AIC6600

Off-Line Linear LED Driver

FEATURES

- Flexible Voltage Detect.
- Wide Range, Programmable LED Voltage.
- LED Thermal Regulation.
- Fixed Current Operation: 20mA or 30mA.
- Can be Paralleled for Higher Current
- 3V to 80V Supply Voltage Range.
- Low Quiescent Current.
- High Efficiency.
- LED Brightness Stable.
- No External Component.
- User TRIAC Dimming Control.
- SOP-8 Package.

DESCRIPTION

The AIC6600 is off-line linear LED driver. The application of high bright LED is widely used for general illumination.

The AIC6600 driving device includes a plurality of LEDs. When the voltage detecting circuit detects the different voltage level of input voltage, it can control the LED strings. If the input voltage is lower that it will bypass some LED strings. And turn on all LED strings when the input voltage is higher. The number of LEDs in LED array is dependent on the voltage level of the AC power source, that includes of ±15% variations. A typical application for the AIC6600 is to drive LEDs with a constant current of 20mA or 30mA. Multiple AIC6600 can also be used in parallel to provide higher currents.

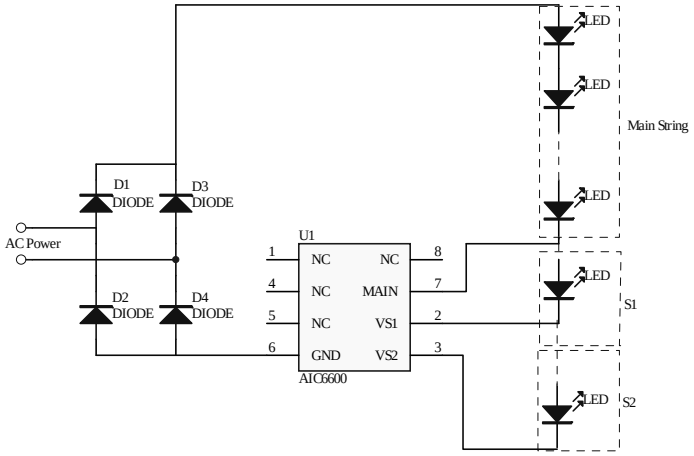
The quality of fixed current and wide range voltage makes this device ideal for TRIAC dimming applications.

The AIC6600 is available in a SOP-8 package.

APPLICATIONS

- T-8 CFL Replacement LED Solution
- General Illumination

TYPICAL APPLICATION CIRCUIT



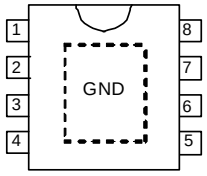
■ ORDERING INFORMATION

AIC6600X–XXXXX

- PACKING TYPE
  TR: TAPE & REEL
  BG: BAG
- PACKAGE TYPE
  R8: SOP-8 Exposed Pad (Heat Sink)
- G: GREEN PACKAGE
- LED CURRENT
  A: 20mA
  B: 30mA

Example: AIC6600A-GR8TR

→ With 20mA LED current, R8 type pin configuration in SOP-8 Green package and TAPE & REEL packing.

PACKAGE TYPE	PIN CONFIGURATION
R8 (SOP-8)	SOP-8 Exposed Pad (Heat Sink) TOP VIEW 1: NC 2: VS1 3: VS2 4: NC 5: NC 6: GND(TAB) 7: MAIN 8: NC 

ABSOLUTE MAXIMUM RATINGS

Input Voltage 92V

Operating Ambient Temperature Range T_A ..... -40ºC~85ºC

Operating Maximum Junction Temperature T_J 150ºC

Storage Temperature Range T_{STG} ..... -65ºC~150ºC

Lead Temperature (Soldering 10 Sec.)..... 260ºC

Thermal Resistance Junction to Case SOP-8 (Exposed Pad) ..... 15ºC /W

Thermal Resistance Junction to Ambient SOP-8 (Exposed Pad)… ..... 60ºC /W

(Assume no Ambient Airflow, no Heatsink)

Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

■ ELECTRICAL CHARACTERISTICS

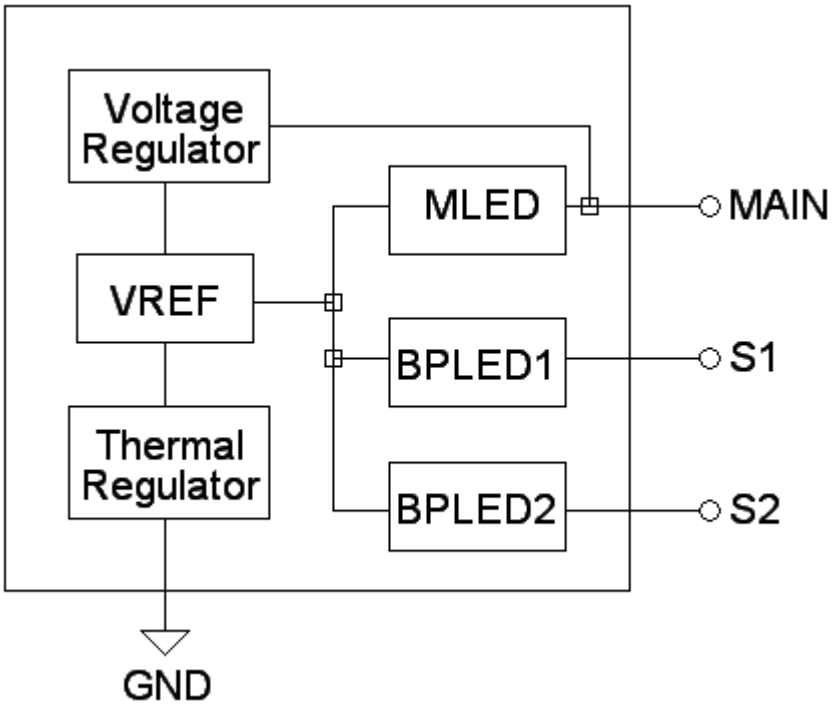
(T_J=25°C, unless otherwise specified) (Note 1)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage Section						
VDD Operation Voltage			5		80	V
Quiescent Current		I_Q		120		μA
GND Current		I_{GND}		120		μA
Reference Voltage	I_{LED} =20mA	V_{REF}		0.66		V
	I_{LED} =30mA	V_{REF}		0.99		V
LED Current						
LED Current Regulation	AIC6600A-XXXXX	I_{LED}		20		mA
	AIC6600B-XXXXX	I_{LED}		30		mA
LED Current Tolerance			-10		+10	%
String Current Matching			-10		+10	%
Fault Protection						
Thermal Regulation				90		℃
Thermal Regulation Current	Temp. at 140℃, I_{LED} =20mA			10		mA
	Temp. at 140℃, I_{LED} =30mA			15		mA

Note 1: Specifications are production tested at T_A=25°C. Specifications over the -40°C to 85°C operating temperature range are assured by design, characterization and correlation with Statistical Quality Controls (SQC).

■ TYPICAL PERFORMANCE CHARACTERISTICS

■ BLOCK DIAGRAM



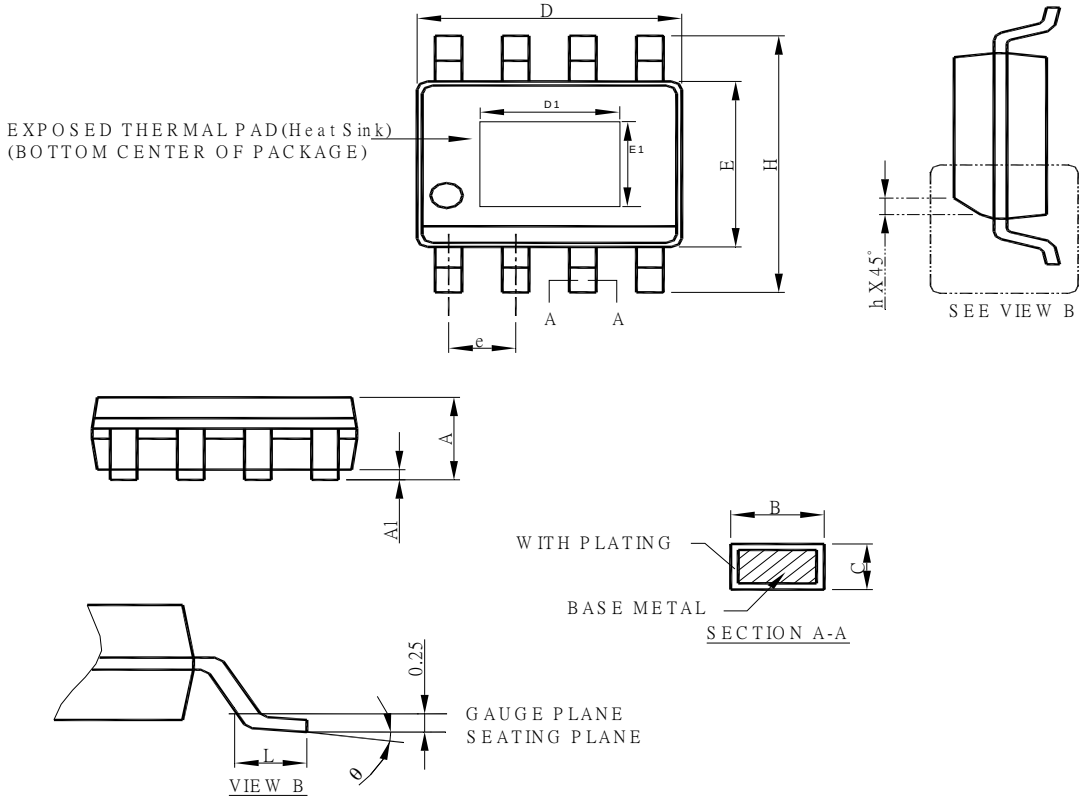
■ PIN DESCRIPTION

VMAIN PIN	-LED Main Cathode Connection.
VS1 PIN	-LED S1 Cathode Connection.
VS2 PIN	-LED S2 Cathode Connection.
GND PIN	-Ground

APPLICATION INFORMATION

PHYSICAL DIMENSIONS

- **SOP-8 Exposed Pad (Heat Sink) PACKAGE OUTLINE DRAWING**



SYMBOL	SOP-8 Exposed Pad(Heat Sink)	
	MILLIMETERS	
	MIN.	MAX.
A	1.35	1.75
A1	0.00	0.15
B	0.31	0.51
C	0.17	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.27
q	0°	8°
D1	1.5	3.5
E1	1.0	2.55

Note : 1. Refer to JEDEC MS-012E.
2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side .
3. Dimension "E" does not include inter-lead flash or protrusions.
4. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Note:

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