

**Step-Down, White LED Constant-Current Supply****FEATURES**

- Wide Input Voltage Range: 7V to 32V
- LED Output Current :  
T6325A Up to 1.0A
- Set LED current Options :  
Set LED current by resistor  
Set LED current by PWM
- Low 0.05uA Shutdown Current
- SOP-8 and TO-252 Lead-free Package
- Build in Short Protect

**Applications**

- Portable Communication Devices
- Handheld Electronics
- LED/Display Back Light Driver
- Lightings (MR16)

**GENERAL DESCRIPTION**

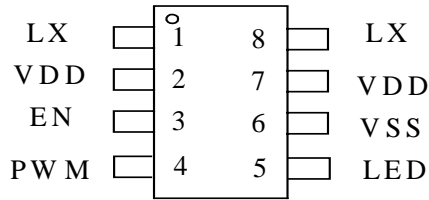
The T6325A is step-down constant current LED driver. An low-dropout bias supply for white LEDs is a high-performance alternative to the simple resistors used in conventional white LED designs. The T6325A uses options single resistor or PWM to set the current for LED. The T6325A is available in SOP-8 and TO-252 Lead-free package.

**PART NUMBER EXAMPLES**

<b>PART NO.</b>	<b>PACKAGE</b>
T6325A-ADG	SOP-8
T6325A-AWG	TO-252

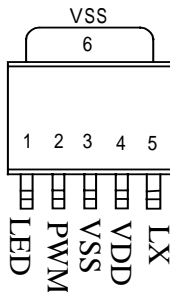
**PIN ARRANGEMENT(Top view)**

SOP-8 Package



T6325A-ADG

TO-252 Package



T6325A-AWG

**PIN DESCRIPTION**

SYMBOL	SOP-8	TO-252	DESCRIPTION
LX	1,8	5	Switch pin, Connect to external inductor
VDD	2,7	4	Power supply
VSS	6	3	Ground
LED	5	1	LED Cathode connection
PWM	4	2	PWM brightness control, floting is full PWM duty
EN	3		Enable control signal, H: Active, L : Power Down

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Unit
Voltage on any pin relative to GND	V <sub>IN</sub>	-0.3 to 36	V
Operating Temperature Rang	T <sub>A</sub>	-40 to +85	°C
Maximum Soldering Temperature (at leads, 10 sec)	T <sub>LEAD</sub>	300	°C
Storage Temperature Rang	T <sub>S</sub>	-65 to +150	°C

**Electrical Characteristics**

(T<sub>A</sub> = -40 to 85°C unless otherwise noted. Typical values are at T<sub>A</sub> =25°C, VDD =12V)

Symbol	Description	Conditions	Min.	Typ.	Max	Unit
V <sub>DD</sub>	Input Voltage		7	-	32	V
T <sub>OFF</sub>	Switch Minimum Off Time		300	420	550	ns
I <sub>DD</sub>	Switch Off Current			3		mA
I <sub>OFF</sub>	Shutdown Current	CE=0V		0.1	1	uA
V <sub>IHCE</sub>	CE Input Voltage Hight		2			V
V <sub>ILCE</sub>	CE Input Voltage Low				1	V
I <sub>ICE</sub>	CE Input Bias Current				0.1	uA
R <sub>DS(on)</sub>	Switch ON Resistance			0.6		ohm
I <sub>LED</sub>	LED Current			700	1000	mA

**Functional Description**

The T6325A provides step-down constant current supply for white LED designs. The T6325A uses a single resistor to set the current for LED. The T6325A offers several advantages over using resistors, such as improved LED to LED brightness matching, lower variation with supply voltage changes. The T6325A uses options single resistor or PWM to set the current for LED. Significantly lower dropout voltage, and in some applications, significantly improved efficiency.

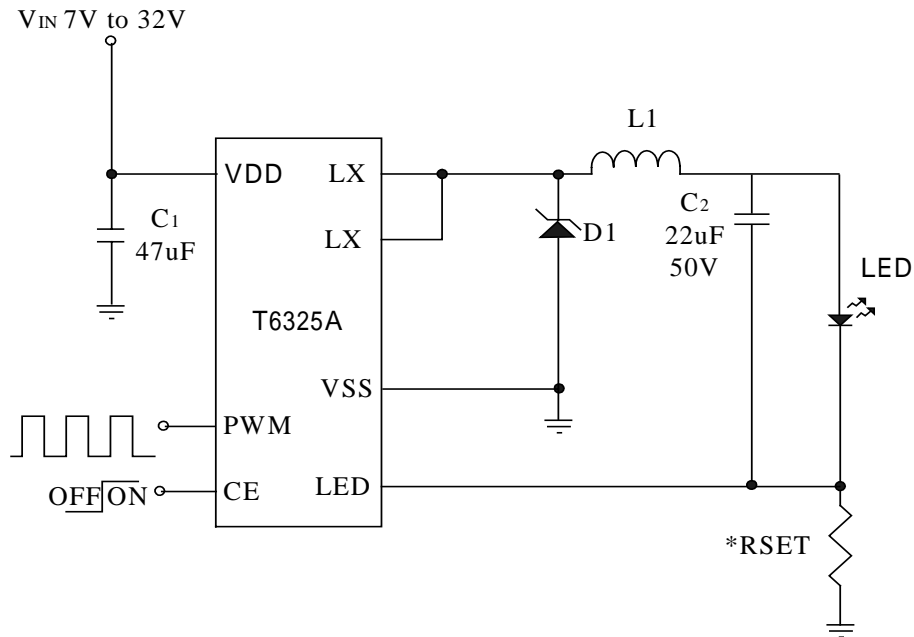
**Enable Input**

EN powers the input of the T6325A. Drive EN high (> 2.0V) to enable the device; drive EN low (< 1V) to disable the device. Driving EN low forces and SET into a high-impedance state.

**Applications Information**

Very Low-Cost, High-Efficiency Solution . This is the least expensive and most efficient architecture. Due to the high forward voltage of white LED. The T6325A current regulating architecture and low dropout greatly minimize this effect compared to using simple resistors. The enable function of the T6325A turns on and off the LED.

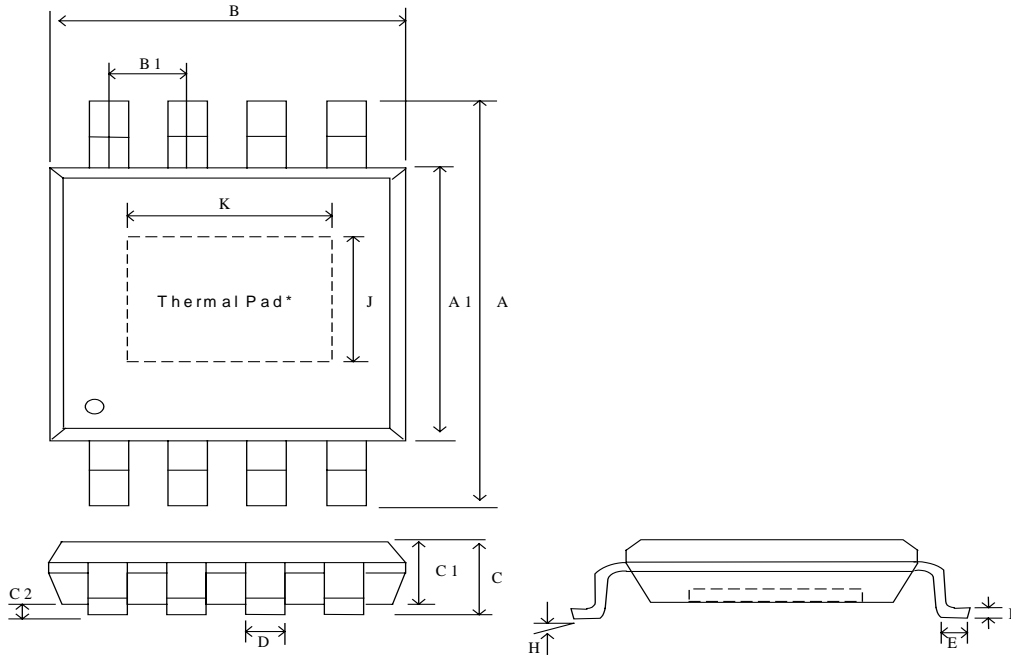
**TYPICAL APPLICATION CIRCUITS**



Note: \*RSET value is 0.33 ohm at ILED=700mA

Typical Application Circuit for Dimming from PWM or Resistor

**PACKAGE DIMENSIONS  
8-LEAD SOP**



Symbol	Dimension in mm			Dimension in inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	5.70	6.00	6.30	0.224	0.236	0.248
A1	3.75	3.95	4.10	0.148	0.156	0.164
B	-	-	5.13	-	-	0.202
B1	-	1.27	-	-	0.050	-
C	-	-	1.80	-	-	0.071
C1	1.35	1.55	1.75	0.052	0.061	0.069
C2	0.10	-	0.25	0.001	-	0.004
D	0.31	0.41	0.51	0.012	0.016	0.020
E	0.30	0.50	0.70	0.012	0.020	0.028
F	0.10	0.15	0.25	0.004	0.006	0.010
J		2.23 REF			0.088 REF	
K		2.97 REF			0.117 REF	
H	0~8°			0~8°		

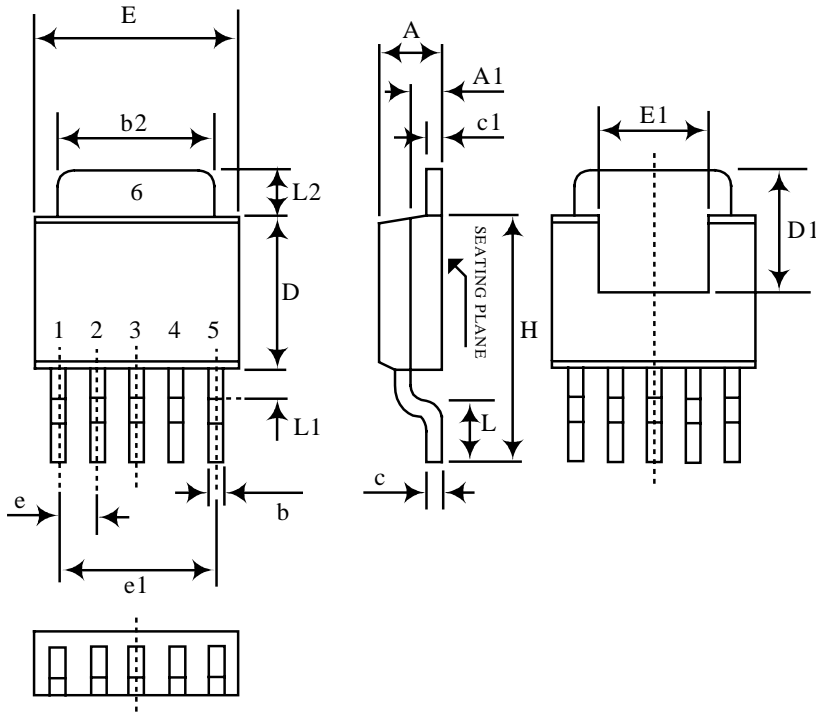
**\*Note :**

The thermal pad on the IC's bottom has to be mounted on the copper foil.

To eliminate the noise influence, the thermal pad is suggested to be connected to GND on PCB.

In addition, desired thermal conductivity will be improved, if a heat-conducting copper foil on PCB is soldered with thermal pad. The thermal pad enhances the power dissipation. As a result, a large amount of current can be sunk safely in one package.

**PACKAGE DIMENSIONS**  
5-LEAD TO-252



Symbol	Dimension in inch		Dimension in mm	
	Min.	Max.	Min.	Max.
A	0.087	0.094	2.20	2.40
A1	0.040	0.050	1.00	1.27
b	0.016	0.24	0.40	0.60
b2	0.205	0.213	5.20	5.40
c	0.017	0.023	0.43	0.58
c1	0.017	0.023	0.43	0.58
D	0.213	0.224	5.40	5.70
D1	0.150 (REF.)		3.80 (REF.)	
E	0.250	0.262	6.35	6.65
E1	0.150 (REF.)		3.80 (REF.)	
e	0.050 (TYP.)		1.27 (TYP.)	
e1	0.200 (TYP.)		5.08 (TYP.)	
H	0.313	0.338	7.94	8.6
L	0.055	0.070	1.40	1.78
L1	0.043	0.047	1.09	1.19
L2	0.050	0.060	1.30	1.50