

Positive LDO regulator IC
正出力低飽和レギュレータIC

TK111xxCS-G, TK11100CS-G, TK121xxCS-G

DESCRIPTION

The TK111xxCS-G, TK11100CS-G and TK121xxCS-G are low dropout linear regulators with on/off control, which can supply 200mA load current. The output voltage, trimmed with high accuracy, is available from 1.5 to 10.0V in 0.1V steps. The on/off control of the TK121xxCS-G is low threshold type of the TK111xxCS-G. And the TK11100CS-G output voltage, adjustable by external resistors, is available from 1.3 to 13.0V.

TK111xxCS-G、TK11100CS-G、TK121xxCS-Gは、出力電流200mAを安定に供給できるon/offコントロール付低飽和レギュレータICです。出力電圧は内部固定で高精度にトリミングされ、1.5V~10.0Vの間で0.1Vステップで設定できます。TK121xxCS-GはTK111xxCS-Gのon/offコントロール低閾値タイプです。またTK11100CS-Gは外部抵抗により出力電圧を1.3V~13.0V間で自由に設定できます。

FEATURES

- High Precision Output Voltage of $\pm 1.5\%$ or $\pm 50\text{mV}$
- Adjustable Output Voltage by External Resistors (TK11100CS)
- Superior Phase Compensation to Previous Model
- Very Good Stability: Ceramic capacitor can be used.
- Very Low Dropout Voltage: $V_{\text{DROP}}=80\text{mV}$ at $I_{\text{OUT}}=50\text{mA}$
- Active High On/off Control
- Excellent Ripple Rejection Ratio: -80dB at 1kHz
- Very Low Noise with Noise Pass Pin
- Short Circuit Protection (Over Current Protection)
- Thermal Shutdown (Over Heat Protection)
- Reverse Bias Protection
- 高精度出力電圧: $\pm 1.5\%$ or $\pm 50\text{mV}$
- 外部抵抗により設定可能な出力電圧(TK11100CS)
- 位相補正をより高度化
- 高い安定性: セラミックコンデンサ使用可能
- 少ない入出力間電圧降下: $V_{\text{DROP}}=80\text{mV}$ at $I_{\text{OUT}}=50\text{mA}$
- 出力on/offコントロール: High-On
- 優れたリップルリジェクション: -80dB at 1kHz
- ノイズパス端子で低ノイズアプリケーション可
- 短絡保護機能(過電流保護)
- サーマルシャットダウン機能(過熱保護)
- 逆バイアス過電流阻止機能

APPLICATIONS

- Battery Powered Systems
- Mobile Communication Systems:
Cordless Phone, GSM, PHS, PDC, CDMA, Base Station of Mobile Phones etc.
- Industrial Equipment:
Personal Computer, Barcode Reader etc.
- Measurement System etc.
- バッテリー駆動機器
- 移動体通信機器用:
コードレスホン、GSM、PHS、PDC、CDMA、携帯電話基地局 etc.
- 産業機器用:
パソコン、バーコードリーダー etc.
- 計測器 etc

PACKAGE OUTLINE

ORDERING INFORMATION

Part name	Package	Marking	Pin configuration	Ordering information																																																																																				
TK111xxCS	SOT23-5	Rxx	See next page	<table border="1"> <tr> <td>T</td><td>K</td><td>1</td><td>1</td><td>x</td><td>x</td><td>C</td><td>S</td><td>C</td><td>L</td><td>-</td><td>G</td> </tr> <tr> <td>Number</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">Environment code</td> </tr> <tr> <td>1, 2</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">G: Lead free</td> </tr> <tr> <td>Voltage code</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">Storage direction</td> </tr> <tr> <td>Ex. 2.5V:25, 5.0V:50</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">L: Left type</td> </tr> <tr> <td>Package code</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">Temperature range</td> </tr> <tr> <td>S: SOT23-5</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">C: $T_A=25^\circ\text{C}$, I: Full</td> </tr> </table>	T	K	1	1	x	x	C	S	C	L	-	G	Number								Environment code				1, 2								G: Lead free				Voltage code								Storage direction				Ex. 2.5V:25, 5.0V:50								L: Left type				Package code								Temperature range				S: SOT23-5								C: $T_A=25^\circ\text{C}$, I: Full			
T		K			1	1	x	x	C	S	C	L	-	G																																																																										
Number								Environment code																																																																																
1, 2								G: Lead free																																																																																
Voltage code								Storage direction																																																																																
Ex. 2.5V:25, 5.0V:50								L: Left type																																																																																
Package code								Temperature range																																																																																
S: SOT23-5								C: $T_A=25^\circ\text{C}$, I: Full																																																																																
TK121xxCS		xxR																																																																																						
TK11100CS	SOT23-6	R00	See next page	<table border="1"> <tr> <td>T</td><td>K</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>C</td><td>S</td><td>C</td><td>B</td><td>-</td><td>G</td> </tr> <tr> <td>Package code</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">Environment code</td> </tr> <tr> <td>S: SOT23-5</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">G: Lead free</td> </tr> <tr> <td>Temperature range</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">Storage direction</td> </tr> <tr> <td>C: $T_A=25^\circ\text{C}$</td> <td colspan="5"></td> <td colspan="2"></td> <td colspan="4">B: Back type</td> </tr> </table>	T	K	1	1	1	0	0	C	S	C	B	-	G	Package code								Environment code				S: SOT23-5								G: Lead free				Temperature range								Storage direction				C: $T_A=25^\circ\text{C}$								B: Back type																										
T	K	1	1	1	0	0	C	S	C	B	-	G																																																																												
Package code								Environment code																																																																																
S: SOT23-5								G: Lead free																																																																																
Temperature range								Storage direction																																																																																
C: $T_A=25^\circ\text{C}$								B: Back type																																																																																

* "xx" means voltage code. "xx"は電圧コードを示しています。

ABSOLUTE MAXIMUM RATINGS

Parameter	項目	Symbol	記号	Rating	定格	Unit	単位	Remarks	備考
Operating Voltage Range	動作電圧範囲	V _{OP}		2.1 to 14.0		V		TK111xxCS/11100CS	
				2.1 to 12.0					
Operating Temperature Range	動作温度範囲	T _{OP}		-40 to +85		°C			
Power Dissipation	許容消費電力	P _D		600		mW		Board mount	基板実装時

ELECTRICAL CHARACTERISTICS

TK11100CS: V_{IN}=4.0V, V_{OUT}=3.0V TK111xxCS, TK121xxCS: V_{IN}=V_{OUT.TYP}+1.0V, V_{CONT}=1.8V, T_A=T_i=25°C

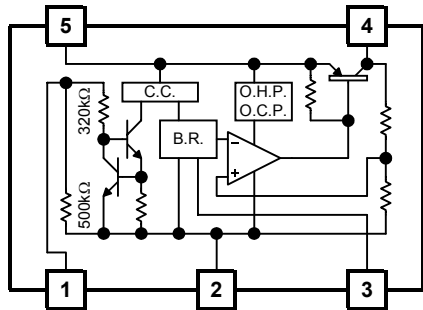
Parameter	項目	Symbol	記号	Value			Units	Conditions
				MIN	TYP	MAX		
Dropout Voltage	入出力間電圧降下 *1	V _{DROP}		80	140	mV	I _{OUT} =50mA	
Maximum Output Current	最大出力電流 *2	I _{OUT.MAX}	240	320		mA	V _{OUT} =V _{OUT.TYP} ×0.9	
Quiescent Current	電源電流	I _Q		63	100	μA	TK111xxCS	I _{OUT} =0mA
				78	125		TK11100CS(R1=51kΩ)	
				92	146		TK121xxCS	
Standby Current	スタンバイ電流	I _{STB}		0.0	0.1	μA	V _{CONT} =0V	
Ground Pin Current	無効電流	I _{GND}		1.0	1.8	mA	I _{OUT} =50mA	
Control Voltage	コントロール電圧	V _{CONT}		1.8		V	TK111xxCS	V _{OUT} ON state
					0.35		TK11100CS	V _{OUT} OFF state
				0.9			TK121xxCS	V _{OUT} ON state
					0.2			V _{OUT} OFF state

*1 For V_{OUT} ≤ 2.0V, no regulations 出力電圧2.0V以下の製品は入出力電圧降下項目の規格はありません。

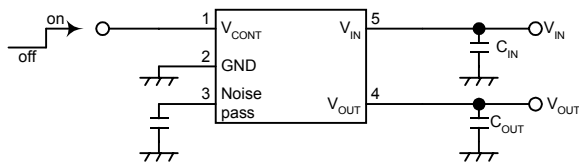
*2 The maximum output current is limited by power dissipation. 最大電流値は許容消費電力に制限されます。

BLOCK DIAGRAM

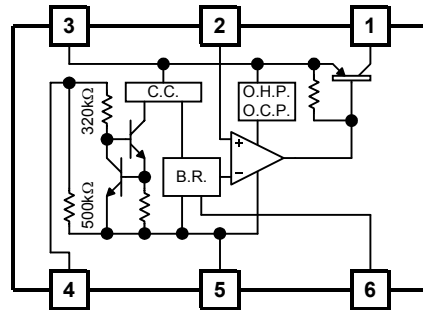
■ TK111xxCS



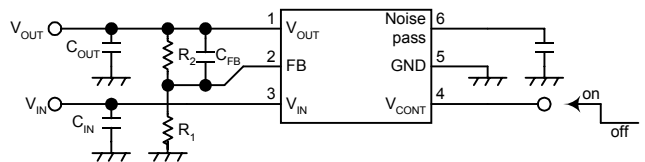
TK111xxCS/TK121xxCS



■ TK11100CS



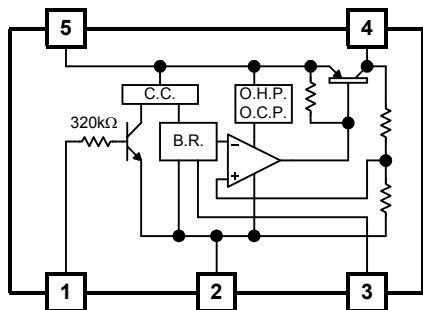
TK11100CS



$$V_{OUT} = V_{FB} \times \left\{ \frac{(R_1 + R_2)}{R_1} \right\}$$

$$V_{FB.TYP} = 1.27V$$

■ TK121xxCS



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