BUS Interface for car audio

BA8270F/BA8270FV

The BA8270F/BA8270FV is bus interface IC (master side) developed for car audio applications. When used with the BA827F/BA8272FV (slave side), it is possible to communication system for the deck and components such as power amplifiers, CD and MD changers, tuners and TVs using BUS ON, DATA, CLOCK and RESET signals.

●Applications

Car audio systems

●Features

1) Allows construction of communication system with BUS ON, DATA, CLOCK and RESET signals with used with the BA8272F/ 8272FV (slave side).
2) Ideal for car audio systems.

●Absolute maximum ratings (Ta=25°C)

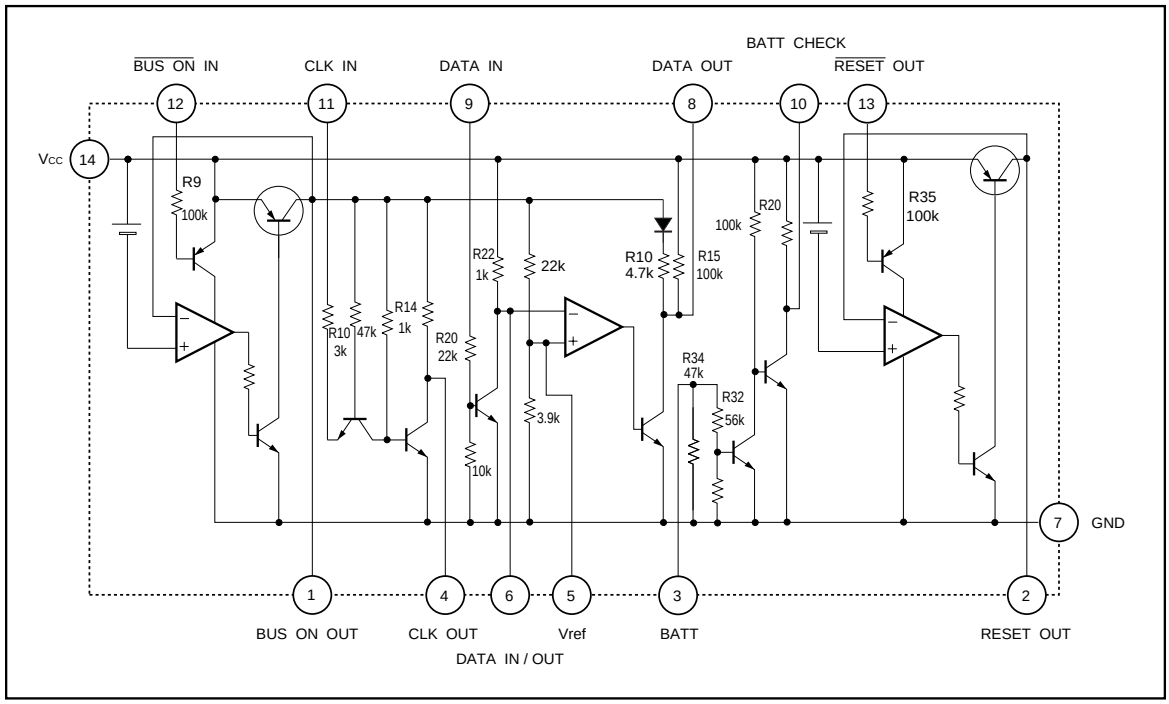
Parameter		Symbol	Limits	Unit
Power supply voltege		V_{CC}	7.0	V
Power dissipation	BA8270F	Pd	450 *1	mW
	BA8270FV		400 *2	
Operating temperature		Topr	−40 to +85	℃
Storage temperature		Tstg	−55 to +125	℃
Voltage range for input		V_{IN}	−0.3 to +7.0	V
Voltage range for BATT		V_{BATT}	−0.3 to +18.0	V

Operating temperautre range is for I_L1=50mA, and I_L2=5mA.
*1 Reduced by 4.5mW for each increase in Ta of 1℃ over 25℃.
*2 Reduced by 4.0mW for each increase in Ta of 1℃ over 25℃.

●Recommendable operating voltage range (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V_{CC}	4.0	−	7.0	V

●**Electrical characteristic curves**



●**Electrical characteristics** (Unless otherwise noted, Ta=25°C, V_{CC}=5.5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current 1	I_{CC1}	–		300	μA	No load and BATT pin (pin 3)=5.5V. Other pins off (excluding the BATT input current)
Circuit current 2	I_{CC2}	–	8.5	15.0	mA	No load, $\overline{\text{BUS ON}}$ IN=1.0V
Circuit current 3	I_{CC3}	–	17	30	mA	IL1=50mA, IL2=50mA
Voltage 1 between VCC and BUS ON OUT	V_{LOSS1}	–	0.25	0.35	V	IL1=100mA
Voltage 2 between VCC and BUS ON OUT	V_{LOSS2}	–	0.15	0.2	V	IL2=40mA
Input pin current 1	I_{IN1}	32	48	70	μA	$\overline{\text{BUS ON}}$ IN pin, 0V input
Input pin current 2	I_{IN2}	175	220	300	μA	DATA IN pin, 5.5V input
Input pin current 3	I_{IN3}	150	190	300	μA	BATT pin, 5.5V input
Input pin current 4	I_{IN4}	38	48	70	μA	$\overline{\text{RESET}}$ OUT pin, 0V input
Output internal resistor 1	R_{14}	0.75k	1k	1.25k	Ω	CLK OUT
Output internal resistor 2	R_{22}	0.75k	1k	1.25k	Ω	DATA IN / OUT
Output internal resistor 3	R_{29}	75k	100k	125k	Ω	BATT CHECK
DATA OUT pin output current	I_{DATA}	0.75	1.1	1.45	mA	5.5V applied to DATA IN 0V input to $\overline{\text{BUS ON}}$ IN
ON output voltage for each	V_{SAT}	–	0.2	0.4	V	CLK OUT, DATA OUT
DATA IN / OUT ON output voltage	V_{6ON}	–	0.1	0.25	V	DATA IN / OUT
BATTCHECK output voltage	V_{10ON}	–	–	0.4	V	–

◎Not designed for raduation resistance.

●**Measurement current**

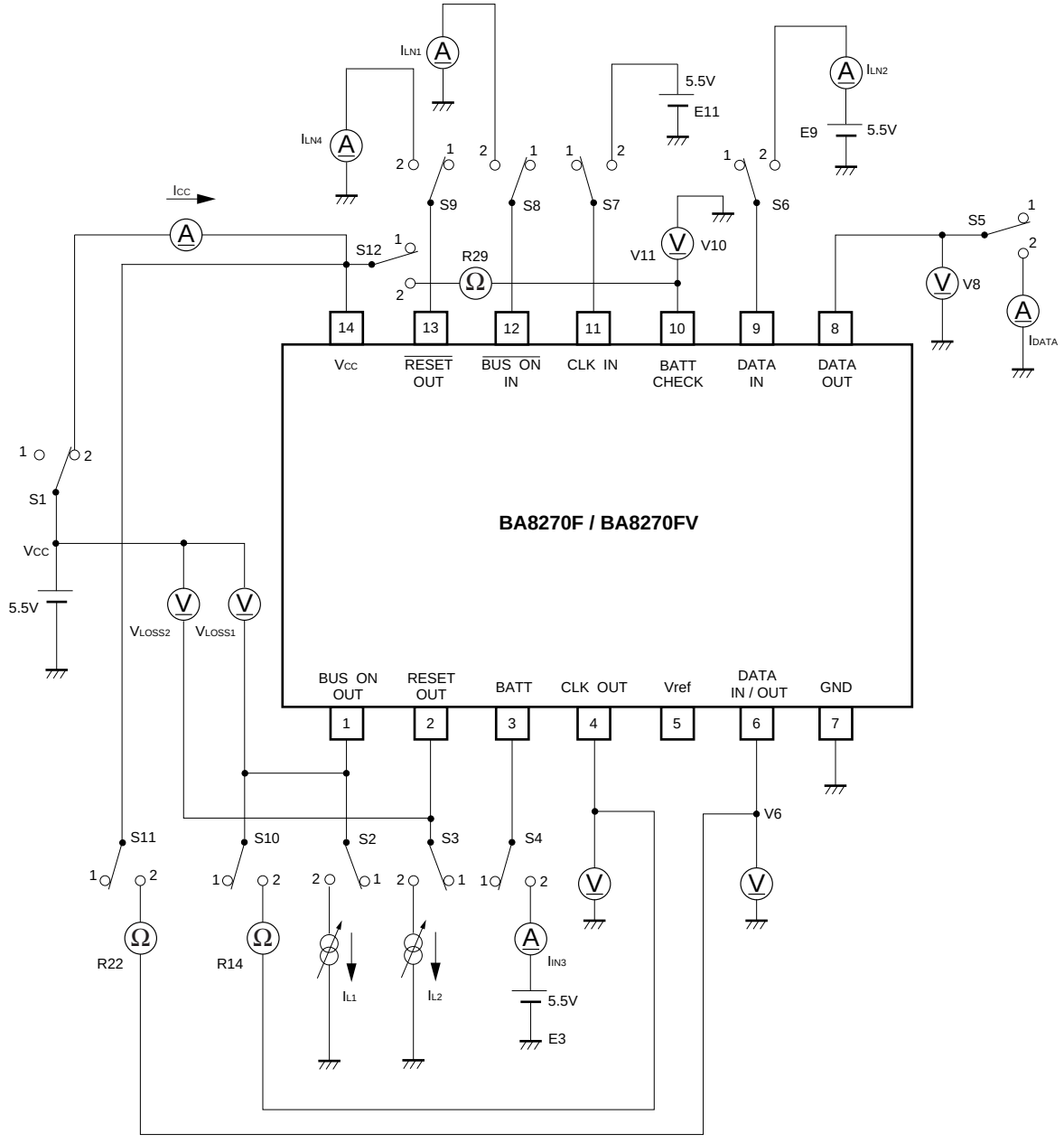
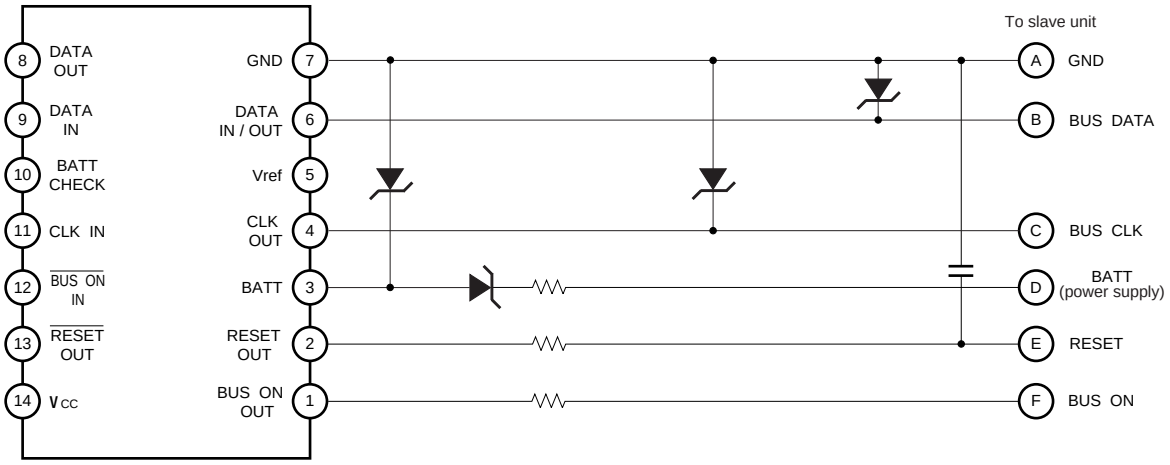


Fig.1

●Measurement circuit switch operation table

Parameter	Symbol	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S 10	S 11	S 12	Measured pin	Conditions
Circuit current 1	I_{CC1}	2	1	1	2	1	1	1	1	1	1	1	1	pin14	3pin=5.5V
Circuit current 2	I_{CC2}				1				2					pin14	12pin=0V
Circuit current 3	I_{CC3}		2	2						2				pin14	I_{L1}=50mA, I_{L2}=50mA
Voltage 1 between V_{CC} and BUS ON OUT	V_{LOSS1}			1						1				pin1-pin14	I_{L1}=100mA
Voltage 2 between V_{CC} and BUS ON OUT	V_{LOSS2}								1	2				pin1-pin14	I_{L1}=40mA
Input pin current 1	I_{IN1}			2					2	1				pin12	–
Input pin current 2	I_{IN2}			1			2		1					pin9	E_9=5.5
Input pin current 3	I_{IN3}				2		1							pin3	E_3=5.5
Input pin current 4	I_{IN4}				1					2				pin13	–
Output internal resistor 1	R_{14}	1								1	2			pin1-pin14	–
Output internal resistor 2	R_{22}										1	2		pin6-pin4	–
Output internal resistor 3	R_{29}											1	2	pin10-pin14	–
DATA OUT pin output current	I_{DATA}	2				2	2		2				1	pin8	E_9=5.5
CLK OUT pin output voltage	V_{4ON}					1	1	2						pin4	E_{11}=5.5
DATA IN / OUT ON output voltage	V_{8ON}						2	1						pin8	E_9=5.5
DATA IN / OUT ON output volotage	V_{6ON}								1					pin6	E_9=5.5
BATT CHRCK output voltage	V_{1ON}				2		1							pin10	E_3=5.5

●Application example



• Construct Zener diode circuits to provide over-voltage protection for DATA.

Fig.2

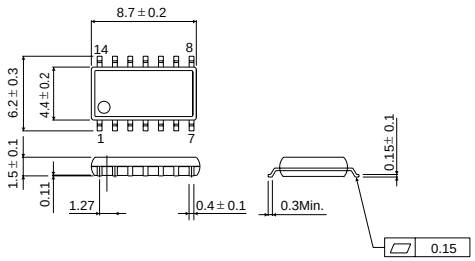
●Operation notes

(1) We guarantee the application circuit design, but recommend that you thoroughly check its characteristics in actual use. If you change any of the external component values, check both the static and transient characteristics of the circuit, and allow sufficient margin in your selection to take into account variations in the components and ICs.
Note that Rohm has not fully investigated patent tights regarding this product.

(2) Based on the EIAJ static electric destruction voltage measurement (C=200pF and R0Ω), the withstanding voltage of pins 9 and 11 has been determined to be 200V or less. Take due care.
Note that Rohm has not fullyinvestigated patent rights regarding this product.

●External dimensions (Unit : mm)

BA8270F



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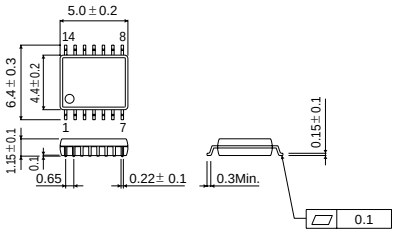
BA8270FV



SSOP-B14

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