

General Description

RLD1301 is a LED driver IC for direct AC powered LEDs. Inductor and electrolyte capacitors are not necessary implementing a driving circuit. Thus the lifetime of LED lamps can be extended up to LED chips itself. The output current level is adjustable via an external resistor. Dimming control can be accomplished with current control circuit or TRIAC phase control switch. The NTC (Negative Temperature Coefficient) characteristics of the control block ensure stable operation of LED lamps under over voltage and over temperature. THD (Total Harmonic Distortion) can be reduced to below 20%, and PF (Power Factor) is close to 1. RLD1301 offers the competitive solution for AC direct drive LED lamps with a robust long lifetime and cost effectiveness.

Features

- AC direct powered LED driver
- No electrolyte capacitor, No inductor
- Low THD
- High PF
- Long lifetime
- No EMI issue
- Dimming controllable
- Negative temperature coefficient

同时兼顾PF、无EMI、可调光、NTC、无电解无电感长寿命特性的IC.

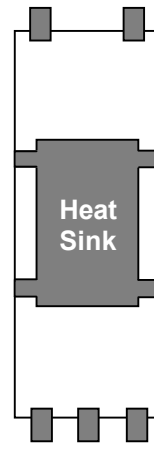
Applications

- AC direct drive LED bulb type lamp
- AC direct drive LED PAR type lamp
- AC direct drive LED panel type lamp
- AC direct drive LED street light lamp
- AC direct drive LED tube light lamp
- AC direct drive LED down light lamp

Package Type : P-6020G

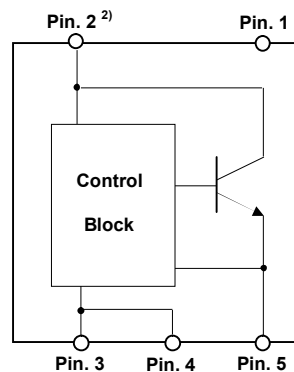


[Top view]



[Bottom view]

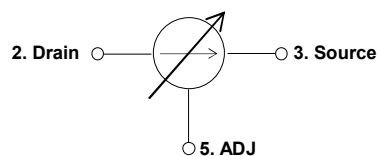
Schematic & PIN Configuration



1 : NC 2 : Drain 3,4 : Source 5 : ADJ

²⁾ Heat sink connected to pin. 2

Device Symbol



Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

切不可误认为是IC工作的典型值。

Parameter	Symbol	Ratings	Unit
Drain Voltage	V_{DD}	80	V 最大耐压值
Drain Current	I_D	100	mA 可输出的最大电流值
Power Dissipation ^{*1)}	P_D	2.0	W 能够承受的最大功耗
Operating Temperature	T_{OP}	-40 ~ 85	$^\circ\text{C}$ 工作温度
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ 150	$^\circ\text{C}$

^{*1)} Drain voltage and drain current should be determined by considering the power dissipation rating

Electrical Characteristics

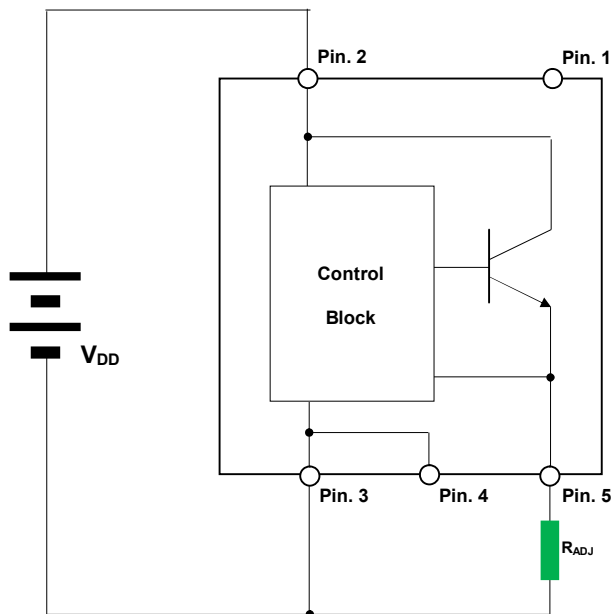
500mm² Heat sink^{*2)}, $T_A = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain Voltage	V_{DD}		4		80	V
Drain Current	I_D	$R_{ADJ} = 6\Omega, V_{DD}=5V$	79	83	88	mA
		$R_{ADJ} = 9\Omega, V_{DD}=5V$	54	57	60	mA
		$R_{ADJ} = 18\Omega, V_{DD}=5V$	26	27	29	mA
		$R_{ADJ} = 55\Omega, V_{DD}=5V$	8	9	10	mA

^{*2)} Device mounted on 2oz copper heat sink on FR4

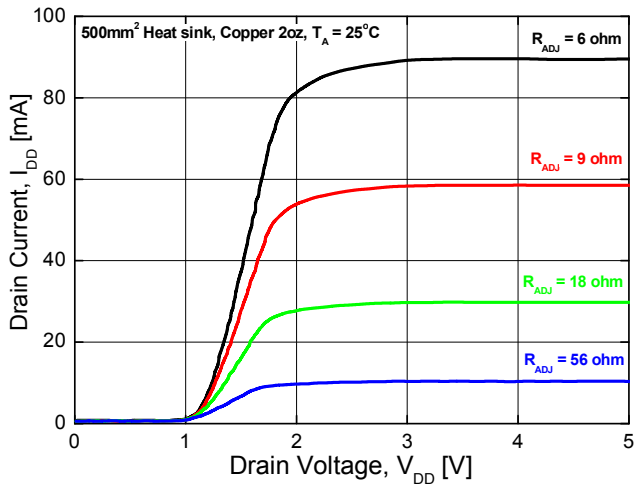
此表为调节电路电流的参考值。由于灯珠数量、IC分压的不确定性，所以没有确定的计算公式。客户使用时根据需要在上表给出的基础上微调即可。

Test circuit

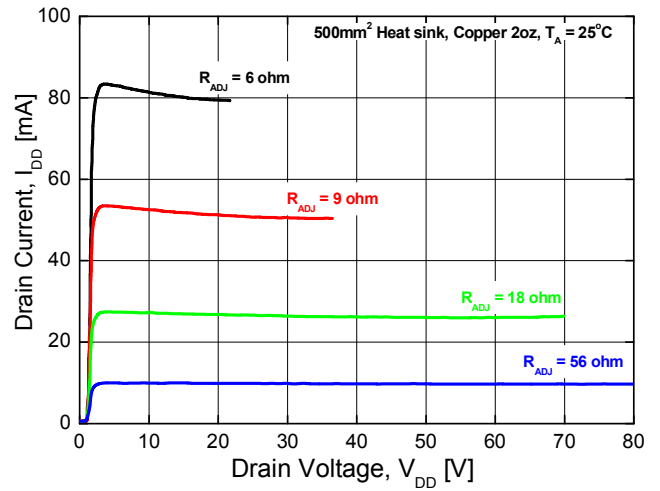


IC耐压与输出电流有关系，设计者务必注意。

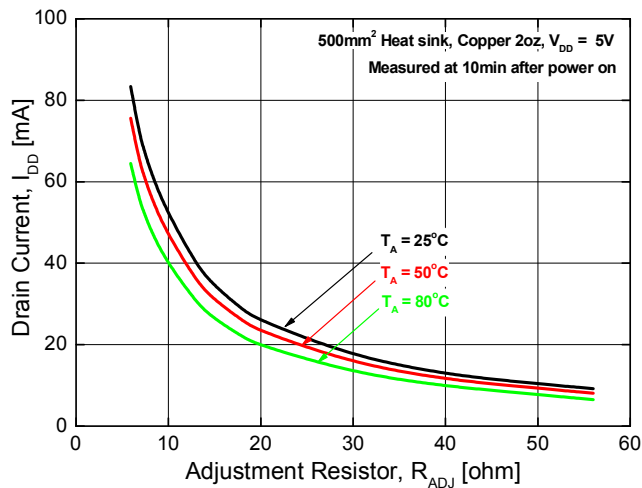
Drain Current vs. Drain Voltage



Drain Current vs. Drain Voltage

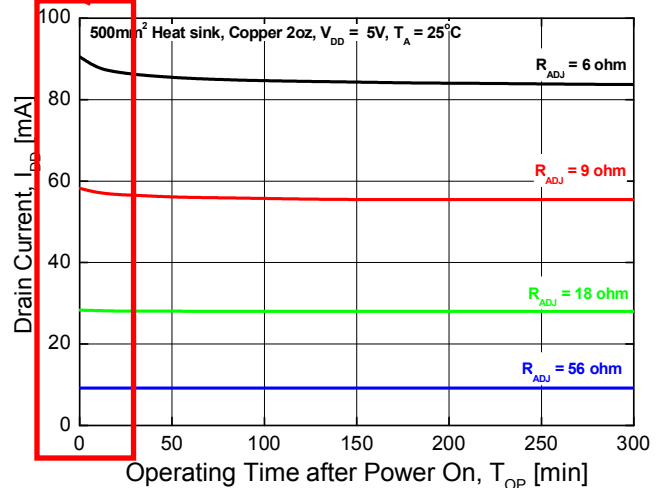


Drain Current vs. Adjustment Resistor

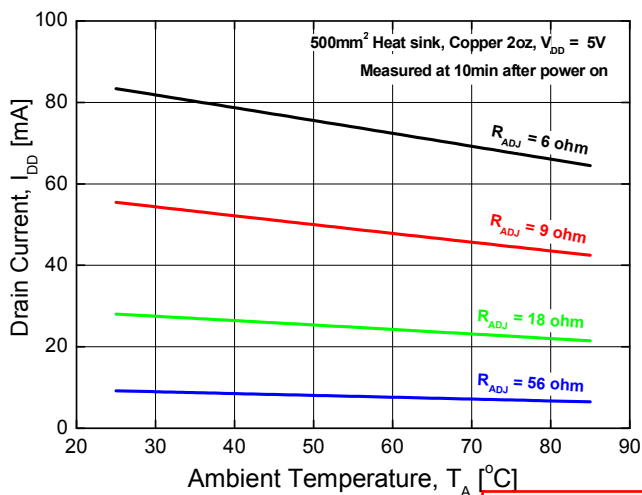


待点亮5-10分钟后再检测功率和电流，需要一定的时间稳定。

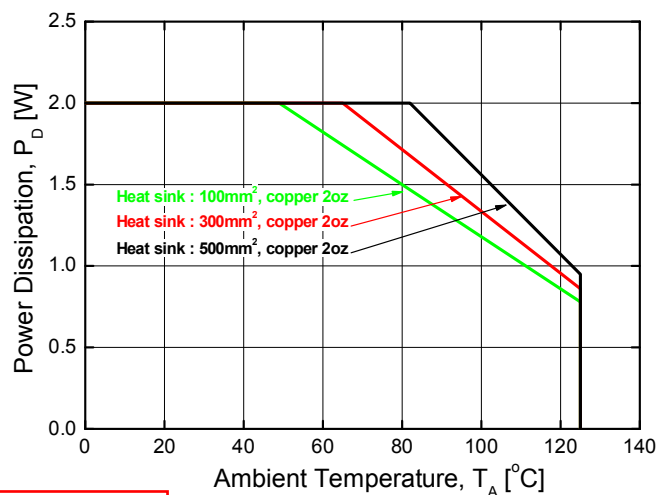
Drain Current vs. Operating Time



Drain Current vs. Ambient Temperature



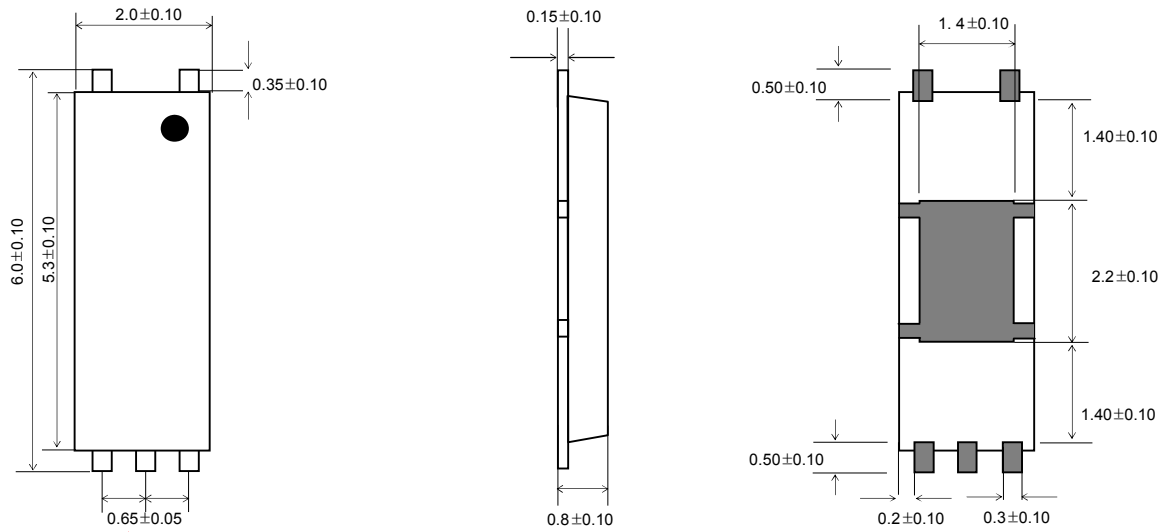
Power Derating vs. Ambient Temperature



务必认真研读以上IC的特性曲线，对您的设计会有帮助。

PKG Dimensions

Unit : mm



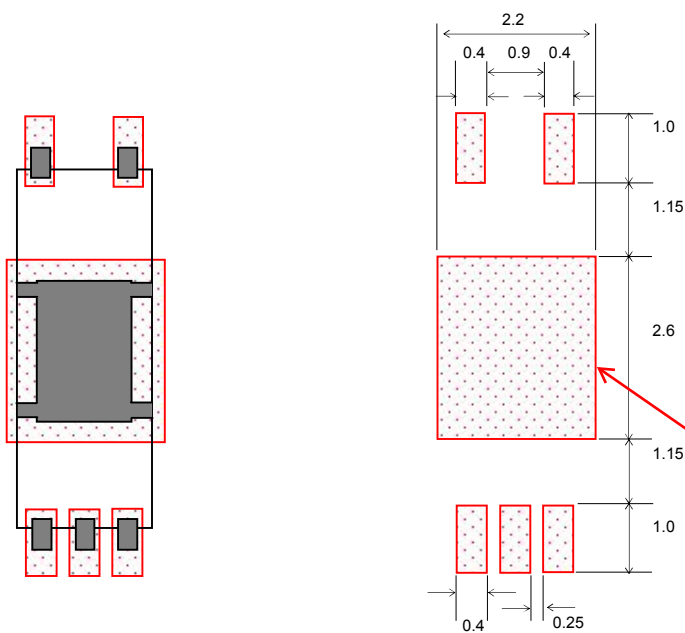
与市面上近似IC的
TO-252封装比，体积
非常非常小。

Marking Information



Land Pattern

Unit : mm

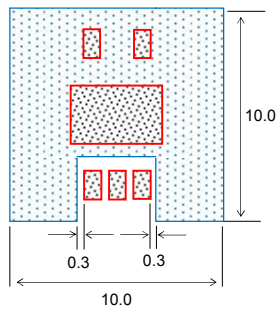


我司强烈建议，客户在打板时，把此处的铜箔面积尽可能的做大，散热做的越好，电路电流和基板温度越稳定，同时也利于NTC功能的启动。另外，尽可能的机贴而不采用手工贴，防止热沉没有贴好而出现的一系列问题。比如：您发现IC温度超过100度就是热沉没有贴好的缘故。

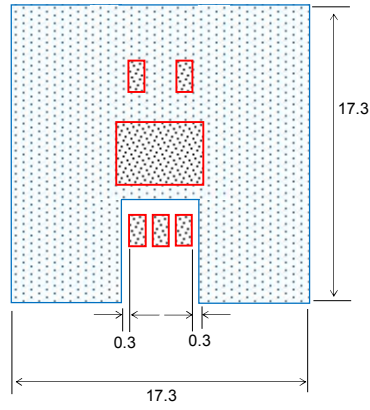
Heat Sink Pattern

Unit : mm

100mm² / Copper 2oz



300mm² / Copper 2oz



500mm² / Copper 2oz

