

|                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Io=200mA bipolar LDO regulator IC                                                 |                                                                                   |
| Io=200mA双极型低压降稳压IC                                                                |                                                                                   |
|  |  |
| <b>TK11100CS</b><br>(SOT23-6)                                                     | <b>TK111xxCS</b><br>(SOT23-5)                                                     |

## DESCRIPTION / 说明

The TK11100CS type, the TK111xxCS type are bipolar LDO regulator ICs. The packages are SOT23-6 and SOT23-5.

They can supply 200mA output current

They are designed for portable applications with space requirements, battery powered system and any electronic equipment.

They offer low dropout voltage.

The output voltage of the TK11100CS can be set from 1.3 to 13.0V by external resistor.

That of the TK111xxCS is internally fixed from 1.5 to 10.0V.

TK11100CS型, TK111xxCS型为双极型低压降稳压IC。其封装为SOT23-6和 SOT23-5。

可以提供200mA的输出电流。

设计用于有空间限制的便携式设备, 电池供电系统和电子设备。

提供低压降。

可以通过外部电阻将TK11100CS的输出电压设为1.3至13.0V。

TK111xxCS的内部固定输出电压为1.5至9.0V。

## FEATURES / 特性

- |                                                                                                                                                                                                                                                                  |                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>■ High accuracy</li> <li>■ Low dropout voltage</li> <li>■ Thermal and over current protection</li> <li>■ High maximum load current</li> <li>■ Active high on/off control</li> <li>■ Packages: SOT23-5, SOT23-6</li> </ul> | <ul style="list-style-type: none"> <li>■ 高精度</li> <li>■ 低压降</li> <li>■ 过热及过流保护</li> <li>■ 最大负载电流</li> <li>■ 高电平开/关控制</li> <li>■ 封装: SOT23-5, SOT23-6</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ABSOLUTE MAXIMUM RATINGS / 绝对最大额定值

| Parameter                   | 参数     | Symbol 符号       | Rating     | 额定值 | Unit 单位 | Remarks        | 备注   |
|-----------------------------|--------|-----------------|------------|-----|---------|----------------|------|
| Operating voltage range     | 工作电压范围 | V <sub>OP</sub> | 2.1 to 14  |     | V       |                |      |
| Operating temperature range | 工作温度范围 | T <sub>OP</sub> | -40 to +85 |     | °C      |                |      |
| Power dissipation           | 功耗     | P <sub>D</sub>  | 360        |     | mW      | *Board mounted | 基板安装 |

## ELECTRICAL CHARACTERISTICS / 电气特性

[TK11100CS]

V<sub>in</sub>=4.0V, R<sub>1</sub>=51kΩ, R<sub>2</sub>=68kΩ, V<sub>cont</sub>=1.8V, T<sub>A</sub>=T<sub>J</sub>=25°C

| Parameter              | 参数     | Symbol 符号            | Value/值 |         |         | Unit 单位 | Conditions                                       | 备注 |
|------------------------|--------|----------------------|---------|---------|---------|---------|--------------------------------------------------|----|
|                        |        |                      | MIN. 最小 | TYP. 典型 | MAX. 最大 |         |                                                  |    |
| Fb pin voltage         | Fb端子电压 | V <sub>fb</sub>      | 1.250   | 1.270   | 1.290   | V       | I <sub>out</sub> = 5mA                           |    |
| Line regulation        | 线性调整率  | LinReg               |         | 0.0     | 5.0     | mV      | ΔV <sub>in</sub> = 5V                            |    |
| Load regulation        | 负载调整率  | LoaReg               |         | 11      | 27      | mV      | I <sub>out</sub> = 5mA ~ 100mA                   |    |
|                        |        |                      |         | 26      | 61      | mV      | I <sub>out</sub> = 5mA ~ 200mA                   |    |
| Dropout voltage        | 电压降    | V <sub>drop</sub>    |         | 80      | 140     | mV      | I <sub>out</sub> = 50mA                          |    |
|                        |        |                      |         | 120     | 210     | mV      | I <sub>out</sub> = 100mA                         |    |
|                        |        |                      |         | 200     | 350     | mV      | I <sub>out</sub> = 200mA                         |    |
| Maximum output current | 最大负载电流 | I <sub>outPEAK</sub> | 240     | 320     |         | mA      | When V <sub>out</sub> drops 0.3V<br>当V输出降到0.3V时  |    |
| Supply current         | 供应电流   | I <sub>cc</sub>      |         | 78      | 125     | A       | I <sub>out</sub> = 0mA                           |    |
| Standby current        | 待机电流   | I <sub>standby</sub> |         | 0.0     | 0.1     | A       | V <sub>cont</sub> = 0V                           |    |
| Quiescent current      | 静态电流   | I <sub>q</sub>       |         | 1.0     | 1.8     | mA      | I <sub>out</sub> = 50mA                          |    |
| Control Terminal       | 控制端子   |                      |         |         |         |         |                                                  |    |
| Control current        | 控制电流   | I <sub>cont</sub>    |         | 5.0     | 15.0    | A       | V <sub>cont</sub> = 1.8V                         |    |
| Control voltage        | 控制电压   | V <sub>cont</sub>    | 1.8     |         |         | V       | V <sub>out</sub> ON state/V <sub>out</sub> 开启状态  |    |
|                        |        |                      |         |         | 0.35    | V       | V <sub>out</sub> OFF state/V <sub>out</sub> 关闭状态 |    |

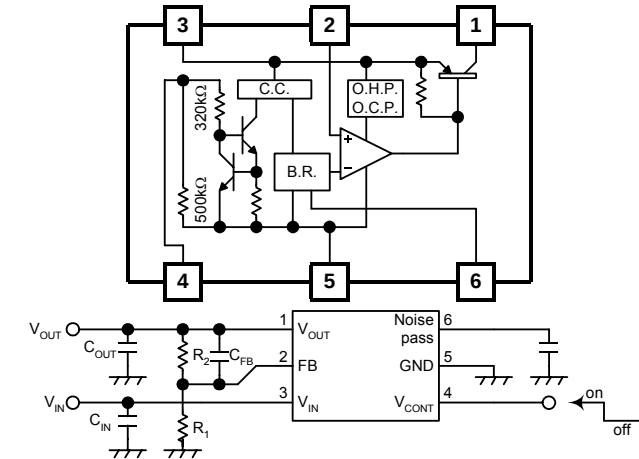
[TK111xxCS]

$V_{IN}=V_{OUT,TYP}+1V, V_{CONT}=1.8V, T_A=25^{\circ}C$

| Parameter                                                                    | 参数     | Symbol符号             | Value                                       |         |         | Unit 单位                          | Conditions                                                                       | 备注 |  |
|------------------------------------------------------------------------------|--------|----------------------|---------------------------------------------|---------|---------|----------------------------------|----------------------------------------------------------------------------------|----|--|
|                                                                              |        |                      | MIN. 最小                                     | TYP. 典型 | MAX. 最大 |                                  |                                                                                  |    |  |
| Output voltage                                                               | 输出电压   | V <sub>OUT</sub>     | ±1.5% or ±50mV                              |         |         |                                  |                                                                                  |    |  |
| Line regulation                                                              | 线性调整率  | L <sub>IN</sub> REG  |                                             | 0.0     | 5       | mV                               | V <sub>IN</sub> =V <sub>OUT,TYP</sub> +1V ---- V <sub>OUT,TYP</sub> +6V<br>ΔV=5V |    |  |
| Load regulation                                                              | 负载调整率  | L <sub>OA</sub> REG  |                                             | (11)    | (28)    | mV                               | 5mA<I <sub>OUT</sub> <100mA                                                      |    |  |
|                                                                              |        |                      |                                             | (27)    | (64)    | mV                               | 5mA<I <sub>OUT</sub> <200mA                                                      |    |  |
| Drop-out voltage                                                             | 电压降    | V <sub>DROP</sub>    |                                             | 80      | 140     | mV                               | I <sub>OUT</sub> =50mA                                                           |    |  |
|                                                                              |        |                      |                                             | 120     | 210     | mV                               | I <sub>OUT</sub> =100mA                                                          |    |  |
|                                                                              |        |                      |                                             | 200     | 350     | mV                               | I <sub>OUT</sub> =200mA (2.4V≤V <sub>OUT</sub> )                                 |    |  |
|                                                                              |        |                      |                                             | 230     | 350     | mV                               | I <sub>out</sub> =180mA<br>(2.1V≤V <sub>OUT</sub> <2.4V)                         |    |  |
|                                                                              |        |                      | 1.5V≤ V <sub>OUT</sub> ≤2.0V: No regulation |         |         |                                  | Because of VopMin=1.8V                                                           |    |  |
|                                                                              |        |                      |                                             |         |         |                                  |                                                                                  |    |  |
| Maximum output current                                                       | 最大输出电流 | I <sub>OUT,MAX</sub> | 240                                         | 320     |         | mA                               | When (V <sub>OUT,TYP</sub> ×0.9)                                                 |    |  |
| Consumption current                                                          | 电流功耗   | I <sub>CC</sub>      |                                             | 63      | 100     | μA                               | I <sub>OUT</sub> =0mA Except I <sub>CONT</sub>                                   |    |  |
| Standing by current                                                          | 待机电流   | I <sub>STANDBY</sub> |                                             | 0.0     | 0.1     | μA                               | V <sub>CONT</sub> =0V off state                                                  |    |  |
| Quiescent current                                                            | 静态电流   | I <sub>Q</sub>       |                                             | 1.0     | 1.8     | mA                               | I <sub>OUT</sub> =50mA                                                           |    |  |
| Control terminal Specification (Pull down resistor =500k ) 控制端子规格（下拉电阻=500k） |        |                      |                                             |         |         |                                  |                                                                                  |    |  |
| Control current                                                              | 控制电流   | I <sub>CONT</sub>    | 5                                           | 15      | μA      | V <sub>CONT</sub> =1.8V on state |                                                                                  |    |  |
| Control voltage                                                              | 控制电压   | V <sub>CONT</sub>    | 1.8                                         |         |         | V                                | on state                                                                         |    |  |
|                                                                              |        |                      |                                             |         | 0.35    | V                                | off state                                                                        |    |  |

BLOCK DIAGRAM / 框图

■ TK11100CS



$V_{OUT}=V_{FB} \times \{(R_1+R_2)/R_1\}$

$V_{FB,TYP}=1.27V$

\* C.C....Control Circuit, O.H.P...Over Heat Protection, O.C.P...Over Current Protection, B.G....Band gap Reference

\* C.C....控制电流, O.H.P...过热保护, O.C.P...过电流保护, B.G....波段间隙参考

■ TK111xxCS

