

PREPARED BY: <i>K. Kataura</i> DATE 7. JUN. 1996	<h1>SHARP</h1> <p>ELECTRONIC COMPONENTS GROUP SHARP CORPORATION</p> <h2>SPECIFICATION</h2>	SPEC NO. EC-95648C
CHECKED BY: <i>M. Hori</i> DATE 7. JUN. 1996		FILE NO.
APPROVED BY: <i>K. Ishii</i> DATE 7. JUN. 1996		ISSUE 7. JUN. 1996
		PAGE 7
		REPRESENTATIVE DIVISION <input checked="" type="checkbox"/> ELECTRONIC COMPONENTS DIV. <input type="checkbox"/> OPTICAL DEVICE DIV <input type="checkbox"/> PHOTO VOLTAICS DIV.

DEVICE SPECIFICATION FOR  
DIGITAL DBS TUNER WITH LOOP THROUGH

MODEL NO.    **BSFR68G15**

•1 CUSTOMER' S APPROVAL

DATE

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BY

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PRESENTED

BY

*M. Yamauchi*

MIYOSHI YAMAUCHI

GENERAL MANAGER

ENGINEERING DEPARTMENT 1

ELECTRONIC COMPONENTS DIVISION

ELECTRONIC COMPONENTS (ELECTRONIC) GROUP

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MODEL No

BSFR68G15

## RECORDS OF REVISION

DOC. FIRST ISSUE

15. NOV. 1995

IDENT. DATA No. ,

EC-95648

DATE	REF. PAGE PARAGRAPH DRAWING No.	REVISE No.	SUMMARY	CHECK & APPROVAL
1995 11.	PAGE 3	△	5.4 Amplitude ripple BW=27MHz:F <sub>0</sub> ± 0MHZ BW=36MHz:F <sub>0</sub> ± 5MHZ ↓ BW=27MHz:F <sub>0</sub> ± 8MHZ BW=36MHz:F <sub>0</sub> ± 12MHZ	H. Fujimoto H. Futama M. Hori S. Ishii M. Yamouchi
1996 5,9	PAGE 1  PAGE 2  PAGE 4	△	1.15 Operating voltage B7 28V ± 1.4V DC ↓ B7 30V ± 1.5V DC 4.1 Supply voltage B7 28.0 ± 0.1V ↓ B7 30.0 ± 0.1V 6. I <sup>2</sup> C bass interface serial resistor 1KΩ  100Q	H. Futama M. Hori S. Ishii M. Yamouchi
1996.6.7	PAGE4	△	5.16 Power gain between RF input and output item addition min -3dB typ 0dB 6.1 I <sup>2</sup> C bass interface serial resistor 100Ω → 220Ω capacitor 33pF → 100pF	H. Futama M. Hori S. Ishii M. Yamouchi

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Description: This specification covers L-band to I and Q baseband tuner intended for use in digital modulated satellite receiver.

## 1. GENERAL SPECIFICATIONS

1.1	Receiving frequency range		950MHz to 2150MHz
1.2	Input signal level per channel		-25dBm to -70dBm
1.3	Nominal RF input impedance		75 ohm (F-connector)
1.4	L01 frequency range		1429.5MHz to 2629.5MHz
1.5	Synthesizer		SP5055 or equivalent
1.6	Reference frequency		7.8125kHz
1.7	Step size		125kHz
1.8	Intermediate frequency		479.5MHz
1.9	IF filter 3dB band width		27MHz/36MHz (DUAL SAW) BW=27MHZ:P5=1,P7=0 BW=36MHz:P5=0,P7=1
1.10	AGC voltage input		4V to 5V
	external		4V to max gain 5V to min gain
1.11	L02 frequency		479.5MHz(fixed SAW oscillator)
1.12	LPF cut off frequency(-3dB)		20MHz Typ
1.13	Nominal output level		1.0 Vpp per 1k ohm load impedance
1.14	Nominal output impedance(I/Q output)		50ohm
1.15	Operating Voltage	B1,B2	5V ± 0.25V DC
		B4,B5	5V ± 0.25V DC
		B6	12V ± 0.6V DC
		⚠ B7	30V ± 1.5V DC
1.16	LNB power	LNB 1,LNB 2	20V DC,400mA max
1.17	Circuit block diagram		figure 1

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2.1 Dimension and mounting details figure 2

**3. ENVIRONMENTAL SPECIFICATIONS**

## 3.1 Temperature

Operating 0℃ to +55℃

Storage -20℃ to +75℃

## 3.2 Humidity

Operating Less than 85%

Storage Less than 95%

**4. TEST CONDITION**

## 4.1 Supply voltage

B1,B2 5.0 ± 0.1V

B4,B5 5.0 ± 0.1V

B6 12.0 ± 0.1V

△ 07 30.0 ± 0.1V

## 4.2 Ambient temperature

25℃ ± 5℃

## 4.3 Ambient humidity

65% ± 5%

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## 5. ELECTRICAL SPECIFICATIONS

(Testing Condition is showed 4-1-4-3)

No.	Item		Specification				Condition
			Min	TYP	Max	Unit	
5.1	Noise Figure			9	13	dB	0dB gain reduction measured at I/Q out
5.2	RF input VSWR			2.0	2.5		
5.3	Gain variation			7	10	dB	
△ 5.4	Amplitude ripple	BW=27MHz:F <sub>0</sub> ± 8MHz BW=36MHz:F <sub>0</sub> ±1 2MHz		1.5	2.0	dBpp	
5.5	AGC control range Adjusted 1 Vp-p output level into 1k ohm for -25dBm to -70dBm signal input		45	55		dB	
5.6	Image Rejection		30	35		dB	
5.7	3rd order intermodulation		40	60		dB	F 1, RF 2, RF 3=-25dBm RF 2= RF1+29.5MHz RF 3= RF1+59.0MHz measured at I/Q out
5.8	Phase noise	10kHz		-75	-70	.Bc/H:	measured at I/Q out
		100kHz		-90	-80	.Bc/H:	
5.9	PLL switching time			80	100	msec	within ±5% tuning voltage
5.10	2nd Oscillator initial value		479	479	480	MHz	
5.11	2nd Oscillator drift with temperature		-30		+30	KHz	25±30°C
5.12	Spurious signal and local oscillator signal leak at R F input terminal			-15	-63	dBm	950 to 2150MHz
				-70	-50	dBm	2150 to 2629.5MHz
5.13	I/Q phase balance			±1	±3	deg	offset 100KHz
5.14	I/Q gain balance			±1	±2	dB	offset 100KHz

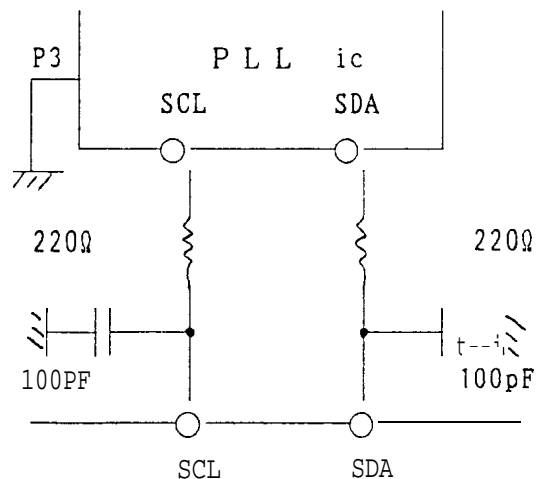
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No.	Item	Specification				Condition
		Min	Typ	Max	Unit	
5.15	Amplitude flatness		5	10	dBp-p	
5.16	Power gain between RF input and output	-3	0		dB	
5.17	Isolation between RF output and RF input	20	28		dB	
5.18	Noise figure		4	8	dB	
5.19	RF output VSWR		2.0	2.5		
5.20	Current consumption	B1 5V	20	40	mA	
		B2 5V	80	120	mA	
		B4 5V	240	300	mA	
		B5 5V	20	40	mA	
		B6 12V	22	40	mA	
		B7 30V	1	5	mA	

## 6. I<sup>2</sup>C BASS INTERFACE

6.1 The interface of this tuner is as following table

Tuner pin NO.	I <sup>2</sup> C bass port	note
9	SDA	via serial resistor 220Ω and feed through capacitor 100PF
10	SCL	
-	P 3	internally connected to GND



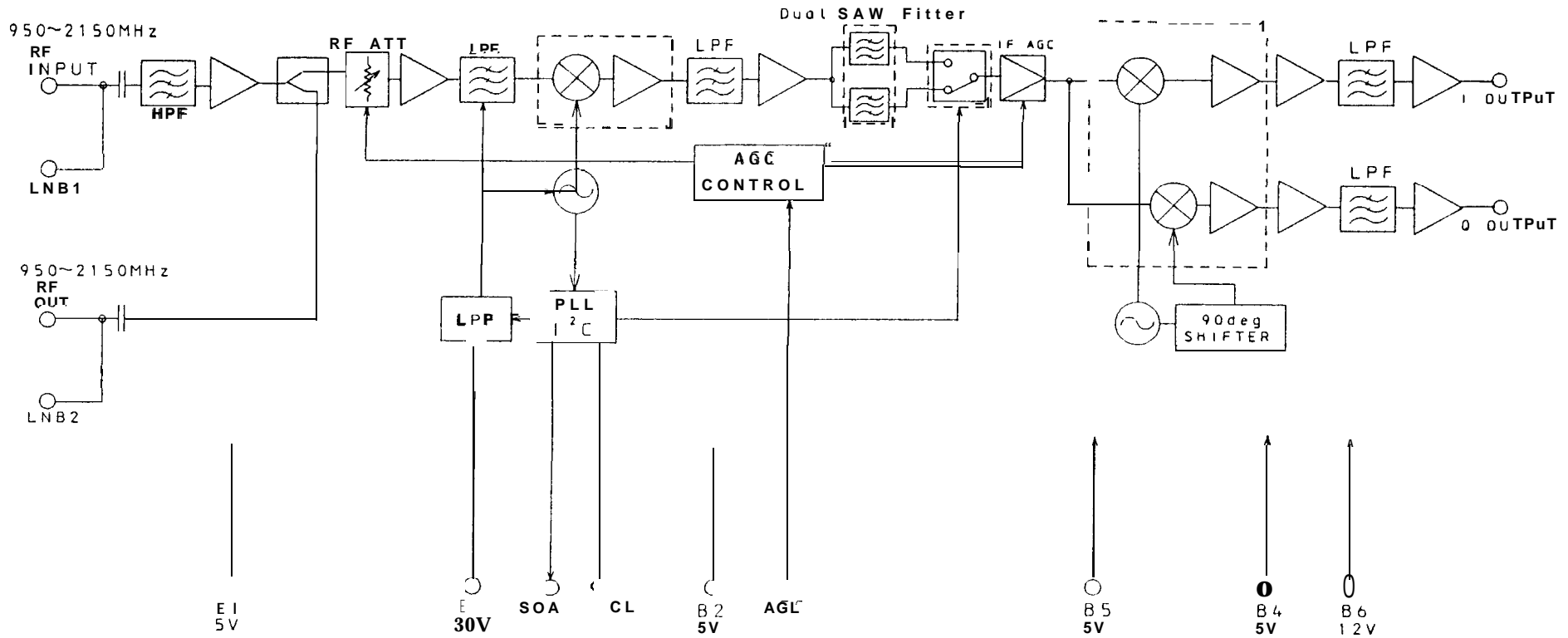
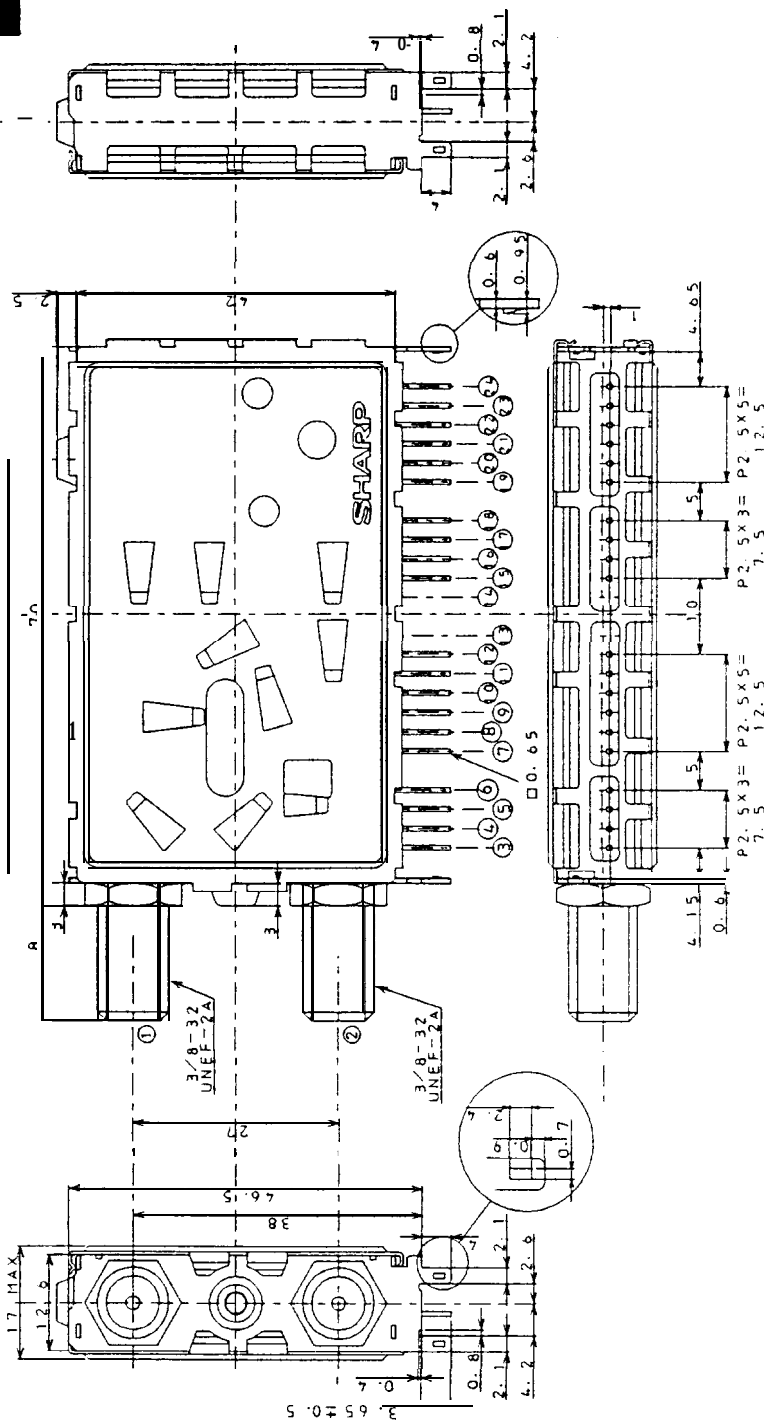


FIGURE 1. CIRCUIT BLOCK DIAGRAM

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NO.	NAME	I/O	VOLT(V)
1	RF INPUT	I	
2	RF OUT	O	
3	LNB 1	I	
4	LNB 2	I	
5	B1	I	5V
6	GND		
7	B7	I	30V
8	NC		
9	SDA	I/O	
10	SCL	I	
11	D4	I	5V
12	NC		
13	-		
14	-		
15	RA	I	12V
16	AGC	I	1~5V
17	B4	I	5V
18	B5	I	5V
19	NC		
20	NC		
21	GND		
22	O OUT	O	
23	GND		
24	I OUT	O	

APPLICABLE MODEL	SCALE	UNIT	DATE	REVISE	CHARGE
	/	1 = /			
THICKNESS	PIECES	MATERIAL	FINISH		
DATE	MAY 9 1996		NAME		
			OUTLINE DRAWING		
			CODE		
			DRAWING NO.		
			SHARP CORPORATION		
			M. K. Hamada		
			西川		