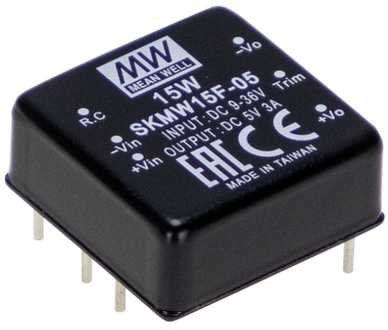
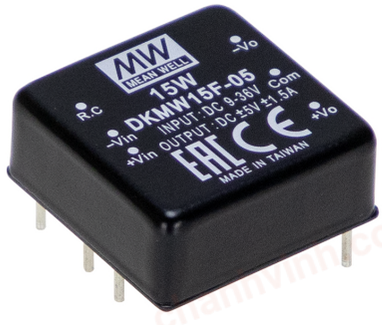
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15W 1"x1" Package DC-DC Regulated Converter SKMW15 & DKMW15 series





TPTC004

Automate Industrial Security Network Telecom

Features

- DIP 1"x1" package with industry standard pinout
- 4:1 ultrawide input range
- Operating temperature range -40 ~ +85℃
- 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℃, 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

- 12 — Output voltage (3.3/5/12/15Vdc，±5/±12/±15Vdc)
- F — Input voltage (F: 9~36Vdc，G: 18~75Vdc)
- 15 — Rated wattage
- SKMW — Series name { S:Single output / D:Dual output

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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

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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		
	EXTERNAL TRIM ADJ. RANGE (Typ.)	Single output only; ±10% for 3.3V/5V, -20%~+10% for 12V/15V		
PROTECTION	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℃ (Refer to "Derating Curve")		
	CASE TEMPERATURE	+110℃ max.		
	WORKING HUMIDITY	5% ~ 95% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-55 ~ +125℃, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	0.03% / ℃ (0 ~ 71℃)		
	SOLDERING TEMPERATURE	1.5mm from case of 3 ~ 5sec./265℃ (max.)		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes		
SAFETY & EMC (Note.5)	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℃/ 70% RH		
	ISOLATION CAPACITANCE (Typ.)	1200pF		
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	BS EN/EN55032(CISPR32)	N/A
		Radiated	BS EN/EN55032(CISPR32)	Class A without external components Class B with external components
	EMC IMMUNITY	**Parameter**	**Standard**	**Test Level / Note**
		ESD	BS EN/EN61000-4-2	contact ±4KV
		Radiated Susceptibility	BS EN/EN61000-4-3	3V/m
		EFT/Bursts	BS EN/EN61000-4-4	±0.5KV(see page 5)
		Surge	BS EN/EN61000-4-5	Line-Line±0.5KV
		Conducted	BS EN/EN61000-4-6	3Vrms
OTHERS	MTBF	220Khrs MIL-HDBK-217F(25℃)		
	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	1.All parameters are specified at normal input, rated load, 25℃ 70% RH ambient. 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 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-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 http://www.meanwell.com) ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx			

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■ 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:

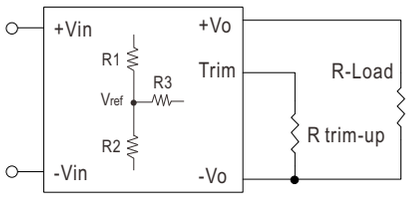


Figure 1. Trim-up Voltage Setup

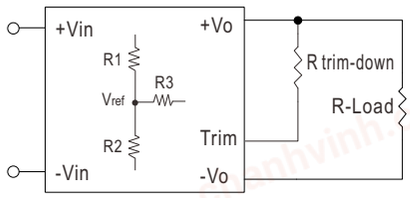


Figure 2. Trim-down Voltage Setup

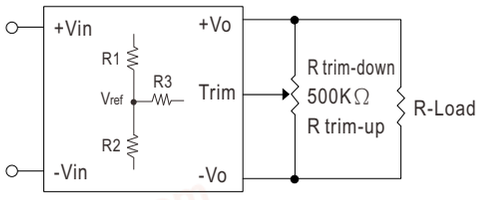


Figure 3. Trim-Connections

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:

$A=[Vref/(V_o'-Vref)] *R1$

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

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 KΩ

R2 = 1 KΩ

R3 = 7.5 KΩ

Vref = 2.5V

$A=[Vref/(V_o'-Vref)] *R1$

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

$=0.894$

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

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

$=(0.894/0.106)-7.5$

$=8.433-7.5$

$=0.933K\Omega$

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2. The value of Rtrim-down defined as:

$A=[(V_o'-Vref)/Vref] *R2$

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

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 KΩ

R2 = 1 KΩ

R3 = 7.5 KΩ

Vref = 2.5V

$A=[(V_o'-Vref)/Vref] *R2$

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

$=3.32$

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

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

$=(12.715/0.51)-7.5$

$=24.931-7.5$

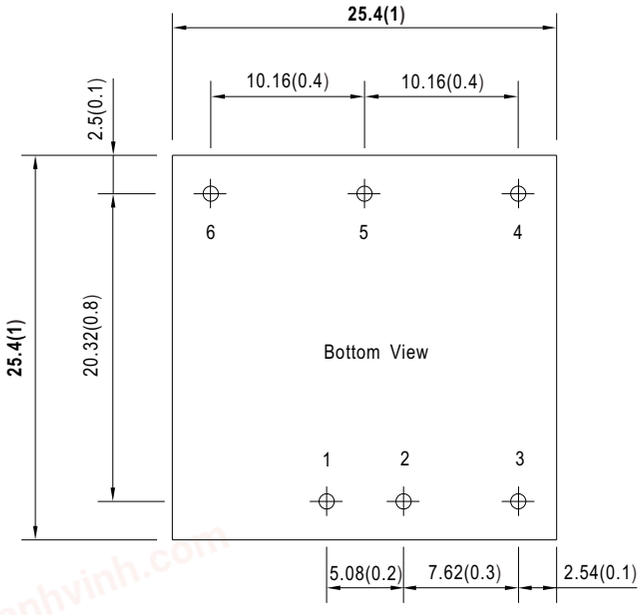
$=17.431K\Omega$

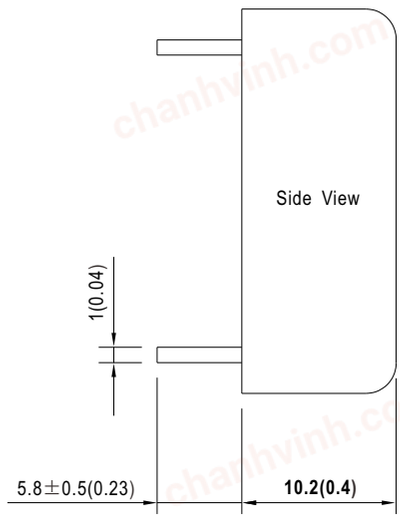
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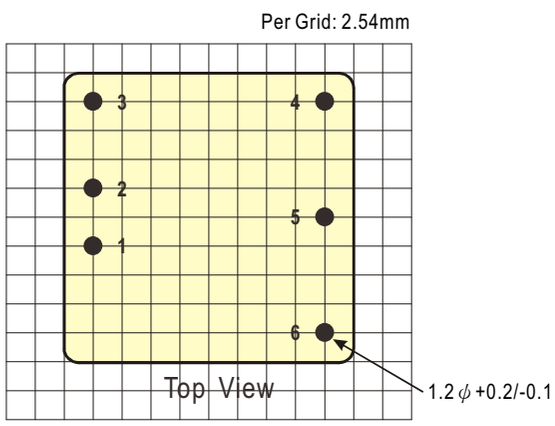
15W 1"x1" Package DC-DC Regulated Converter SKMW15 & DKMW15 series

■ Mechanical Specification

- All dimensions in mm(inch)
- Tolerance:x.x±1mm(x.xx±0.04")
- Pin size is 1±0.1mm (0.04"±0.004")



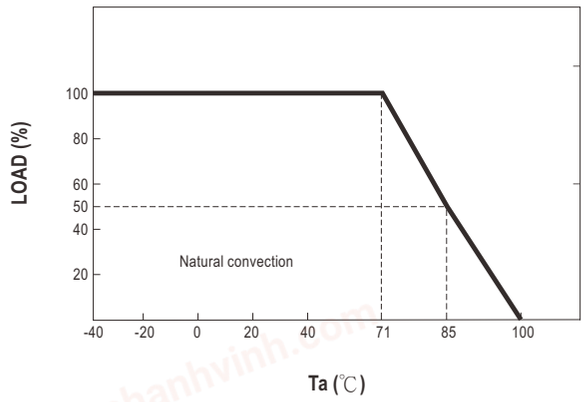




■ Plug Assignment

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

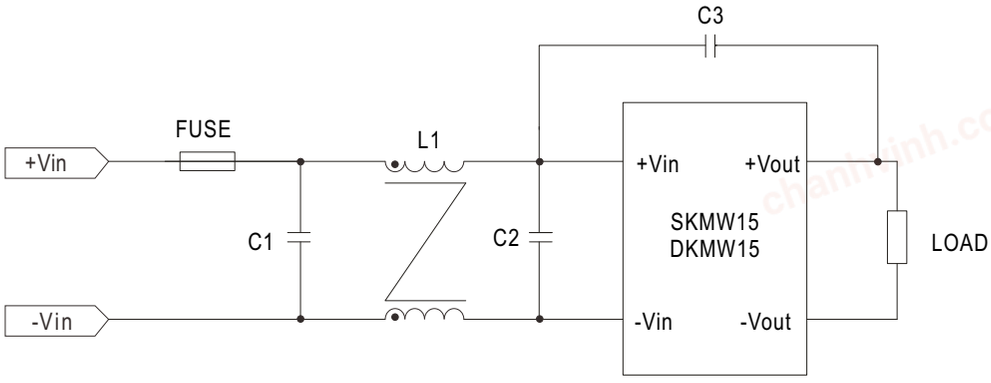
■ Derating Curve



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■ EMC Suggest Ciruit

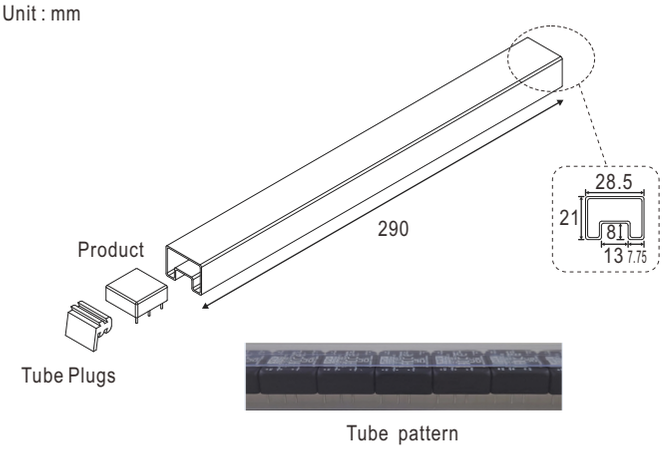
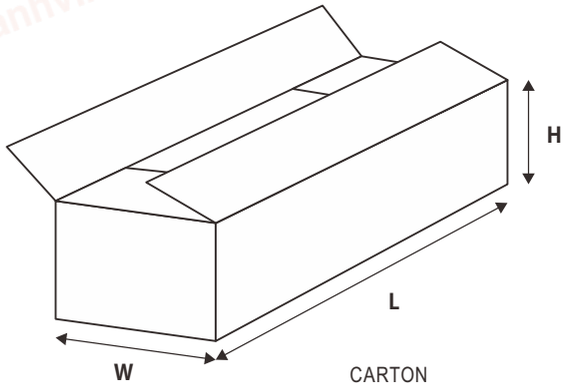
* Required external componets to meet BS EN/EN55032 radiated Class B emission as below:



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

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■ Packing

Standard Tube Packing	MPQ Per Tube (PCS)	One Tube G.W.	Max. Q'TY/ Carton(PCS)	One Carton G.W.
Unit : mm  Tube pattern	10	243g	600	15.4Kg
 CARTON L620 x W230 x H230				

■ Installation Manual

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