



## KC24AH Series

### PWM DIM CONSTANT CURRENT OUTPUT LED DRIVER

RoHS

#### FEATURES

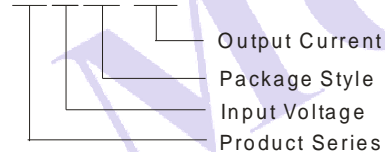
- High efficiency up to 96%
- Constant current output
- Power LED driver
- Wide input voltage range
- PWM dimming
- Remote ON/OFF
- Short circuit protection

#### APPLICATIONS

The KC24AH Series is a step-down constant current source designed for driving high power LEDs. The output currents available are 300mA, 350mA, 500mA, 600mA, 700mA. The KC24AH series is fully featured with very high efficiency, wide input voltage range, high ambient operating temperature, PWM dimming and Remote ON/OFF.

#### MODEL SELECTION

##### KC24AH-350



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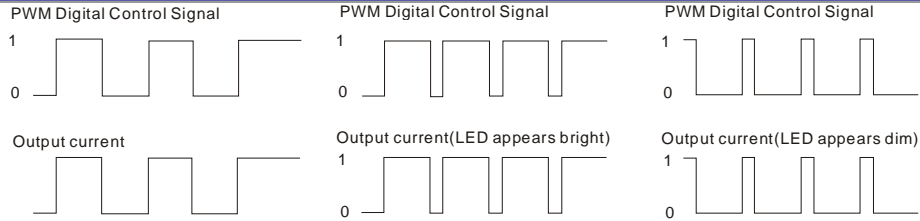
#### PRODUCT PROGRAM

Part Number	Input Voltage(V)		Output		Dimming control	Efficiency (%.max)
	Nominal	Range	Voltage (VDC)	Current (mA)		
KC24AH-300	24	6.5-36	2-30	0-300	PWM	96
KC24AH-350	24	6.5-36	2-30	0-350	PWM	96
KC24AH-500	24	6.5-36	2-30	0-500	PWM	96
KC24AH-600	24	6.5-36	2-30	0-600	PWM	96
KC24AH-700	24	6.5-36	2-30	0-700	PWM	96

#### COMMON SPECIFICATIONS

Item	Test condition	Min.	Typ.	Max.	Units
Utmost input voltage	≤10 seconds	5.5		40	VDC
Recommended input voltage		6.5	24	36	
Input filter		Capacitor(2μF)			
Output voltage range	Vin=36V	2		30	VDC
Input-output voltage drop		4.5		6.5	
Output current range	See the selection guide ,while Vin-Vout>4.5V				
Output current accuracy	Vin=24V, 5 LEDS		±7	±12	%
Output current stability	Vin=24V, 1LED to 5 LEDS		±8	±15	
Temperature coefficient	-40 °C to+71 °C ambient			± 0.03	%/°C
Efficiency at full load				96	%
Short circuit protection		Continuous			
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			470		μF
MTBF	MIL-HDBK-217F(+25°C)		2,000,000		Hours
Case Material		Plastic (UL94-V0)			
Dimensions		22.8*10.2*9.5			mm
Weight		3.5			g
<b>PWM Dimming and ON/OFF Control (let it open if not use)</b>					
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		0.2	10		KHz

## DIGITAL DIMMING CONTROL



This is a PWM type digital dimming, which you can control the output current by adjusting the pulse width of the PWM signal.

$$I_{o\_set} = I_{o\_norm} \times D$$

$I_{o\_set}$  refers to the wanted output current value.

$I_{o\_norm}$  refers to the rated output current

$D$  refers to the pulse width of the PWM signal

For example: we assume the rated output current is 300mA and wanted output current is 150mA, then the pulse width should be 0.5 from the equation above. That is say if we keep the pulse width of PWM signal at 0.5, the output current will be kept at 150mA. It is natural for the driver to generate a audibly noise in dimming process, because the frequency of the control circuit is within human audibly range (20Hz~20KHz). In order to avoid the human eye can observe the LED flashes, the PWM dimming frequency is recommended to set above 100Hz.

## TYPICAL APPLICATION CIRCUITS

### PWM Dimming control circuit

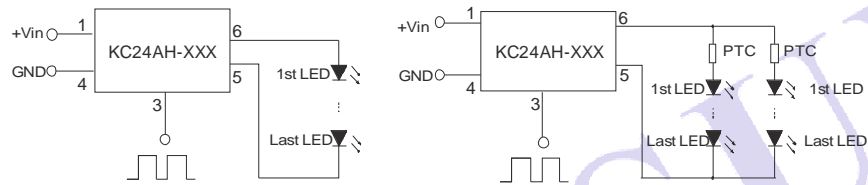
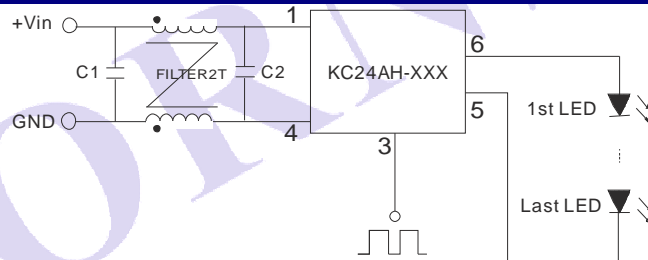


Figure 1

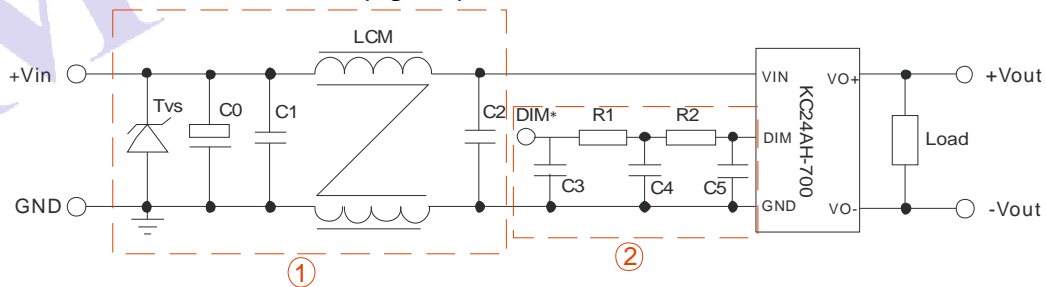
Figure 2

In actual use, if necessary to protect LED, a PTC of positive temperature coefficient may connect to the input end of every channel or all channels, as shown in Figure 2.

## EMC RECOMMENDED CIRCUIT



(Figure 3) EMI filter circuit



(Figure 4) EMI/RFI conducted EN55015 recommended circuit

Note:1.DIM pin is the module's PWM dimming pin as shown in Figure 4.

2.While adding circuit ②,it may extend the PWM dimming output reaction time.

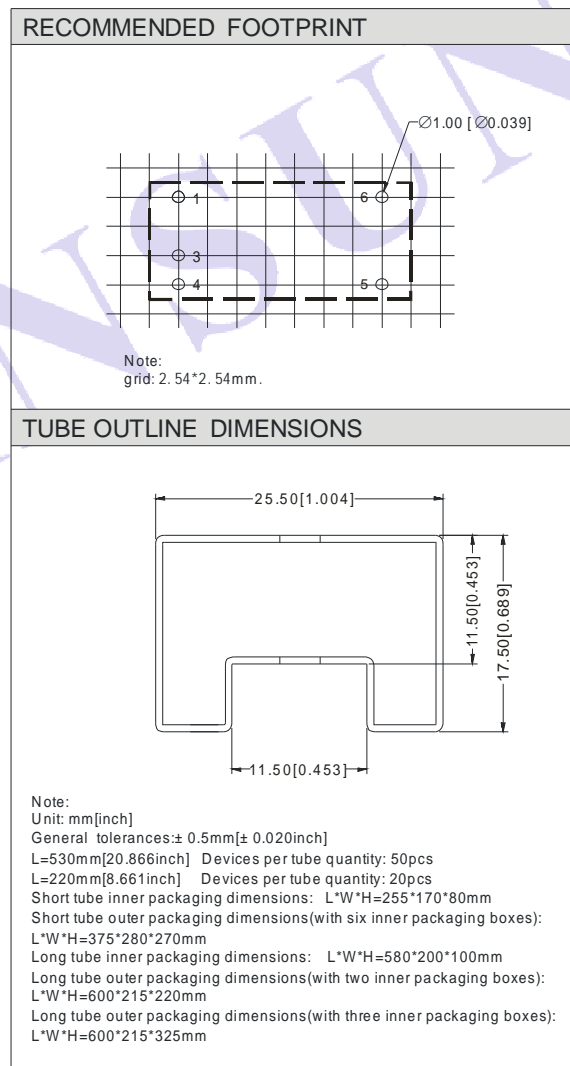
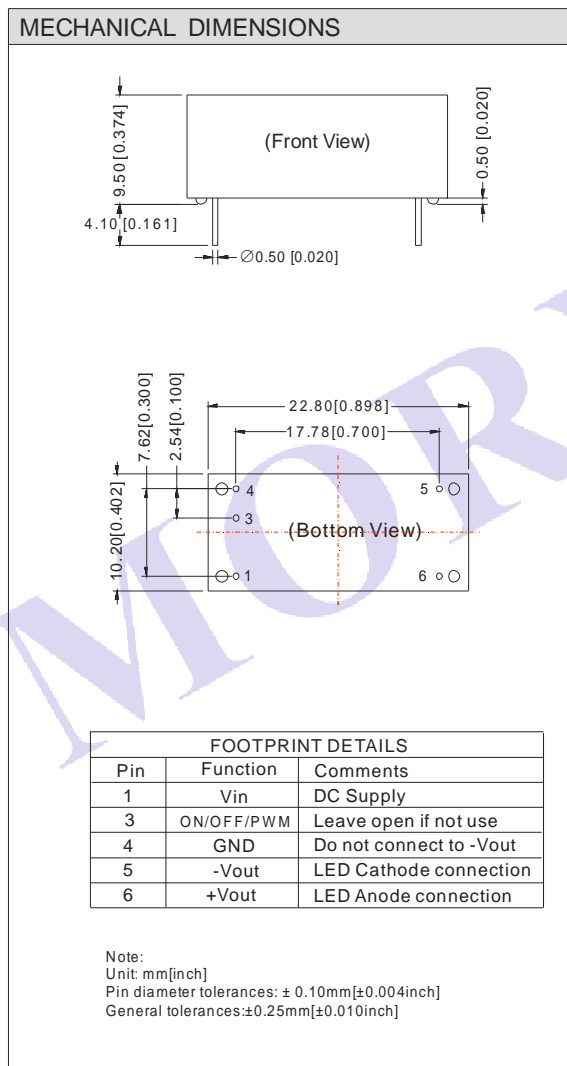
EMC level:

Item	Standard	Level	Predicate	Remark
EMI conducted	EN 55015	Power port	Qualification	Add external circuit ①
ESD	IEC61000-4-2:2001	Level 2	perf. Criteria B	±4KV Add external circuit ②
Surge	IEC61000-4-5:2004	Level 2	perf. Criteria B	±1KV Add external circuit ①
EFT	IEC61000-4-4:2004	Level 2	perf. Criteria B	±1KV Add external circuit ①

Recommended parameter:

Components	Specifications
Tvs	SMCJ48A,1500W (Bringtking)
LCM	UU9.8P4M15-00 (15mH) (Emei)
C0	470µF/50V (CapXon)
C1	4.7µF/50V 1210 (TORCH)
C2	1.0µF/50V 1210 (TORCH)
C3	470pF/100V 0805 (TORCH)
C4	270pF/100V 0805 (TORCH)
C5	100pF/100V 0805 (TORCH)
R1、R2	680Ω 0805(can replaced by inductance or magnetic bead)

## OUTLINE DIMENSIONS & PIN CONNECTIONS



Note:

- All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- In this datasheet, all the test methods of indications are based on corporate standards.