KODENSHI AUK

S52xxM

Low Drop Output Voltage Regulator

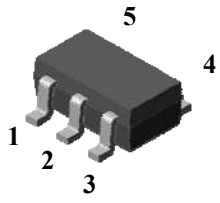
Description

The S52xxM is a u-cap 150mA linear voltage regulator in the SOT-25 package. This regulator has very low dropout voltage and very low ground current. It is designed especially for hand-sets, battery-powered devices and can be controlled by a CMOS or TTL. When the S52xxM is disabled, power consumption drops to nearly zero.

Features

- Output current of 150mA
- Low quiescent current
- Low dropout voltage
- Current limit protection
- Logic-controlled electronic enable

Pin Connections



PIN Connections
1. Input
2. Ground
3. Control
4. Noise bypass
5. Output

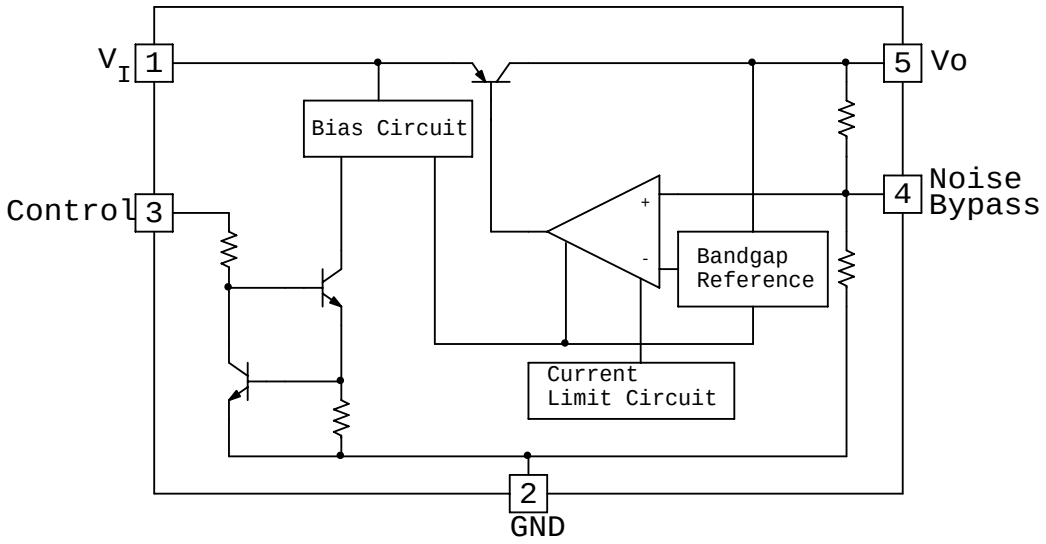
Ordering Information

Type NO.	Marking	Package Code
S52xxM	5□□■	SOT - 25

□□: Voltage Code (15:1.5V, 18:1.8V, 25:2.5V, 28:2.8V, 30:3.0V, 33:3.3V, 50:5.0V)
■ : YY&WW Code

Outline Dimensions (Unit : mm)

BLOCK DIAGRAM



Absolute Maximum Ratings

Ta=25°C

Characteristic	Symbol	Rating	Unit
Input Voltage	V_I	16	V
Control Voltage	V_{CT}	16	V
Power Dissipation	P_D (Note1)	500	mW
	P_D (Note2)	150	
Junction Temperature	T_J	150	°C
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-55 ~ +150	°C

Note 1 : Mount on a glass epoxy circuit board of 30x30mm Pad dimension of $50mm^2$

Note 2 : No Heat sink

Device Selection Guide

Device	Output Voltage
S5215M	1.5V
S5218M	1.8V
S5225M	2.5V
S5228M	2.8V
S5230M	3.0V
S5233M	3.3V
S5250M	5.0V

Electrical Characteristics

(Electrical characteristics at V_I=V_O+1V, I_O=100uA, V_{CT}≥2.0V, C_O=47uF, C_{BYP}=1uF, T_a=25℃, unless otherwise specified.)

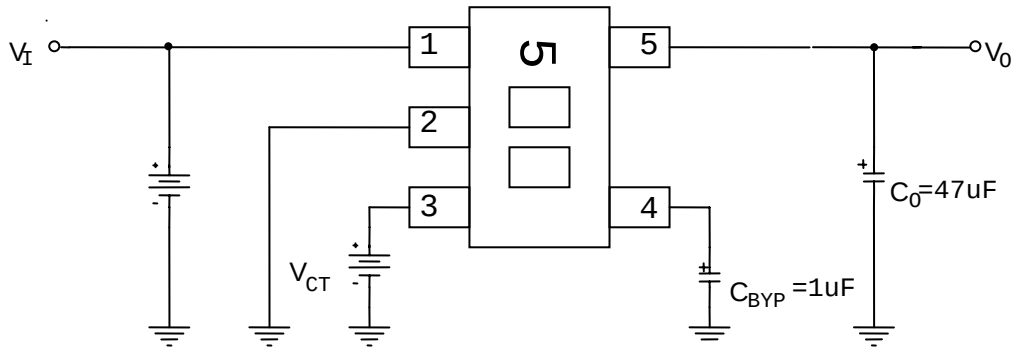
Characteristic	Symbol	Device	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_O	S5215M	-	1.440	1.5	1.560	V
		S5218M	-	1.728	1.8	1.872	V
		S5225M	-	2.400	2.5	2.600	V
		S5228M	-	2.688	2.8	2.912	V
		S5230M	-	2.880	3.0	3.120	V
		S5233M	-	3.168	3.3	3.432	V
		S5250M	-	4.800	5.0	5.200	V
Line Regulation	$\triangle V_{O(\triangle VI)}$	All	1V ≤V_I -V_O ≤10V, I_O=100uA	-	0.3	5	mV
Load Regulation (Note3)	$\triangle V_{O(\triangle IL)}$	All	V_I=V_O+1V, I_O=100uA ~ 100mA	-	8	24	mV
Standby Current	$I_{I(standby)}$	All	V_{CT}≤0.4V (V_O shutdown)	-	0.01	1	uA
Quiescent Current (Note4)	I_{QC}	S5215M S5218M	I_O=50mA, V_{CT}≥2.0V	-	1.5	3.0	mA
		S5225M S5228M S5230M S5233M S5250M	I_O=50mA, V_{CT}≥2.0V	-	0.8	1.5	mA
Dropout Voltage	V_{DROP}	S5215M	I_O=100mA	-	400	500	mV
		S5218M	I_O=100mA	-	500	600	mV
		S5225M S5228M S5230M S5233M S5250M	I_O=100mA	-	140	250	mV
Control Voltage (ON)	$V_{CT(ON)}$	All	-	1.6	-	V_I	V
Control Voltage (OFF)	$V_{CT(OFF)}$	All	-	-	-	0.4	V
Control Current (ON)	$I_{CT(ON)}$	All	V_{CT}≥2.0V	2	5	10	uA
Control Current (OFF)	$I_{CT(OFF)}$	All	V_{CT}≤0.4V	-	0.01	1	uA

Note 3 : Regulation is measured at constant junction temperature using low duty cycle pulse testing.

Note 4 : Quiescent current is the regulator standby current plus pass transistor base current.

The total current drawn from the supply is the sum of the load current plus the quiescent current.

■Typical Application



Low- Noise Operation: C_{BYP}=470pF, C_O≥47uF

Basic Operation: C_{BYP}=not used, C_O≥1uF

Fig. 1 Fixed Voltage Regulator

Electrical Characteristic Curves

Fig.1 V_{DROP} vs. I_O

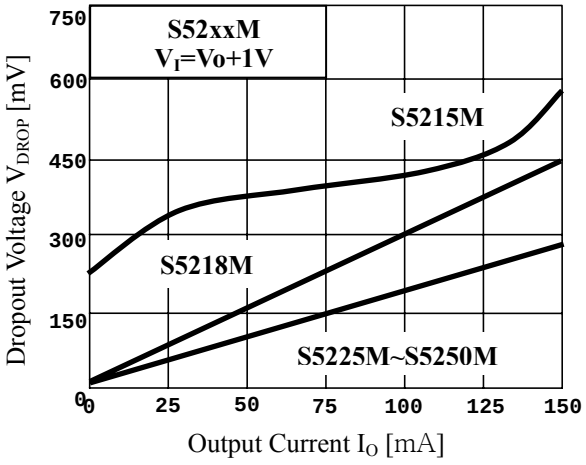


Fig.2 V_O vs. I_O

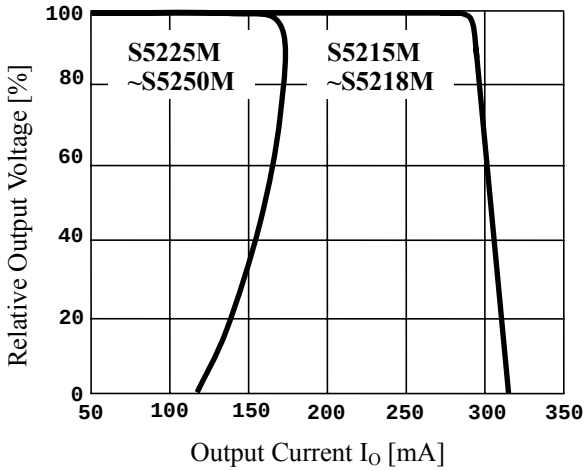


Fig.3 V_O vs. V_{CT}

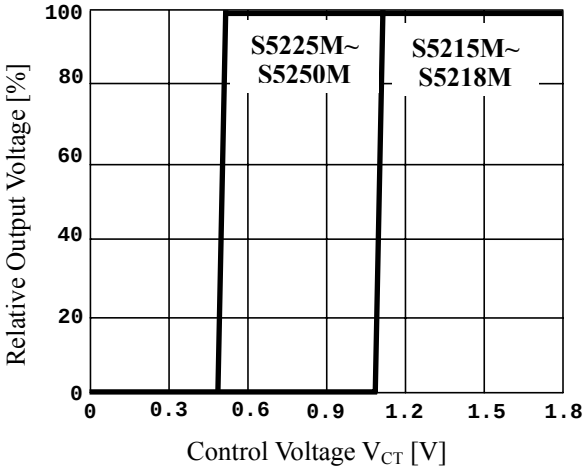


Fig.4 C_{BYP} vs. Turn On Time

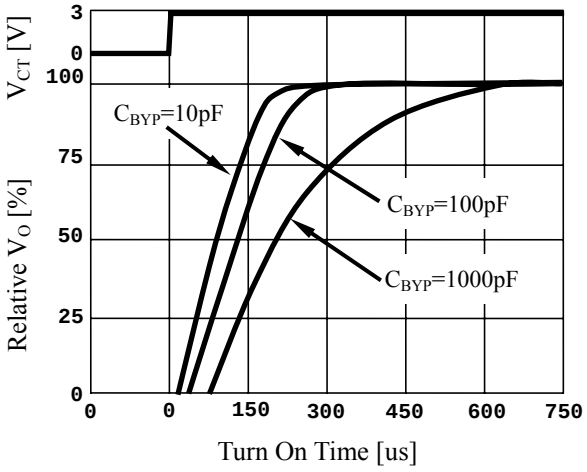
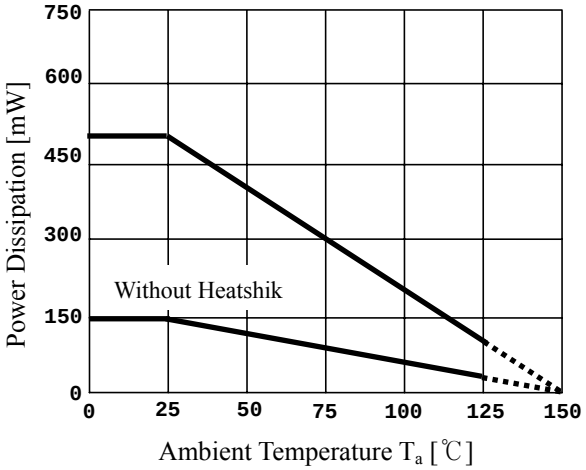
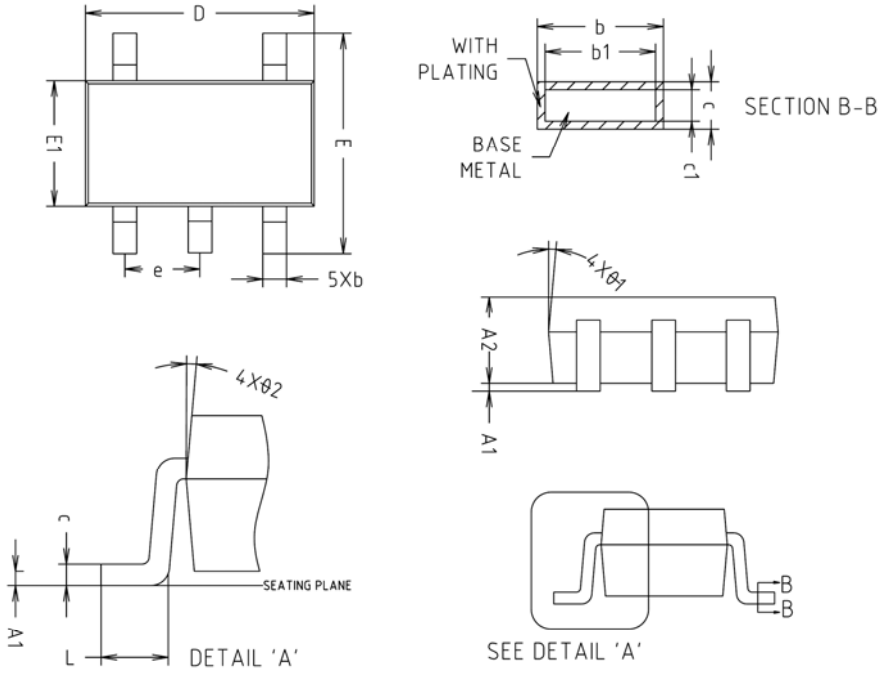


Fig.5 P_D vs. T_a

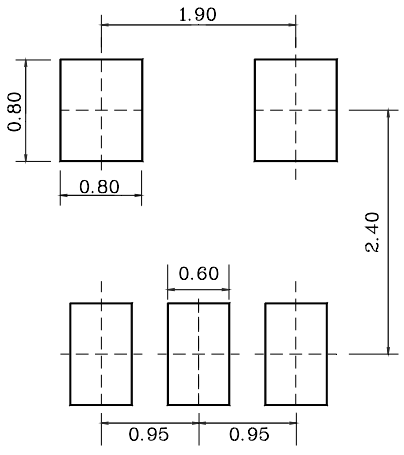


Outline Dimension (Unit : mm)



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A1	0.000	0.050	0.100	
A2	1.000	1.100	1.200	
b	-	0.400	0.450	
b1	-	0.375	0.425	
c	0.110	0.150	0.190	
c1	0.085	0.125	0.165	
D	2.800	2.900	3.000	
E	2.600	2.800	3.000	
E1	1.500	1.600	1.700	
e	0.930	0.950	0.970	
L	0.400	-	-	
θ1	5° REF			
θ2	5° REF			

Recommend PCB Solder Land Dimension (Unit : mm)



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