

TENTATIVE

SPECIFICATION

Version V0.2

MODEL : SBT - 7002F

DESCRIPTION : FM RECEIVER MODULE

Productor Order Code : SBT-7002FS-2N (IIC (2Wire) TYPE)

Productor Order Code : SBT-7002FS-3N (3 Wire TYPE)

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1. Scope

This specification is applied to FM Stereo Tuner Module.

2. General Description

The SBT - 7002F is a CMOS ultra-low-power FM stereo radio IC designed for handheld applications.

3. Features

- * Available for preset tuning to receive US / Europe FM band(87.5 to 108 MHz)
- * RF Automatic Gain Control (AGC) circuit
- * No external IF BPF and discriminator required for FM and less external parts
- * Crystal oscillator operates with a 32.768 KHz
- * Soft muting
- * High Cut Control(HCC) and Stereo Noise Control(SNC)
- * 3-Wired Serial Interface or IIC Bus Interface
- * Alignment-free stereo decoder
- * Standby mode
- * VDD = 2.5 to 3.6 V
- * Low supply current = typ. 7.0 mA

4. General specification

NO	ITEM	Test condition	SPEC				Note
			MIN	TYP	MAX	UNIT	
1	Receiving Frequency	USA/EU/JAPAN BAND	87.5	—	108	MHz	
2	IF Center Frequency	—	—	375	—	kHz	
3	Ant. Input Impedance	Balanced	—	50	—	Ω	
4	Operating Voltage	DC Supply Voltage	2.5	3.0	3.6	V	
5	Operating Temp.	—	-20	—	+ 60	$^{\circ}\text{C}$	
6	Supply Current	—	—	7	8.0	mA	
7	Stand-by Current	System Clock = Off	—	—	5.0	μA	

5. Standard Test Condition

NO	ITEM	CONDITION	
		MONO	STEREO
1	Standard Supply Voltage	3.0V±0.1V DC	
2	Temperature	25±2℃	
3	Relative Humidity	65±5%	
4	Audio Filter	Unless designated, Audio Filter should be used	
		HPF : 100 Hz	
		LPF : 15 KHz	
5	Loading at Audio Output	100 kΩ	
6	Internal Clock Frequency	32.768 KHz	
7	Modulation Frequency	1KHz, 22.5KHz/dev	1KHz, 75KHz/dev
		VRF = 1 mV	including 10% pilot
8	Test Frequency	98 MHz	
9	RF Input Level	60 dBμV	

6. Electrical Specification

NO	ITEM	Freq.	Test CONDITION	SPEC			
				MIN	TYP	MAX	UNIT
1	Usable sensitivity	90 MHz	S/N=30dB, Mod.=22.5kHz	—	6	12	dBμV
		98 MHz		—	6	12	dBμV
		106MHz		—	6	12	dBμV
2	S/N Ratio	98 MHz	Mono : 60dBu, Mod.=22.5kHz	40	45	—	dB
		98 MHz	Stereo : 60dBu, Mod.=75kHz	50	60	—	dB
3	Distortion	98 MHz	Mono : 60dBu, Mod.=22.5kHz	—	0.5	1	%
		98 MHz	Stereo : 60dBu, Mod.=75kHz	—	1	3.0	%
4	Limite sensitivity	98 MHz	Mod.=22.5kHz	—	—	20	dB
5	Image Rejection	106 MHz	Mod.=22.5kHz	20	30	—	dB
6	Stereo Separation	98 MHz	Stereo : 60dBu, Mod.=75kHz	20	30	—	dB
7	Overload distortion	98 MHz	Mono : 99dBu, Mod.=75kHz	—	1	3	%
8	AM Suppression	98 MHz	AM 30%	30	—	—	dB
9	CH. Balance	98 MHz	Mono : 60dBu, Mod.=22.5kHz	—	—	2	dB
10	Audio Output	98 MHz	Mono : 60dBu, Mod.=22.5kHz	60	80	100	mVrms

7. Terminal Interface

7-1 SBT-7002FS-2N (IIC (2Wire) TYPE)

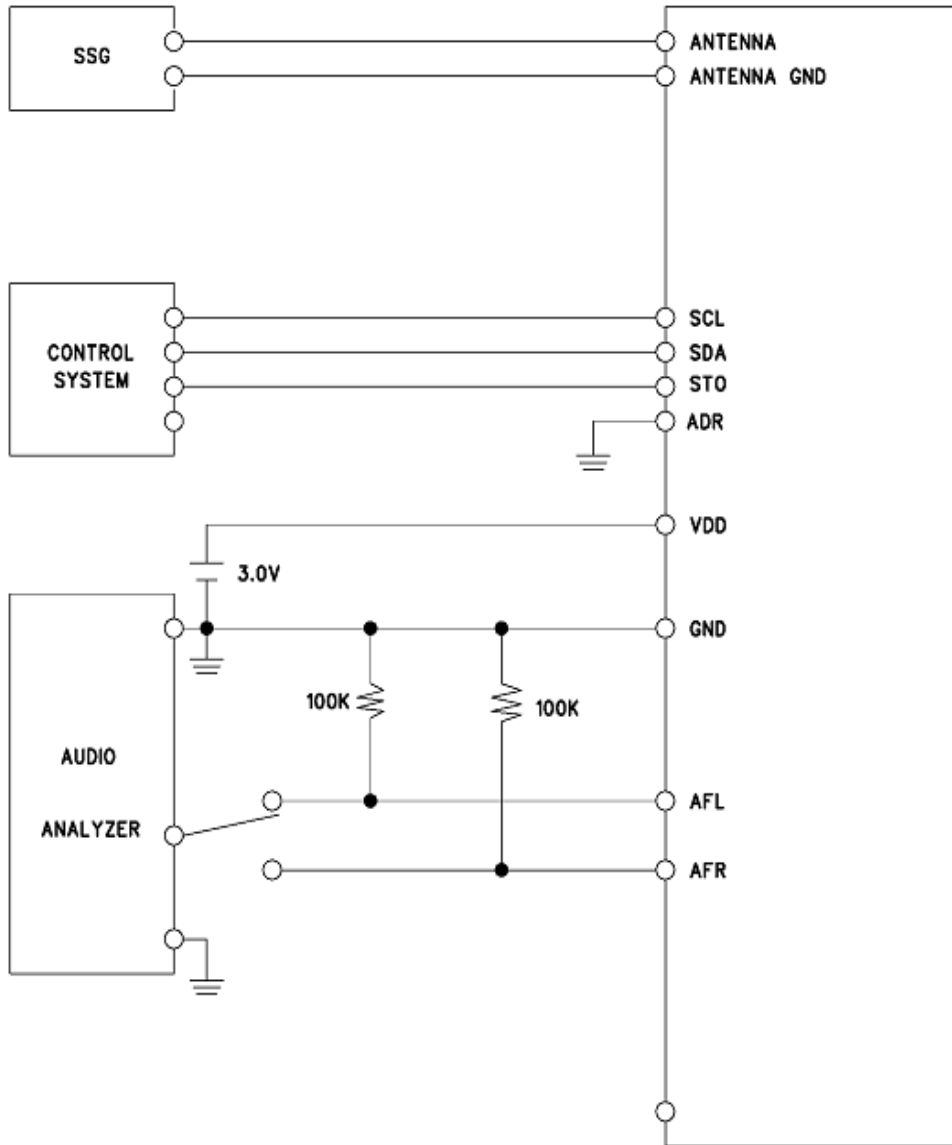
NO	TERMINAL	I/O	Description
1	GND	-	Connect to Ground.
2	STO	O	Status Output
3	ADR	I	Connect to Ground.
4	CLK	I	Serial Clock Input
5	SDA	I	Serial Data Input
6	AUDIO-R	O	Audio R-ch Output
7	AUDIO-L	O	Audio L-ch Output
8	VCC	-	Vcc (3V)
9	ANT	I	RF Input (Connect to Antenna)
10	GND	-	Connect to Ground.

7-2.SBT-7002FS-3N (3 Wire TYPE)

NO	TERMINAL	I/O	Description
1	GND	-	Connect to Ground.
2	STO	O	Status Output
3	ADR	I	Data Latch
4	CLK	I	Serial Clock Input
5	SDA	I	Serial Data Input
6	AUDIO-R	O	Audio R-ch Output
7	AUDIO-L	O	Audio L-ch Output
8	VCC	-	Vcc (3V)
9	ANT	I	RF Input (Connect to Antenna)
10	GND	-	Connect to Ground.

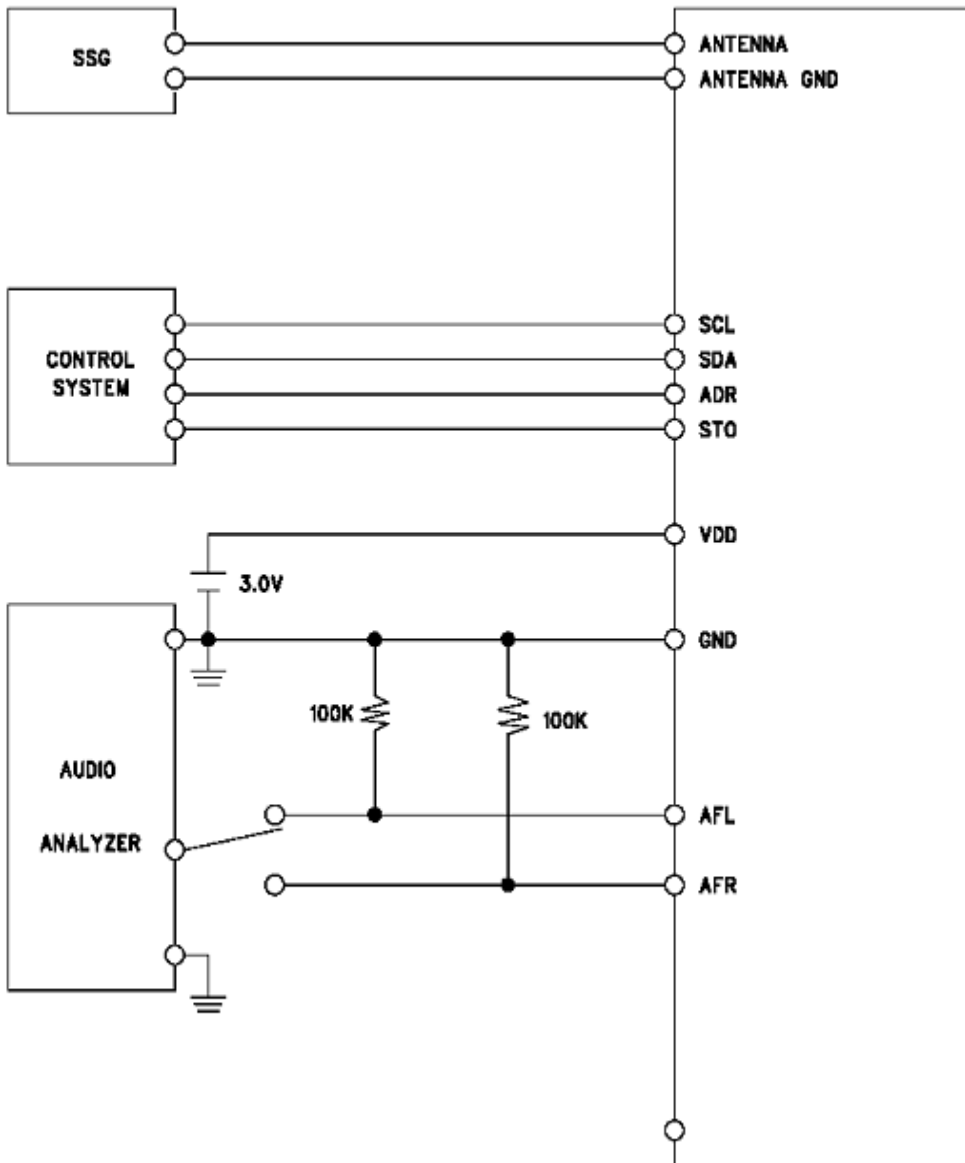
8-1. Circuit of Measurement (IIC (2Wire) TYPE)

Measurement circuit

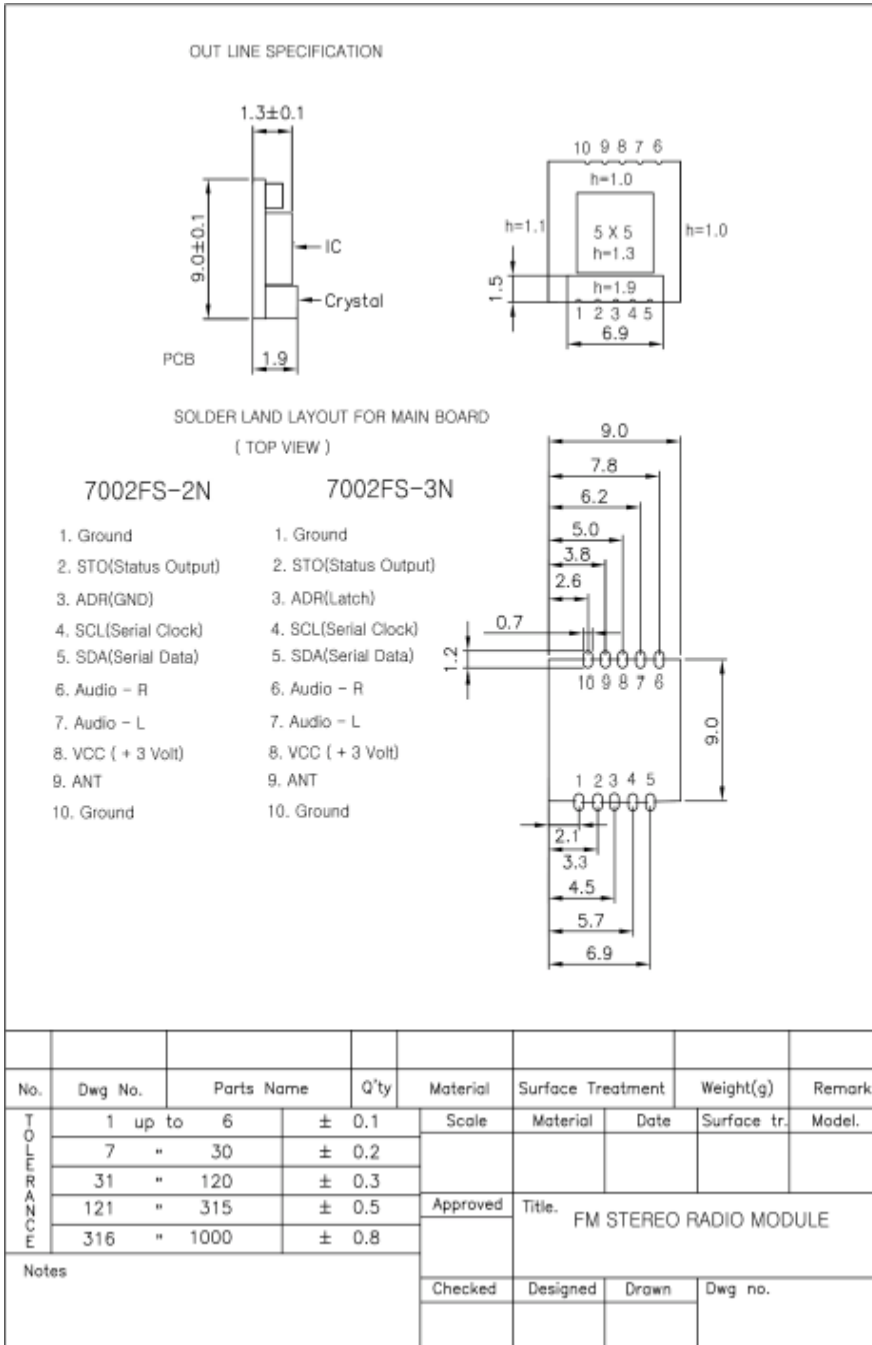


8-2. Circuit of Measurement (3Wire TYPE)

Measurement circuit

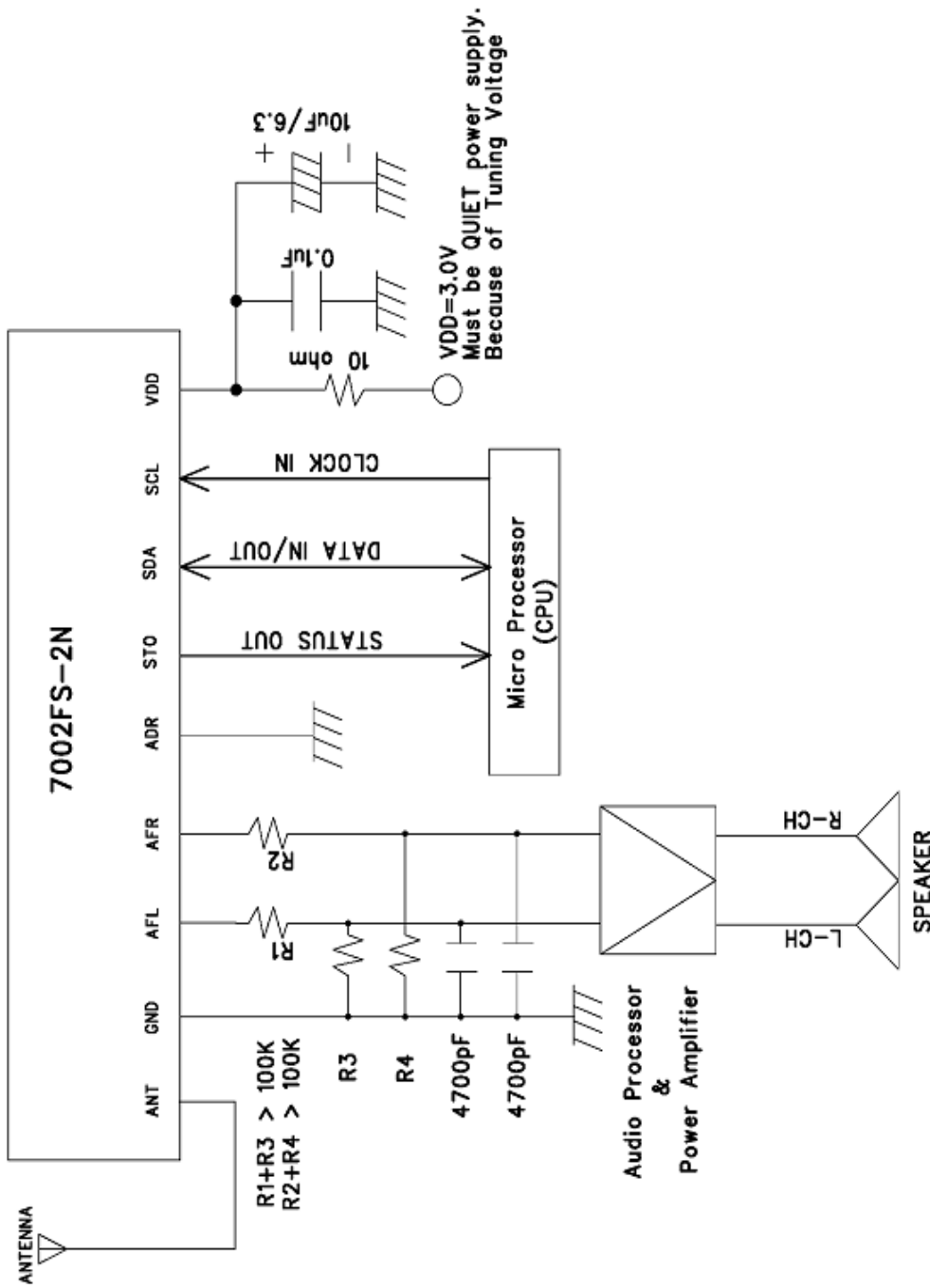


9. Outline Layout



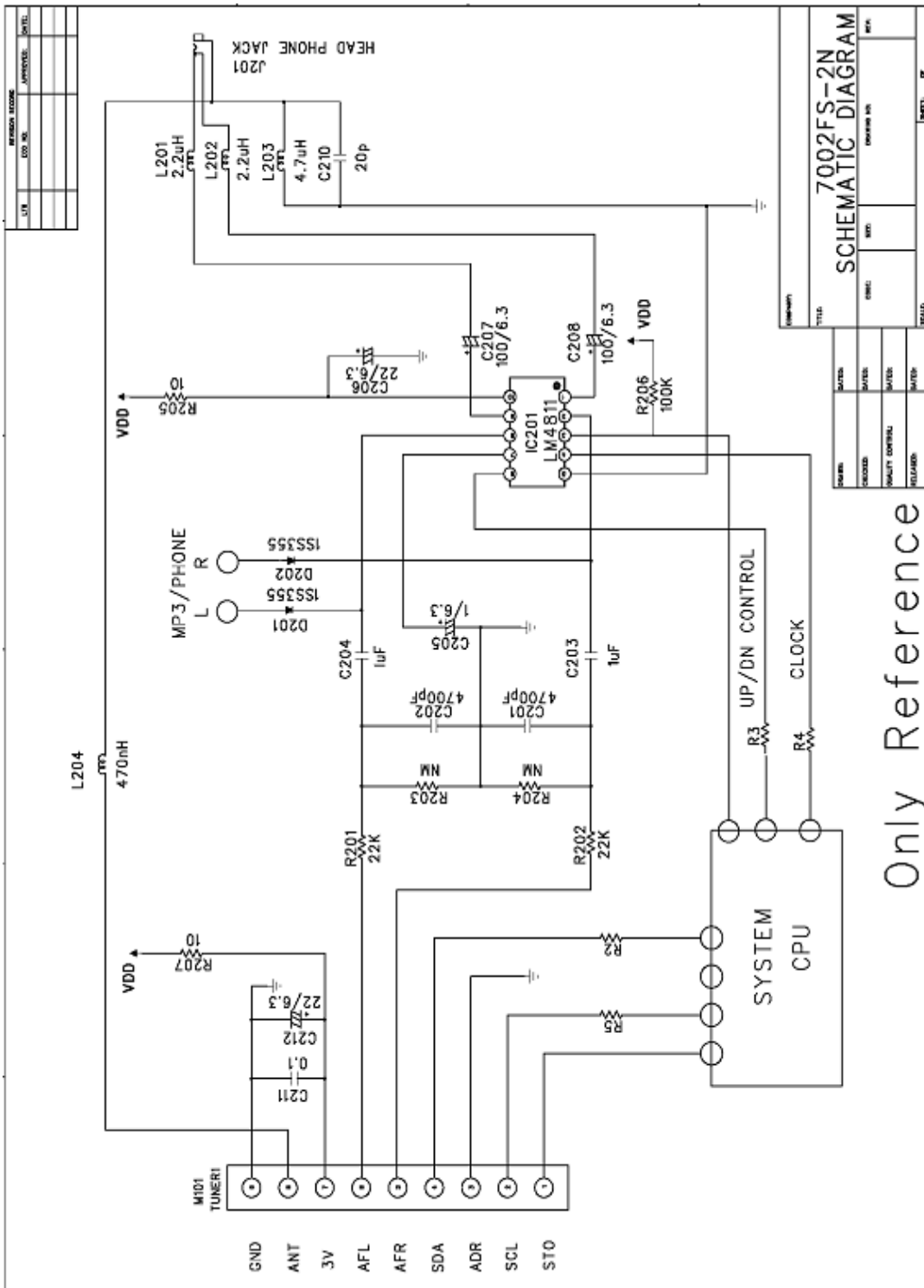
No.	Dwg No.	Parts Name	Q'ty	Material	Surface Treatment	Weight(g)	Remark
T O L E R A N C E	1	up to 6	± 0.1	Scale	Material	Date	Surface tr. Model.
	7	" 30	± 0.2				
	31	" 120	± 0.3				
	121	" 315	± 0.5	Approved	Title. FM STEREO RADIO MODULE		
316	" 1000	± 0.8					
Notes				Checked	Designed	Drawn	Dwg no.

10-1. Application Circuit 1-1 (IIC(2Wire) TYPE)

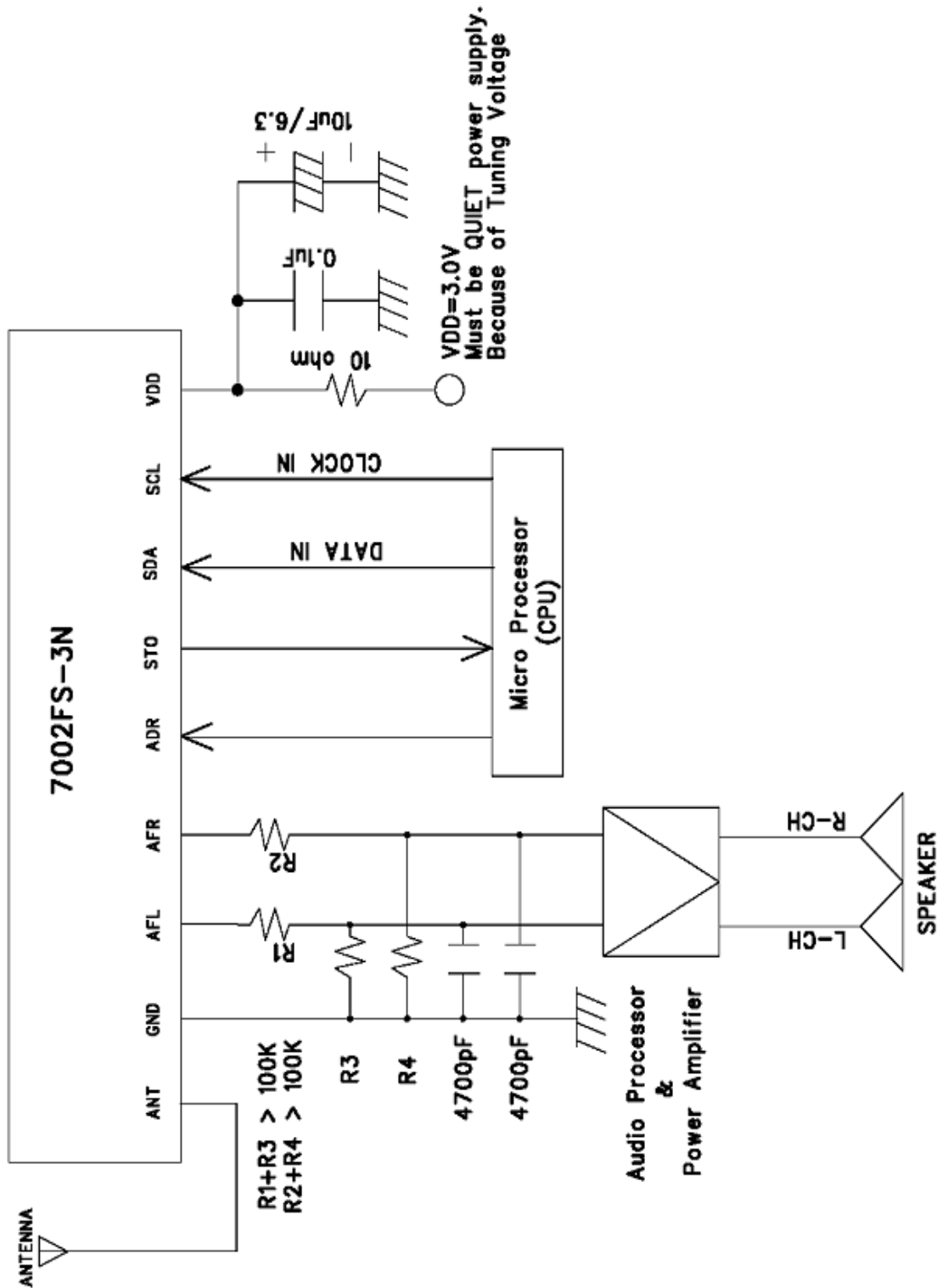


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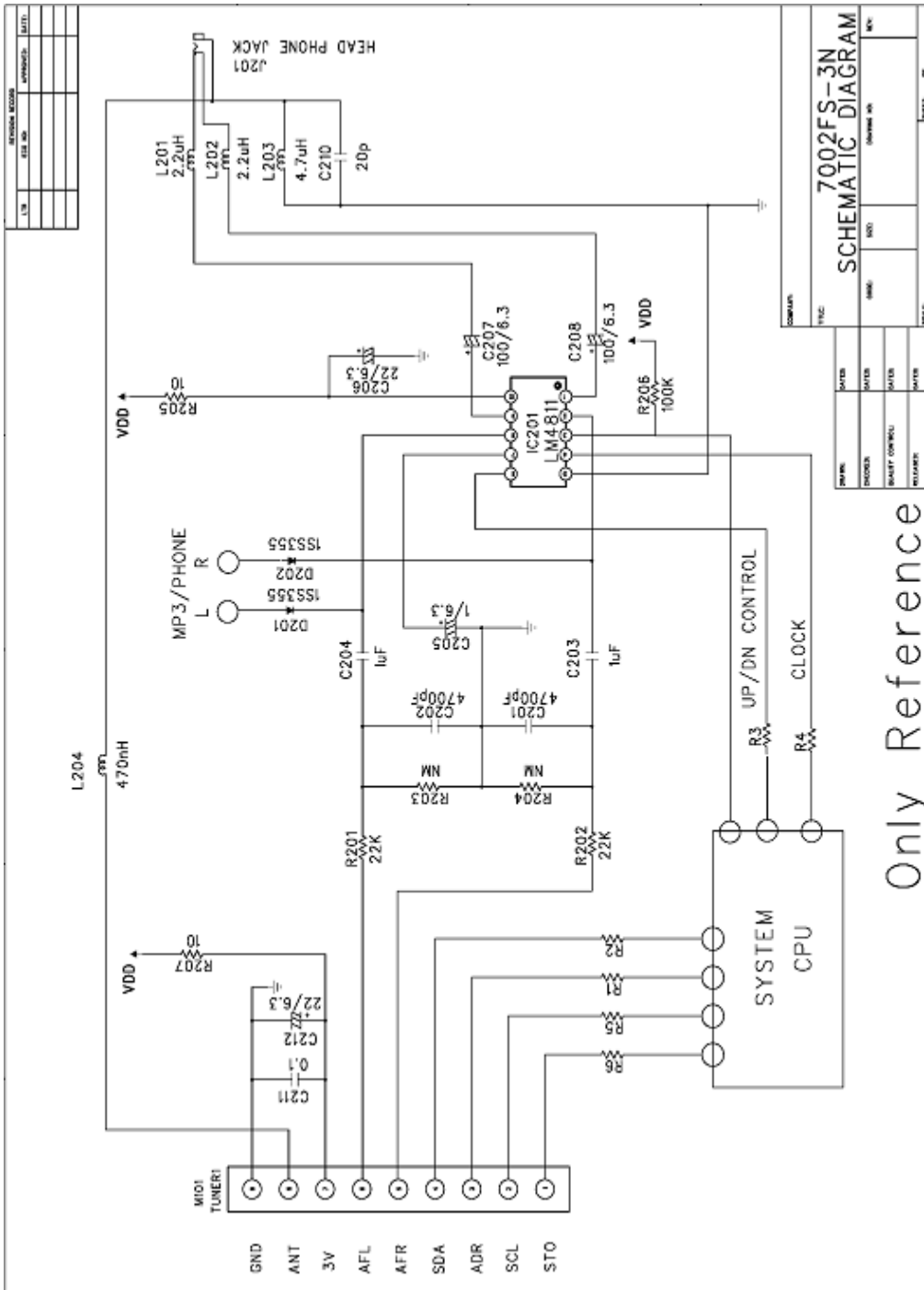
10-2. Application Circuit 1-2 (IIC(2Wire) TYPE)



11-1. Application Circuit 2-1 (3Wire TYPE)



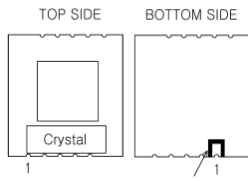
11-2. Application Circuit 2-2 (3Wire TYPE)



7002FS-3N
SCHEMATIC DIAGRAM

NO.	REV.	DATE	BY	CHK.

12. Mould Macking



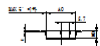
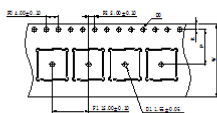
13. Packing Method

13-1. Storage Condition & Time Duration

If stored in reel package, it has a shelf life 6 months provided storage condition 25°C , 60 % RH (relative humidity) or less.

After unpacking it must be soldered to a pcb within 3 months with stored condition 25°C , 60 % RH (relative humidity) or less.

13-2. Reel Dimension

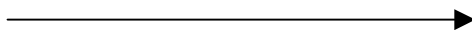


Packing Quantity
 2000 pcs / reel

B0	9.40 ± 0.10	5	1.75 ± 0.10
B1	10.40 ± 0.10	7	1.50 ± 0.10
B2	2.50 ± 0.10	4	0.50 ± 0.05
B3	1.85 ± 0.05	1	24.00 ± 0.20

Leading direction

Unit : m/m

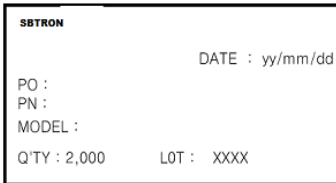


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13-3. Release strength of Cover Tape

Item		Mark	Dimension angle	
Plange	Diameter	A	$\Phi 330$	
	Thickness	T	2.0 ± 0.2	
	Width between flange	W	$12: + 0.8$	
Center Core	Out line diameter	B	$\Phi 98 \pm 1$	
	Center Core Slit	Width	F	4 ± 1
		Deep	V	28 ± 1
	Position	Φ	$120^\circ \pm 30^\circ$	
	Spindle diameter	C	$\Phi 25 \pm 0.5$	
	Key Seats	Width	E	$2.4 + 0.1, -0$
		Deep	U	4.0 ± 1
		Position	Φ	$120^\circ \pm 30^\circ$
Penestra	Out line radius	Ro	$R142 \pm 1$	
	In line radius	Ri	$R50 \pm 1$	
	Rounded corners	Rc	R92	
	Open angle	R	$60^\circ \pm 2^\circ$	
Indication of type : Sticker Lable on one side on one of flange				

13-5. Label Description



DATE : Production Date Code

PO : Production Order Code

PN : Production Number (ex, STB-7002FS-2N (IIC), STB-7002FS-3N(3Wire)

Q'TY : 2000 : 1Rell Standard Quantity

LOT : Lot number code

Leading direction

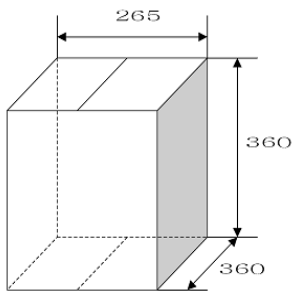
Unit : m/m

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13-3. Release strength of Cover Tape

REEL Quantity	Assortment	W	D	H
Inner Box		340	340	48
1 to 5	Shipping Box	265	360	360

1) OUT BOX (IN BOX 5EA)



2) IN BOX (REEL 1EA)

