Audio Digital Key Controller
BU9260FS

The BU9260FS is designed for key control, an essential feature for karaoke systems.

●Applications

Mini-component stereos, radio cassette recorders, karaoke and other audio devices

●Features

1) Internal I/O filter and mixing operational amplifier
2) Internal ADC and DAC.

3) 16 kbit of internal RAM.
4) Controls serial data.

●Absolute maximum ratings (Ta=25℃)

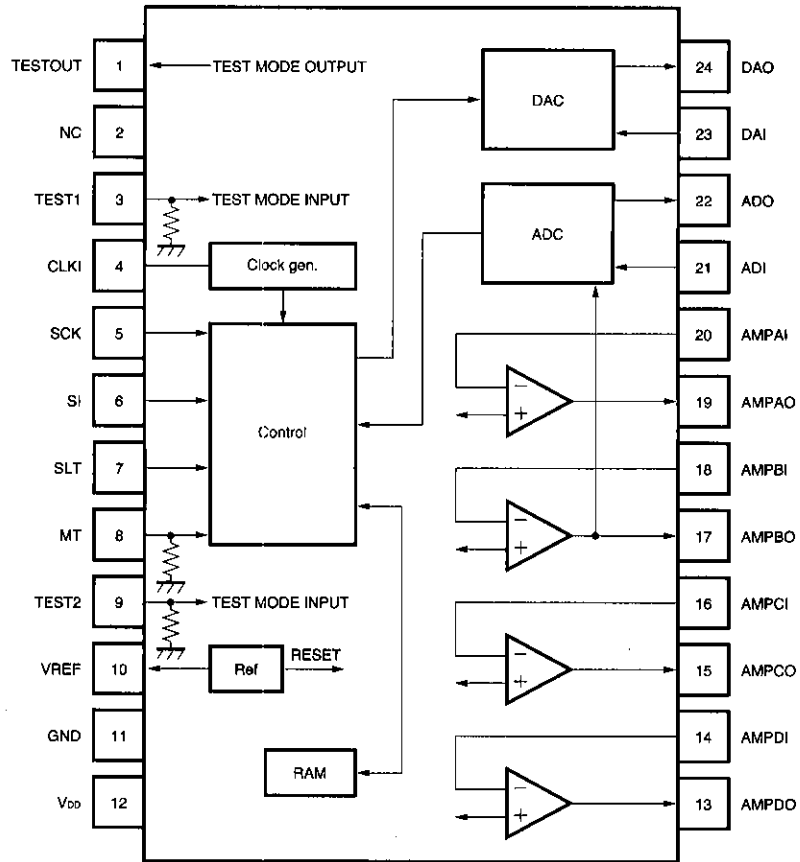| Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	$-0.3\sim7.0$	V
Input voltage	V_{IN}	$GND-0.3\sim V_{DD}+0.3$	V
Power dissipation	Pd	650	mW
Storage temperature	Tstg	$-55\sim125$	℃

＊ Reduced by 6.5 mW for each increase in Ta of 1℃ over 25℃.

●Recommended operating conditions (Ta=25℃)

Parameter	Symbol	Limits	Unit
Operating temperature	Topr	$-10\sim70$	℃
Power supply voltage	V_{DD}	$4.5\sim5.5$	V

●Block diagram

●Pin descriptions

Pin No.	Pin name	Function	Type
1	TESTOUT	Low-level test output	LO
2	NC	No connected	—
3	TEST1	Test input (the low level is normally input)	LIP
4	CLKI	Connecting the clock resistor	CLK
5	SCK	Serial clock input	LI
6	SI	Serial data input	LI
7	SLT	Serial latch input	LI
8	MT	Input of output control muting	LIP
9	TEST2	Test input (the low level is normally input)	LIP
10	VREF	Analog reference voltage	VRO
11	GND	Ground	—
12	V_{DD}	Power supply	—
13	AMPDO	Operational amplifier input/output	AO
14	AMPDI		AI
15	AMPCO	Operational amplifier input/output	AO
16	AMPCI		AI
17	AMPBO	Operational amplifier input/output	AO
18	AMPBI		AI
19	AMPAO	Operational amplifier input/output	AO
20	AMPAI		AI
21	ADI	Connecting the ADC capacitor	ADMI
22	ADO		ADMO
23	DAI	Connecting the DAC capacitor	ADMI
24	DAO		ADMO

●Input / output circuit

Pin types
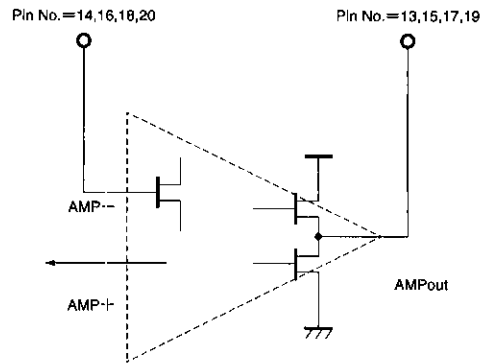
Type : Logic input and output (LI, LO and LIP — LIP has pull-down)

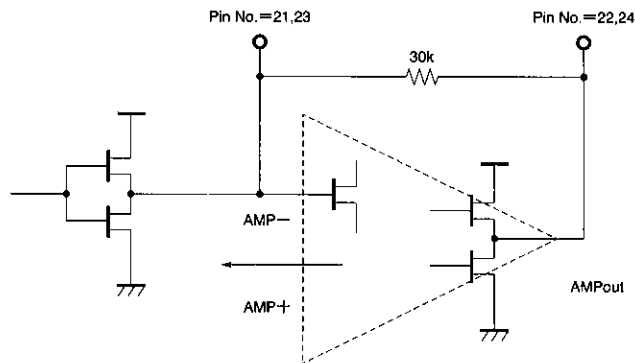Pins 3, 5, 6, 7, 8 and 9 (no pull-down for pins 5, 6 or 7)
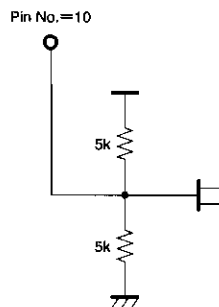
Pin No.=1

20k
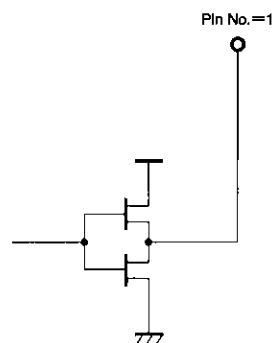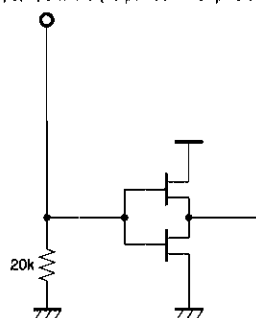
●Input/output circuit

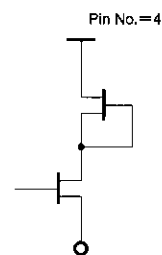Type : Amplifier input and output (AI and AO)

Type : ADM input and output (ADMI and ADMO)

Type : Reference voltage pin (VRO)

Type : Clock pin (CLK)

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●Electrical characteristics (unless otherwise noted, Ta=25℃, V_{DD}=5V, f_{IN}=1kHz, f+0 mode, V_{IN}=100mVrms)

| Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current	I_{DD}	—	7	14	mA	No signal
<Linear>						
Input/output gain	GV	−3	0	+3	dB	
Output distortion	THD	—	1.3	3.0	%	30kHz−LPF
Output noise voltage	No	—	−80	−65	dBV	DIN−Audio
Maximum output voltage	VMax.	0.7	1.5	—	Vrms	THD=10%, LPF gain=1
<Logic>						
Input voltage, High level	VIH	3.8	—	—	V	
Input voltage, Low level	VIL	—	—	1.2	V	
Pull-down resistance	Rd	12	25	50	kΩ	V_{IN}=5V
<Serial data>						
Clock amplitude	twCK	2.0	—	—	μS	
Latch amplitude	twLT	2.0	—	—	μS	
Data setup	tdsu	1.0	—	—	μS	
Data hold	th	1.0	—	—	μS	
Latch setup	tlsu	1.0	—	—	μS	

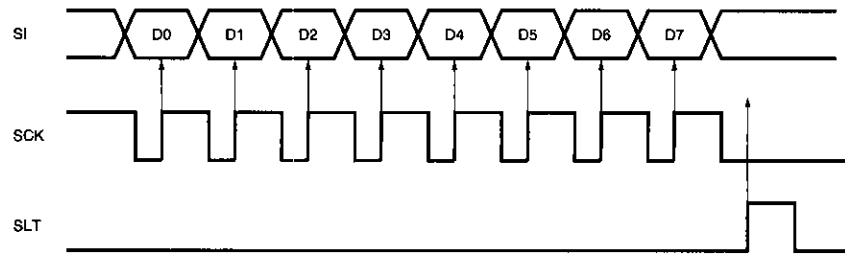●Application circuit
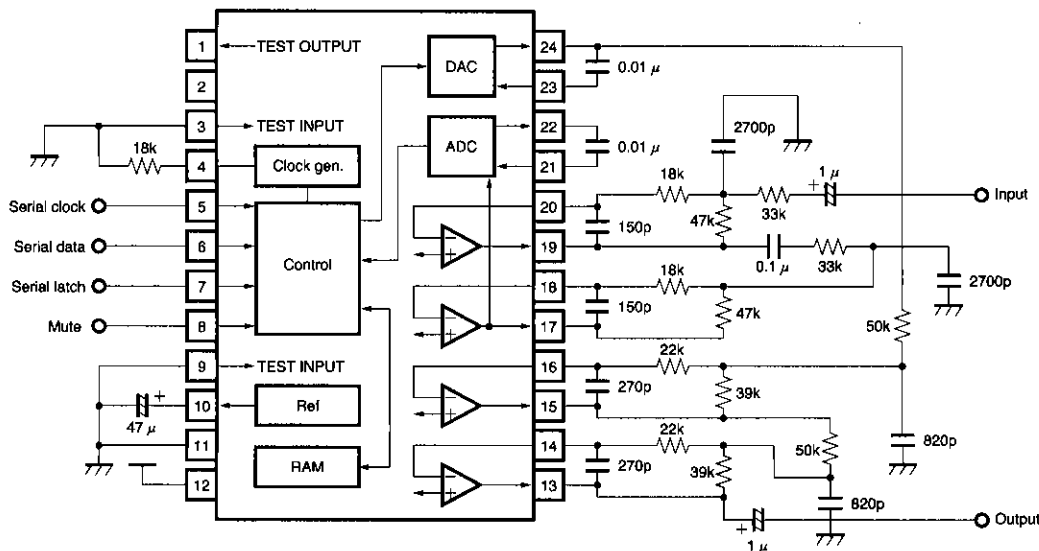
Fig. 1

●Operation notes

Operating mode

(1) Serial data mode

Function : Setting the key according to SCK, SI and SLT
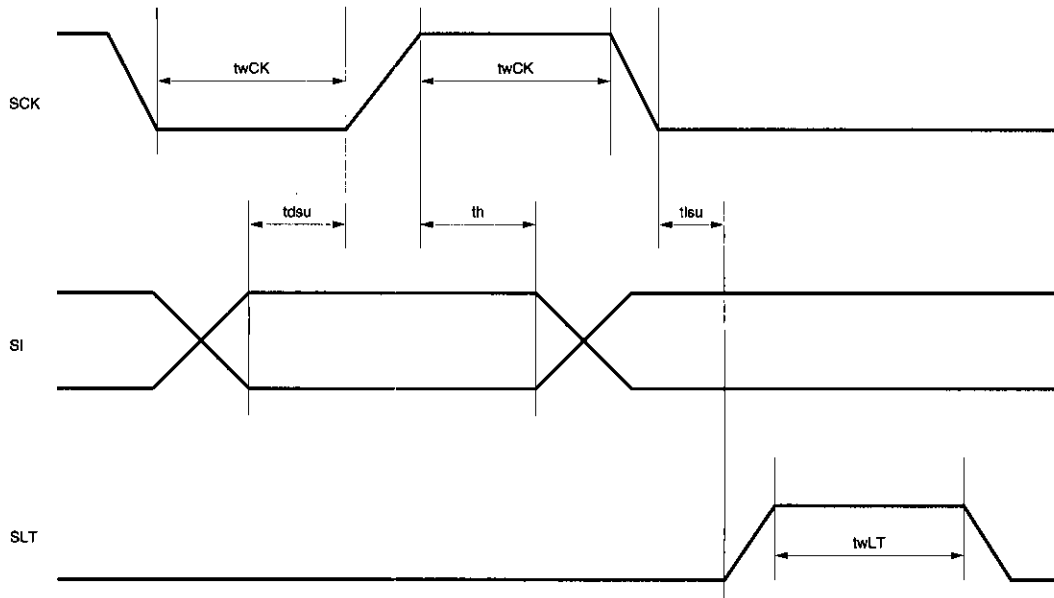
1) Serial data

The signal value is input with the rise of SCK. Input data are latched with the fall of SLT. However, data are canceled unless D6 = high and D7 = low.

2) Serial timing

For standard values, refer to "Electrical Characteristics."

3) Serial data

Key setting	D4	D3	D2	D1	D0
+8	H	H	L	L	L
+7	H	L	H	H	H
+6	H	L	H	H	L
+5	H	L	H	L	H
+4	H	L	H	L	L
+3	H	L	L	H	H
+2	H	L	L	H	L
+1	H	L	L	L	H
0	H	L	L	L	L
−1	L	H	H	H	H
−2	L	H	H	H	L
−3	L	H	H	L	H
−4	L	H	H	L	L
−5	L	H	L	H	H
−6	L	H	L	H	L
−7	L	H	L	L	H
−8	L	H	L	L	L

D5	Output mute control
L	Output is not muted. When MT = high, output is forcibly muted.
H	Output is muted.

D6	D7	Data latch control
H	L	Data is latched with the rise of SLT.
Other than above		Data is not latched, even with the rise of SLT.

Output mute control

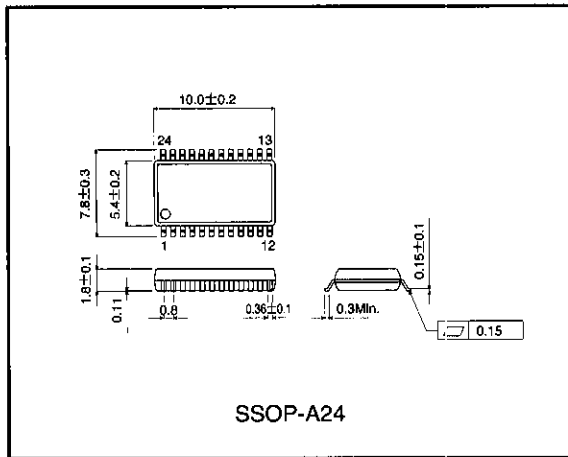Output can be forcibly muted according to MT.

MT	Output mute
L	Output is not muted. However, output is muted when muting is activated by the serial data.
H	Output is muted.

● External dimensions (Units: mm)

SSOP-A24

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