Free-air convection		
	WORKING TEMP.	-40 ~ +90°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	±0.05% / °C		
	SOLDERING TEMPERATURE	1.5mm from case of 3 ~ 5 sec./265°C max.		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes		
SAFETY & EMC ( <small>Note.5</small> )	SAFETY STANDARDS	EAC TP TC 020/2011 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVDC		
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH		
	ISOLATION CAPACITANCE (Typ.)	1000pF		
	EMC EMISSION	Parameter	Standard	Test Level / Note
		Conducted	BS EN/EN55032(CISPR32)	N/A
		Radiated	BS EN/EN55032(CISPR32)	Class A
	EMC IMMUNITY	Parameter	Standard	Test Level / Note
		ESD	BS EN/EN61000-4-2	±4KV contact
		Radiated Susceptibility	BS EN/EN61000-4-3	3V/m
		EFT/Burest	BS EN/EN61000-4-4	Level 1, 0.5KV
Surge		BS EN/EN61000-4-5	±0.5KV Line-Line	
Conducted	BS EN/EN61000-4-6	3V(e.m.f.)		
OTHERS	MTBF	>250Khrs MIL-HDBK-217F(25°C)		
	DIMENSION (L*W*H)	50.8*25.4*11.2mm (2*1*0.44 inch)		
	CASE MATERIAL	Six-side shielded case		
	PACKING	31g ; 10pcs/per tube, 400pcs/40 tube/per carton		
NOTE	<p>1.All parameters are specified at normal input(F:12Vdc, G:24Vdc), rated load, 25°C 70% RH ambient.</p> <p>2.Ripple &amp; noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µf &amp; 47µf capacitor.</p> <p>3.Line regulation is measured from low line to high line at rated load.</p> <p>4.Load regulation is measured from 0% to 100% rated load.</p> <p>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>)</p> <p>※ 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:

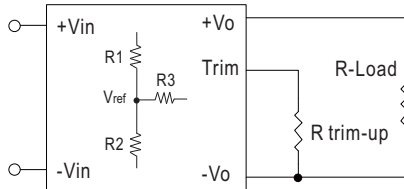


Figure 1. Trim-up Voltage Setup

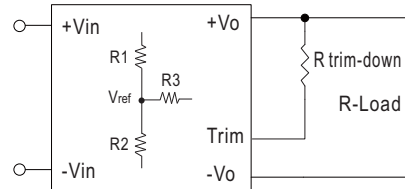


Figure 2. Trim-down Voltage Setup

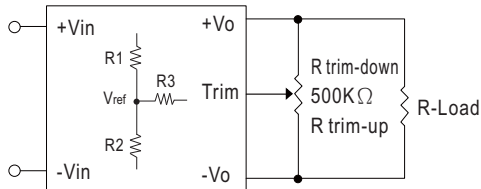


Figure 3. Trim-Connections

Table 1 – Trim up and Trim down Resistor Values

Model Number	Vo,nom (V)	Vref (V)	R1 (KΩ)	R2 (KΩ)	R3 (KΩ)
SKM30F-05N SKM30G-05N	5	2.5	1	1	3.6
SKM30F-12N SKM30G-12N	12	2.5	3.83	1	7.5
SKM30F-15N SKM30G-15N	15	2.5	7.5	1.5	11

1. The value of  $R_{trim-up}$  defined as:

$$A = \left( \frac{V_{ref}}{V_o' - V_{ref}} \right) \times R1$$

$$R_{trim-up} = \left( \frac{A \times R2}{R2 - A} \right) - R3$$

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 (SKM30F-12N) by 10% to 13.2V,  $R_{trim-up}$  is calculated as follows:

$$V_{o,nom} = 12V$$

$$V_o' = 13.2V$$

$$R1 = 3.83 K\Omega$$

$$R2 = 1 K\Omega$$

$$R3 = 7.5 K\Omega$$

$$V_{ref} = 2.5V$$

$$A = \left( \frac{2.5}{13.2 - 2.5} \right) \times 3.83 = 0.894$$

$$R_{trim-up} = \left( \frac{0.894 \times 1}{1 - 0.894} \right) - 7.5$$

$$= \left( \frac{0.894}{0.106} \right) - 7.5$$

$$= 0.933K\Omega$$

2. The value of  $R_{\text{trim-down}}$  defined as:

$$A = \left( \frac{V_o' - V_{\text{ref}}}{V_{\text{ref}}} \right) \times R2$$

$$R_{\text{trim-down}} = \left( \frac{A \times R1}{R1 - A} \right) - R3$$

Where

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

$V_{o,\text{nom}}$  is the nominal output voltage.

$V_o'$  is the desired output voltage.

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

For example, to trim-down the output voltage of 12V model (SKM30F-12N) by 10% to 10.8V,  $R_{\text{trim-down}}$  is calculated as follows:

$$V_{o,\text{nom}} = 12\text{V}$$

$$V_o' = 10.8\text{V}$$

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

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

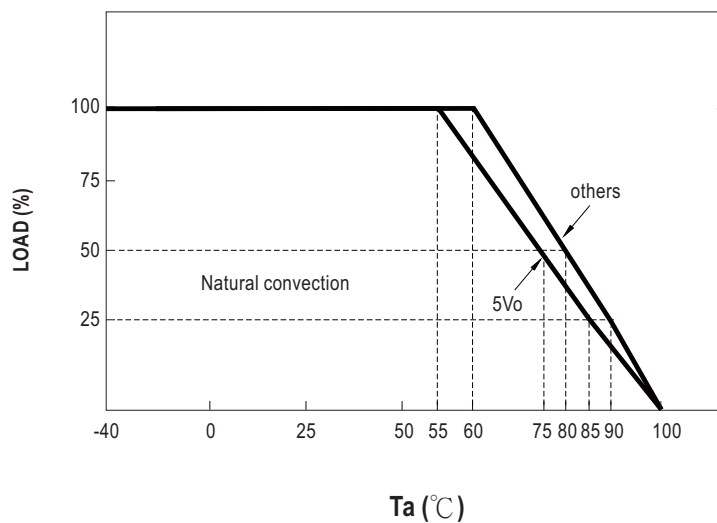
$$R3 = 7.5 \text{ K}\Omega$$

$$V_{\text{ref}} = 2.5\text{V}$$

$$A = \left( \frac{10.8 - 2.5}{2.5} \right) \times 1 = 3.32$$

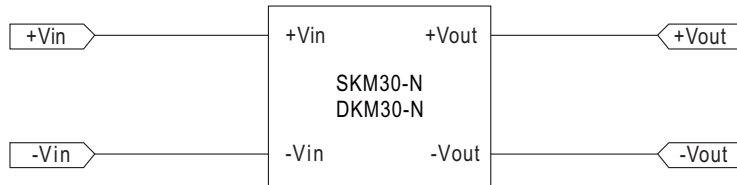
$$\begin{aligned} R_{\text{trim-down}} &= \left( \frac{3.32 \times 3.83}{3.83 - 3.32} \right) - 7.5 \\ &= \left( \frac{12.715}{0.15} \right) - 7.5 \\ &= 17.431\text{K}\Omega \end{aligned}$$

### Derating Curve



## EMC Suggestion Circuit

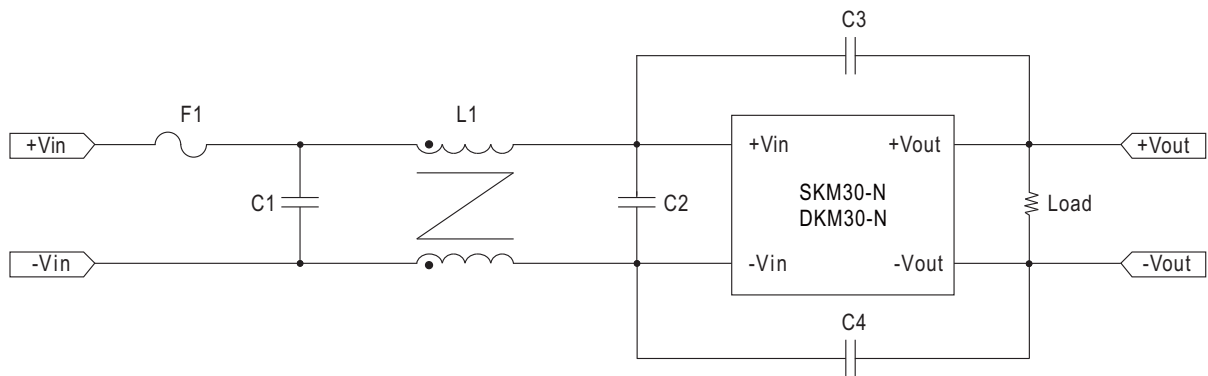
※ Comply to BS EN/EN55032 Class A emission without additional componets are as below:



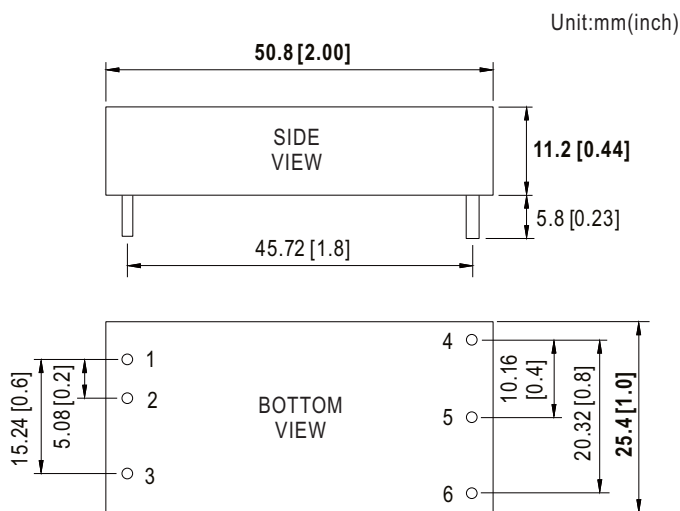
※ Required external componets to meet BS EN/EN55032 Class B emission are as below:

Model No.	BS EN/EN55032 Class B					
	F1	C1	C2	C3	C4	L1
SKM30F-N DKM30F-N	Suggest 6A Slow-Blow Type	47 $\mu$ F/100V	3.3 $\mu$ F/50V 1210 MLCC	1000PF/5KV MLCC	1000PF/5KV MLCC	325 $\mu$ H Common Choke
SKM30G-N DKM30G-N	Suggest 4A Slow-Blow Type	47 $\mu$ F/100V	2.2 $\mu$ F/100V 1210 MLCC	1000PF/5KV MLCC	1000PF/5KV MLCC	325 $\mu$ H Common Choke

Note : Choose according to actual input current for F1



## Mechanical Specification

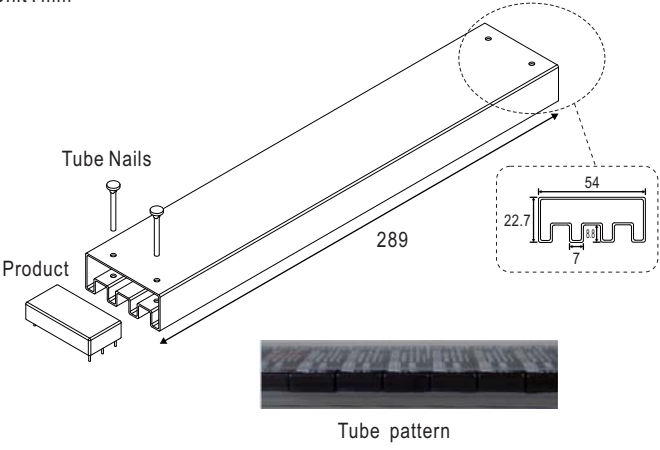
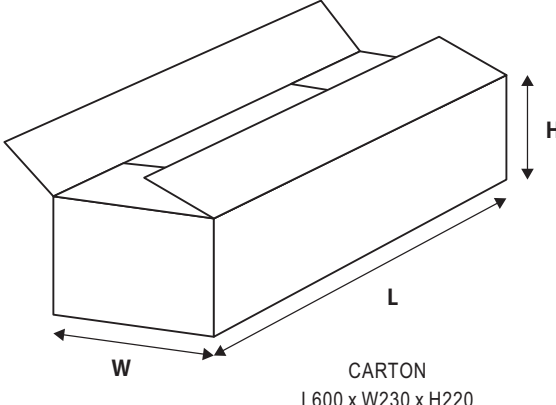


Note : Pin size tolerance 1  $\phi$   $\pm$ 0.1mm

## Pin Configuration

Pin No.	Pin-Out	
	SKM30-N (Single output)	DKM30-N (Dual output)
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote ON/OFF	Remote ON/OFF
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout

■ Packing

Standard Tube Packing	MPQ Per Tube (PCS)	One Tube G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
<p>Unit : mm</p>   <p>CARTON L600 x W230 x H220</p>	10	398g	400	16.72Kg

■ Installation Manual

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