
Constant Current Regulator**■ FEATURES**

- Fixed Current Operation: 20mA and 30mA
- Output Current Tolerance $\pm 10\%$
- Can be paralleled for Higher Current.
- 50V to 500V Supply Voltage Range.
- Thermal Regulation.
- Available in TO-252-5 Package.

■ DESCRIPTION

The AIC6605 is off-line linear LED driver. The application of high bright LED is widely used for general illumination.

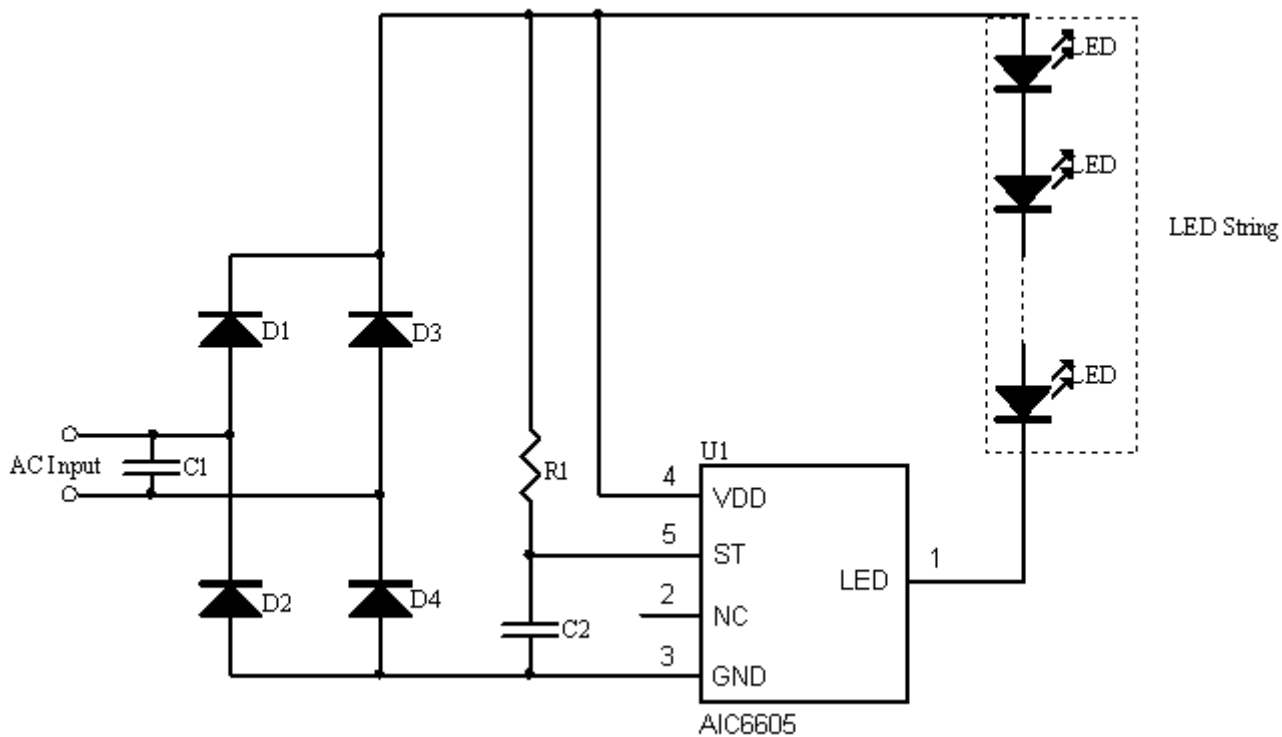
AIC6605 is to drive LEDs with a constant current of 20mA and 30mA at input of $50V_{DC} \sim 500V_{DC}$. Multiple AIC6605 can also be used in parallel to provide higher currents.

The AIC6605 is available in TO-252-5 Package.

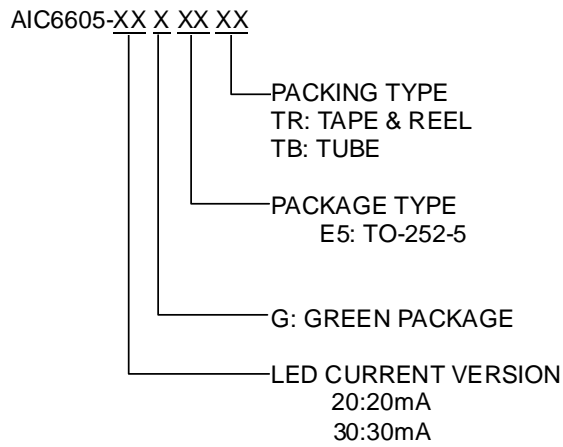
■ APPLICATIONS

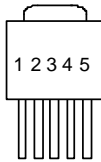
- LED Lamps (e.g. E27, GU10)
- General Illumination
- LED Strings (e.g. T-8 Tube)
- Automotive
- Signage and Decorative LED Lamp
- Constant Current Source
- Constant Current Sink

■ TYPICAL APPLICATION CIRCUIT



■ ORDERING INFORMATION



PACKAGE TYPE	PIN CONFIGURATION
TO-252-5 (E5)	TOP VIEW
1: LED 2: NC 3: GND (TAB) 4: VDD 5: ST	

Example: AIC6605-20GE5TR
 → 20mA Version, in TO-252-5 Green Package and Tape & Reel Packing Type

■ **ABSOLUTE MAXIMUM RATINGS**

VDD Pin Voltage	550V
LED Pin Voltage.....	350V
ST Pin Voltage	40V
Operating Ambient Temperature Range T_A	-40°C~85°C
Operating Maximum Junction Temperature T_J	150°C
Storage Temperature Range T_{STG}	-65°C~150°C
Lead Temperature (Soldering 10 Sec.).....	260°C
Thermal Resistance Junction to Case TO-252.....	8°C /W
Thermal Resistance Junction to Ambient TO-252.....	100°C /W

(Assume no Ambient Airflow, no Heatsink)

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

*The package is place on a two layers PCB with 2 ounces copper and 2 square inch, connected by 8 vias.

■ 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			50		500	V
LED Current						
LED Current Tolerance		I _(VDD)	-10		+10	%
Fault Protection						
Thermal Regulation				140		°C

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

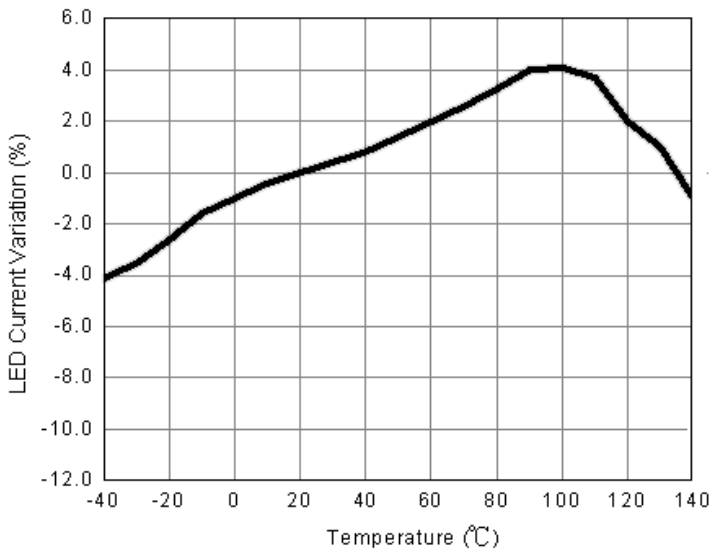
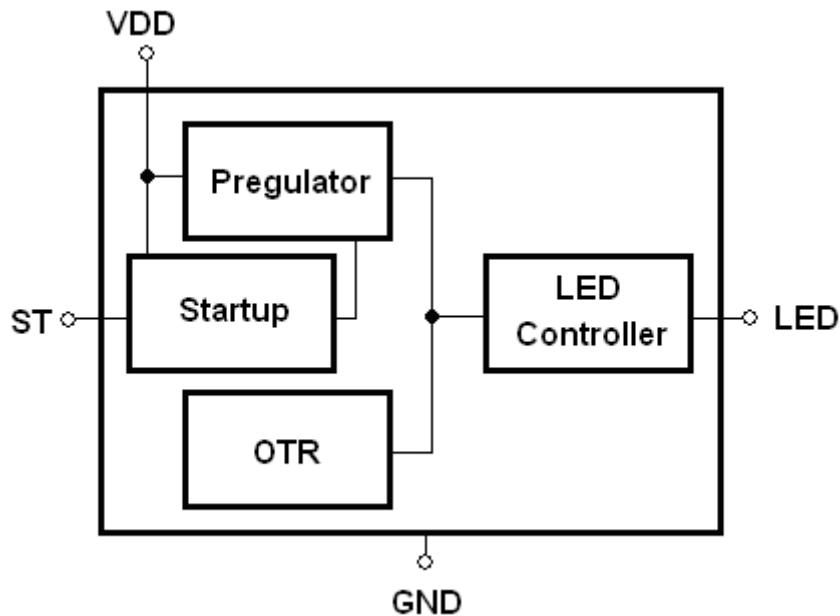


Fig. 1 LED current variation vs temperature

BLOCK DIAGRAM



PIN DESCRIPTION

- ST PIN -Provide the Startup Current for the Controller.
- VDD PIN -Power Supply Input.
- LED PIN -LED Cathode Connection.
- GND PIN -Ground.

APPLICATION INFORMATION

The AIC6605 is off-line constant current LED driver. It can drive a plurality of LED strings. The AIC6605 can flexibly control the LED strings according to the variance of input voltage. If the input voltage is lower, it will bypass some LED strings. When the input voltage is higher than the total forward voltage of all LED strings, all LED strings will be turned on. The number of LEDs in LED array is dependent on the voltage level of the AC power source. Multiple AIC6605 can also be used in parallel to provide higher LED current.

THERMAL REGULATION

The AIC6605 includes the thermal-regulation circuit, which are designed to protect the device from excessive temperature. The internal thermal-regulation circuit reduces the LED current if the junction temperature rises above the preset value of about 140°C.

POWER DISSIPATION

The maximum power dissipation of AIC6605 depends on the thermal resistance of its case and circuit board, the temperature difference between the die junction and ambient air, and the rate of airflow. The rate of temperature rise is greatly affected by the mounting pad configuration on the PCB, the board material, and the ambient temperature. When the IC mounting with good thermal conductivity is used, the junction temperature will be low even when large power dissipation applies.

As a general rule, the lower temperature is, the better reliability of the device is. So the PCB mounting pad should provide maximum thermal conductivity to maintain low device temperature.

APPLICATION CIRCUIT

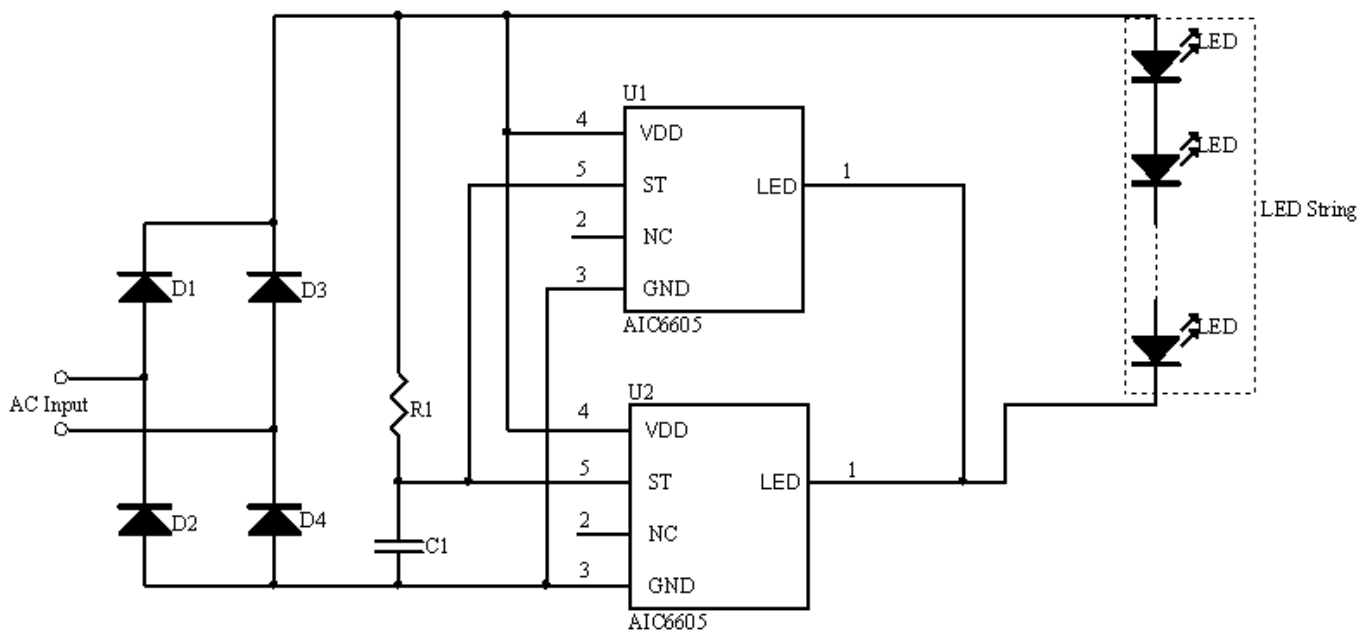
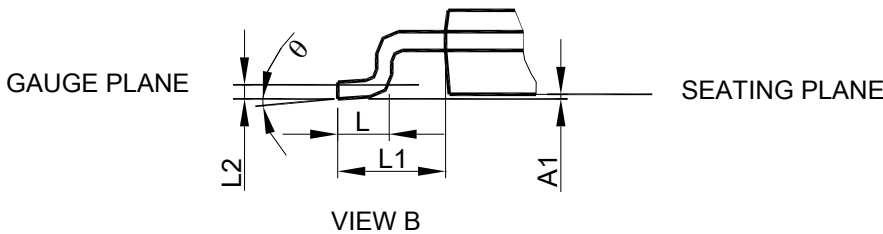
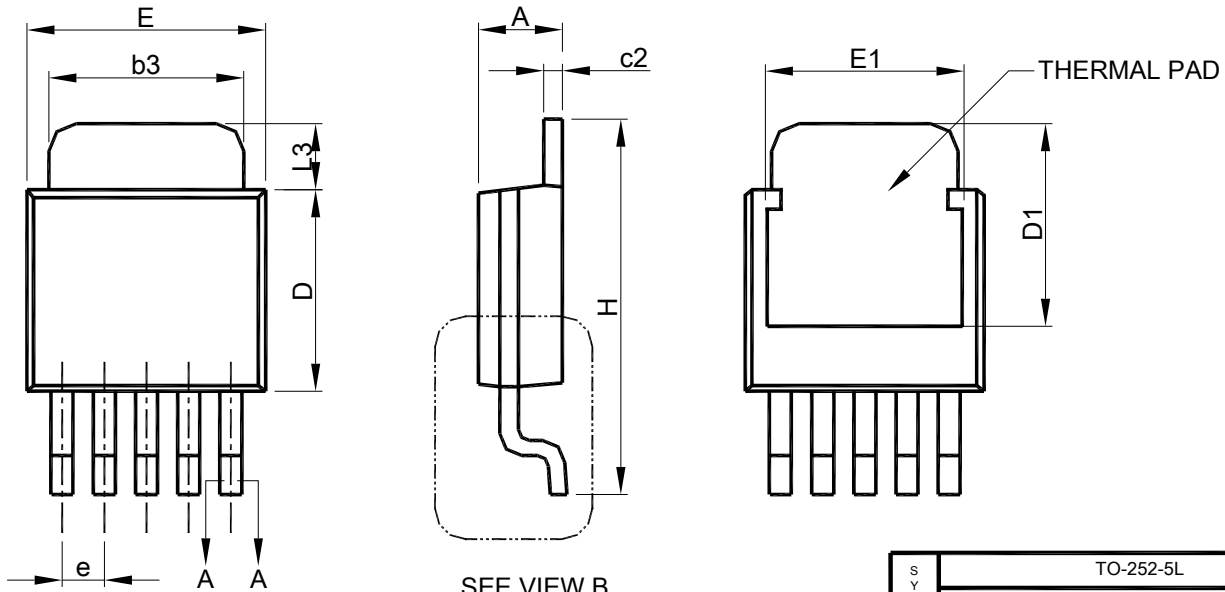


Fig. 2 AIC6605 for Higher LED Current Application

PHYSICAL DIMENSIONS
TO-252-5L


SYMBOL	TO-252-5L	
	MILLIMETERS	
	MIN.	MAX.
A	2.19	2.38
A1	0.00	0.13
b	0.51	0.71
b3	4.32	5.46
c	0.46	0.61
c2	0.46	0.89
D	5.33	6.22
D1	4.90	6.00
E	6.35	6.73
E1	4.32	5.33
e	1.27 BSC	
H	9.40	10.41
L	1.40	1.78
L1	2.67 REF	
L2	0.51 BSC	
L3	0.89	2.03
θ	0°	8°

- Note: 1. Refer to JEDEC TO-252AD and AB.
 2. Dimension "E" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side .
 3. Dimension "D" 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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