



KC24W Series CONSTANT CURRENT GREAT POWER LED DRIVER

RoHS

FEATURES

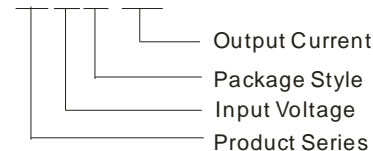
- Lead wire package, simple and convenient
- High efficiency up to 96%
- Ultra wide range voltage input and output
- Constant current mode, great power output
- AC-DC, EMC recommended circuit
- PWM dimming & Analogue dimming
- Remote ON/OFF, Continuous short circuit protection
- RoHS and UL Compliance

APPLICATIONS

The KC24W is a series of step-down constant current source designed for driving high power LEDs. It features high efficiency, wide input voltage range, high operating temperature, PWM and analogue dimming, remote ON/OFF control. It is widely used in LED illumination areas such as decorative light, special control light, backlight, commercial light, streetlight, in-house light and car light, etc.

MODEL SELECTION

KC24W-350



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PRODUCT ITEM

Part Number	Input Voltage(V)		Output		Dimming control	Efficiency(%)
	Normal	Range	Voltage (VDC)	Current (mA)		
KC24W-300	24	5.5-48	3.3-36	0-300	PWM+Analogue	96
KC24W-350	24	5.5-48	3.3-36	0-350	PWM+Analogue	96
KC24W-500	24	5.5-48	3.3-36	0-500	PWM+Analogue	96
KC24W-600	24	5.5-48	3.3-36	0-600	PWM+Analogue	96
KC24W-700	24	5.5-48	3.3-36	0-700	PWM+Analogue	96

SPECIFICATIONS

Item	Test condition	Min.	Typ.	Max.	Units
Utmost input voltage	≤10 seconds	5		55	VDC
Recommended input voltage		5.5	24	48	
Input filter		Capacitor			
Output voltage range	Vin=48V	3.3		36	VDC
Output current range	See the product item				
Output current accuracy			± 2	±3	%
Output current stability	Vin=48V, Vo=3.3V~36V			±1	
Internal power dissipation	Vin=24V,5LEDS			700	mW
Temperature coefficient	-40 °C to+71 °C ambient			± 0.015	%/°C
Efficiency				96	%
Ripple & Noise (Vp-p)	Vin=24V, 1~ 10LEDS			100	mV
Short circuit protection		Continuous,automatic recovery			
Operating temperature range	300mA / 350mA	-40		85	°C
	500mA/ 600mA/ 700mA	-40		71	
Storage temperature range		-55		125	
Maximum case temperature				100	
Maximum capacitive Load			1000		μF
Operating frequency range		320	370	420	kHz
MTBF	MIL-HDBK-217F(+25°C)	2,000,000			Hours
Case Material		Plastic (UL94-V0)			
Dimensions		22.10*12.50*9.00			mm
Weight		6			g

PWM Dimming and ON/OFF Control (leave open if not used)

Remote ON/OFF	ON	Open or 2.8V<Vc<6V		
	OFF(shutdown)	Vc<0.6V		
Remote pin current	Vc=5V		1	mA
Quiescent input current in Shutdown mode	Vin=24V, Vc <0.6V		400	μA
PWM frequency			200	Hz

Analogue dimming (leave open if not used)

Input voltage range	Vin=5.5-48V	0-15V		
Output current range	Vin=5.5-48V	0%-100%		
Control voltage range	Full on	0.2V±50mV		
	Full off	4.5V±200mV		
Driving current	Vc=5V	0.2mA(max)		

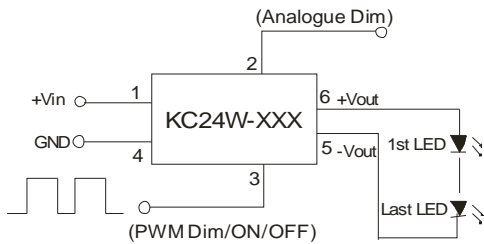
EMC(Refer to Figure 5)

Conducted/Radiated	EN55022, CLASS B			
ESD	IEC/EN 61000-4-2	level 3	(6KV/8KV)	CLASS B
Radiated Immunity	IEC/EN 61000-4-3		(10V/m)	CLASS B
EFT	IEC/EN 61000-4-4	level 3	(±2KV)	CLASS B
Surge	IEC/EN 61000-4-5	level 3	(±1KV)	CLASS B
Conducted Immunity	IEC/EN 61000-4-6		(10Vr.ms)	CLASS B

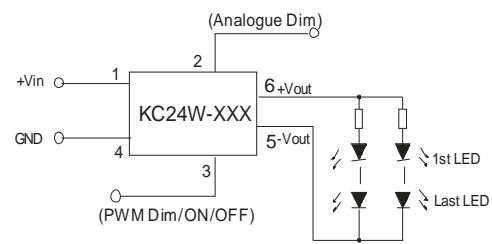
INPUT VS OUTPUT

Input voltage (VDC)	Output voltage range(VDC)	Output constant current (mA)	Output power (W Max)	Input voltage (VDC)	Output voltage range(VDC)	Output constant current (mA)	Output power (W Max)
48	3.3-36.0	300	10.80	48	3.3-36.0	350	12.60
36	3.3-32.0	300	9.60	36	3.3-32.0	350	11.20
24	3.3-21.0	300	6.30	24	3.3-21.0	350	7.35
20	3.3-17.0	300	5.10	20	3.3-17.0	350	5.95
15	3.3-13.2	300	3.96	15	3.3-13.2	350	4.62
12	3.3-10.0	300	3.00	12	3.3-10.0	350	3.50
5.5	3.3-4.0	300	1.20	5.5	3.3-4.0	350	1.40
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48	3.3-36.0	500	18.00	48	3.3-36.0	600	21.60
36	3.3-32.0	500	16.00	36	3.3-32.0	600	19.20
24	3.3-21.0	500	10.50	24	3.3-21.0	600	12.60
20	3.3-17.0	500	8.50	20	3.3-17.0	600	10.20
15	3.3-13.2	500	6.60	15	3.3-13.2	600	7.92
12	3.3-10.0	500	5.00	12	3.3-10.0	600	6.00
5.5	3.3-4.0	500	2.00	5.5	3.3-4.0	600	2.40
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48	3.3-36.0	700	25.20				
36	3.3-32.0	700	22.40				
24	3.3-21.0	700	14.70				
20	3.3-17.0	700	11.90				
15	3.3-13.2	700	9.24				
12	3.3-10.0	700	7.00				
5.5	3.3-4.0	700	2.80				

TYPICAL APPLICATION CIRCUITS



(Figure 1) Series Application

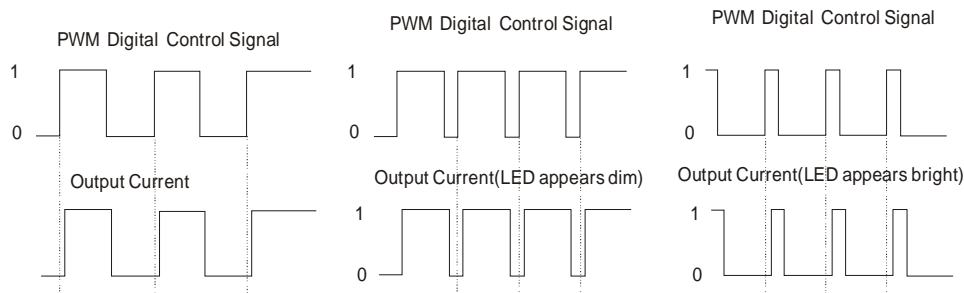


(Figure 2) Parallel-series Application

If it is necessary to protect LED in actual application, you could connect a PTC to the input of every channel or all channels, as shown in Figure 2.

Note: The negative output terminal can't connect GND, or the module may be damaged.

DIGITAL DIMMING CONTROL



For the rated frequency PWM dimming, the output current of driver matters to the pulse width of the PWM signal, and the numerate please refer to the following formula:

$$I_{o_set} = \frac{(DT-0.6)}{T} I_{o_norm}$$

I_{o_set} refers to the expected output current value.

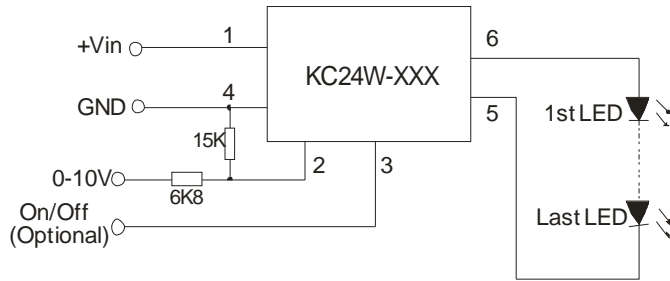
I_{o_norm} refers to the rated output current

D refers to the pulse width of the PWM signal

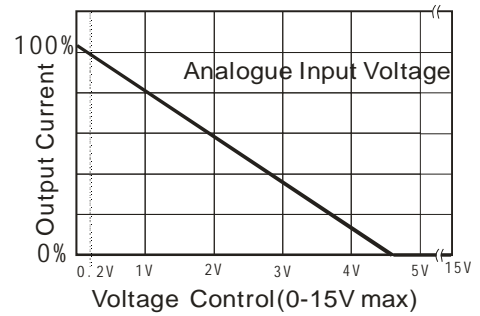
T refers to the cycle of the PWM signal

Note: The formula only supplies as a reference, and the output current may be a little deviation with different load. The Ton(min) of PWM signal must be greater than 0.7ms, or the driver can't be operated normally. It is natural for the driver to generate an audibly noise in dimming process, because the frequency of the control circuit is within human audibly range (20Hz~20KHz).

ANALOGUE DIMMING CONTROL AND APPLICATION EXAMPLE

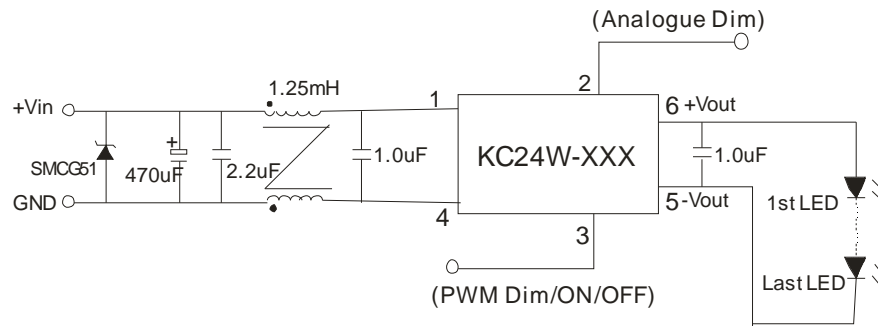


(Figure 3) Analogue dimming circuit



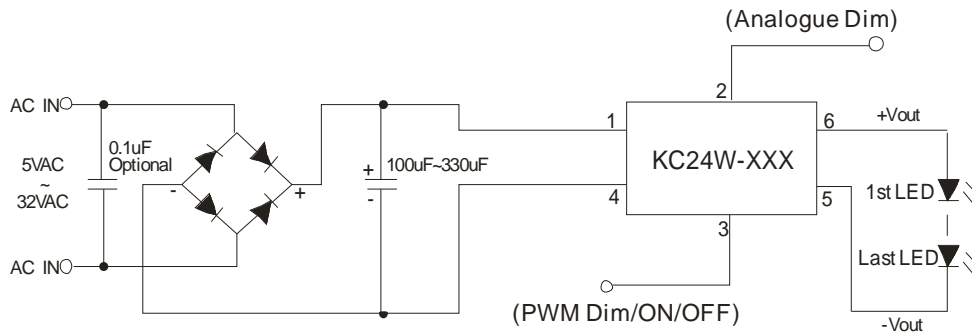
(Figure 4) Analogue input voltage VS output

EMC RECOMMENDED CIRCUIT



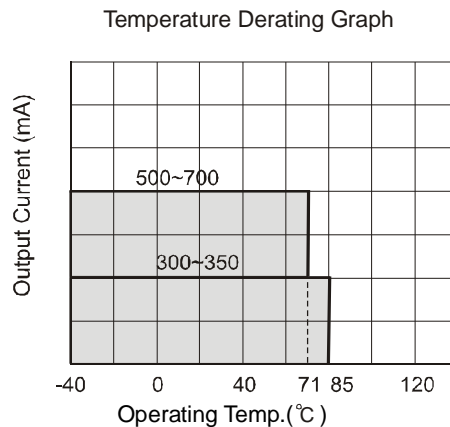
(Figure 5)

AC INPUT RECOMMENDED CIRCUIT

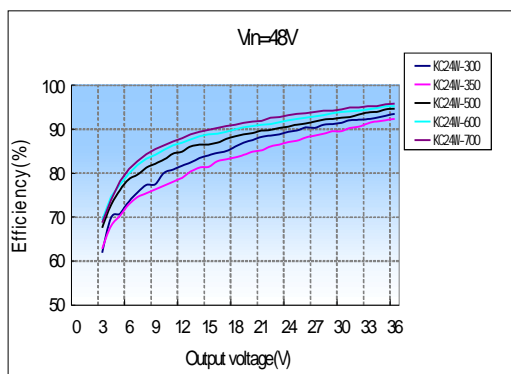
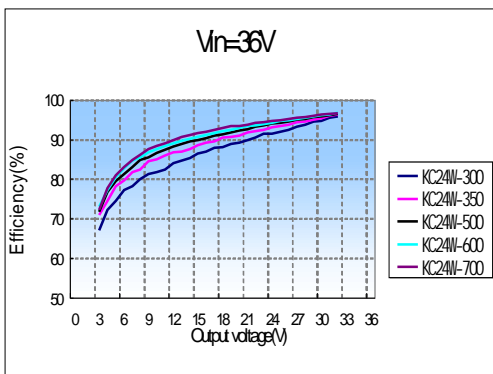
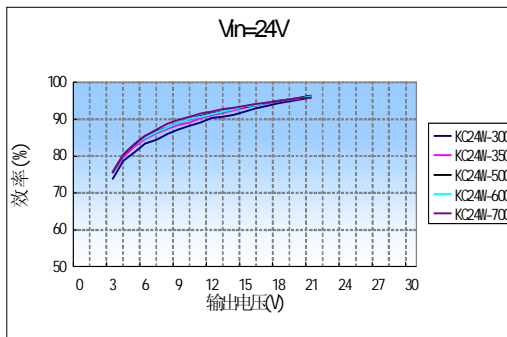
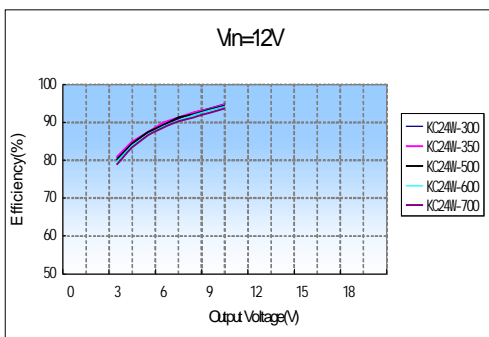


(Figure 6)

TYPICAL TEMPERATURE CURVE

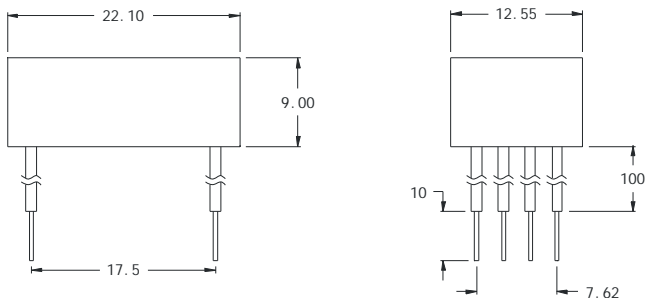


CHARACTERISTICS CURVE



OUTLINE DIMENSIONS & PIN CONNECTIONS

MECHANICAL DIMENSIONS



Note:
Unit: mm
XX ± 1.0mm
XX.X ± 0.50mm
XX.XX ± 0.25mm
Pin tolerances: ±0.10mm

FOOTPRINT DETAILS

Pin	Out	Comments
1	+Vin	DC Supply
2	ANALOGUE DIMMING	Leave open if not used
3	PWM/ON/OFF	Leave open if not used
4	GND	Do not connect to -Vout
5	-Vout	LED Cathode Connection
6	+Vout	LED Anode Connection

Note:

1. Operation under minimum output voltage will not damage the converter; However, they may not meet all specification listed.
2. All specifications measured at $T_a=25^{\circ}\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. Only typical models listed, other models may be different, please contact our technical person for more details.
4. In this datasheet, all the test methods of indications are based on corporate standards.