



SPECIFICATION

ISDBT TUNER

1.SCOPE

Jdvbt-90517 series is RF unit for Japan and Brazil digital terrestrial broadcast reception.
Built in OFDM demodulator IC.

2.GENERAL SPECIFICATIONS

2-1. RECEIVING FREQUENCY RANGE	VHF HIGH	174~219MHz
	UHF	470~806MHz
2-2. SUPPLY VOLTAGE	:B1	1.2V +/-2% Ripple < 7mV
	B2	5V +/-2%
	B3	2.5V +/-2%
	B4	3.3V +/-2%
2-3. CONSUMPTION CURRENT	:B1	1.2V 56 mA
	B2	5V 170 mA
	B3	2.5V 16 mA
	B4	3.3V 1 mA

Pin 2 Ant Power is for active Ant. The maximum current shall not exceed 100mA.
To avoid destroying the components inside the tuner, please offer current limited circuit if you need to supply Pin 2 with current.

2-4. OPERATION AND STORAGE	TEMPERATURE 0~50°C
CONDITIONS FOR GUARANTEE	HUMIDITY 85% OR LESS

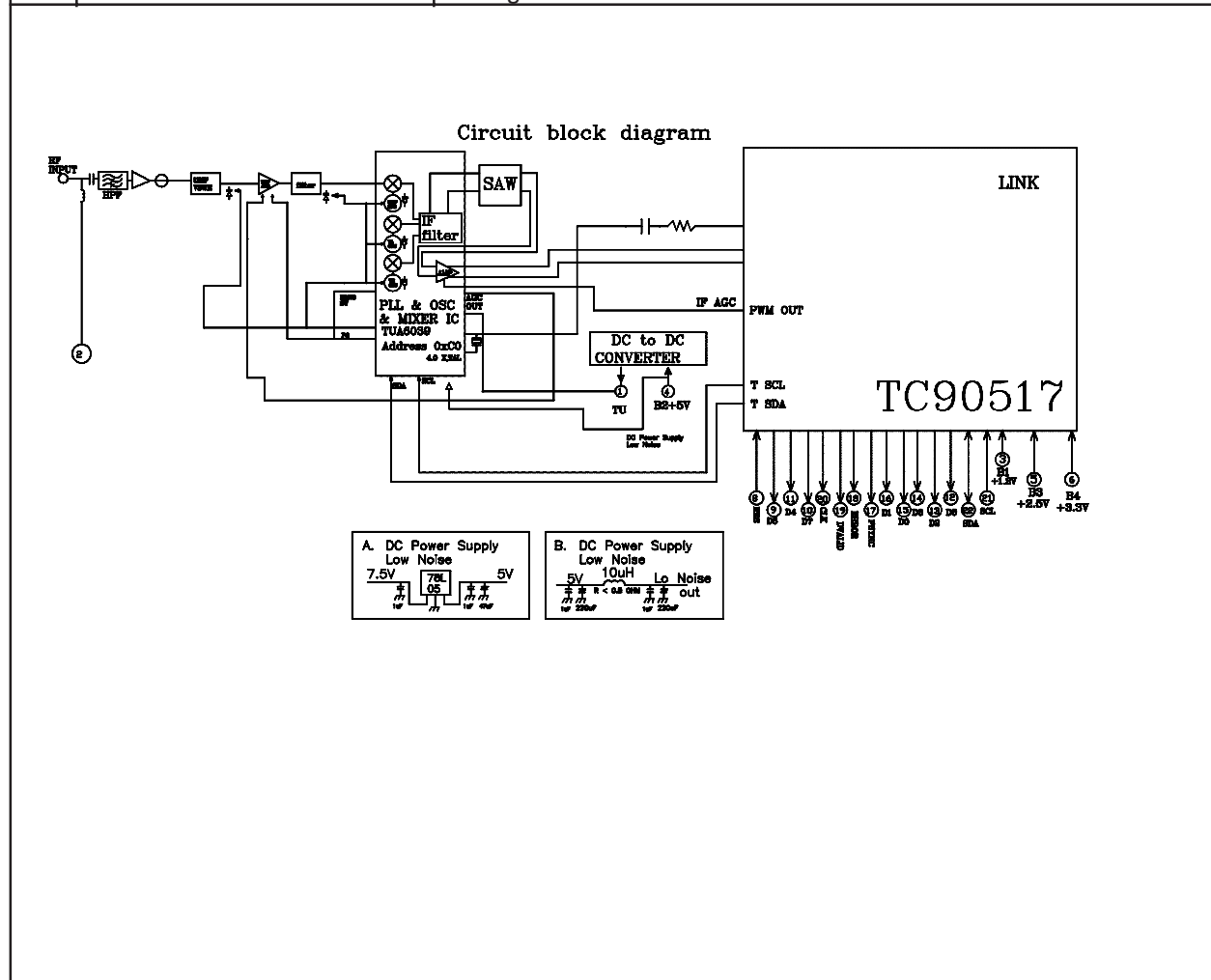
3.TEST CONDITIONS

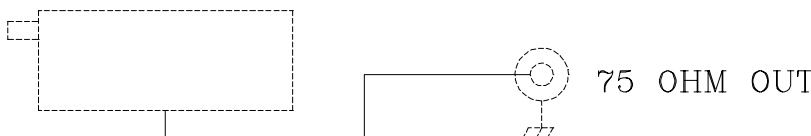
3-1. TESTING AMBIENT CONDITIONS

DEFINED AS TEMPERATURE OF 25+/-2°C AND HUMIDITY OF 65+/-5% RH.

NOTE : THAT TEMPERATURES OF 5~30°C AND HUMIDITY OF 45~85% MAY BE
REGARDED AS STANDARD.

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NO	ITEM	CONDITION	MIN	TYP	MAX	NOTES
1.	GENERAL SPECIFICATIONS					
1.1	Receiving frequency range	VHF HIGH SEE Page 7	174		219	MHz
		UHF	470		806	MHz
1.2	Margin frequency	VHF HIGH	-5		+2	MHz
		UHF	-6		+3	MHz
1.3	RF input impedance	F CONNECTOR 75 OHM				
1.5	L.O PLL synthesizer IC	TUA6039 Address 0xC0				
1.6	PLL synthesizer crystal	+/- 50 ppm		4.0		MHz
1.7	1st intermediate frequency 3dB BW	DVB-T		57		MHz
					6	
1.10	AGC voltage input external	0V to 5V	0V min gain 5V max gain			Current 20uA max
2	Operating Voltage	Supply voltage	5V +/- 2%	3.3V +/- 2%	1.5 +/- 2%	2.5 +/- 2%
2.2	Humidity	Operating	less than 85%			
		Storage	less than 95%			
2.3	Temperature	Operation	0°C to 50°C			
		Storage	-20°C to 75°C			



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NO	ITEM	CONDITION	MIN.	TYP.	MAX.	NOTES
TEST CONDITION						
3.	Supply voltage Ambient humidity Ambient temperature	B1+1.2V B2+5V B3+2.5V B4+3.3V 60% to 70% 20°C to 30°C				
3.1	Test circuit					
3.2	Noise Figure	VHF HIGH UHF		6 5	9 8	dB dB
3.3	AGC Range AGC voltage 5V to 0.5V	VHF HIGH UHF	40 35	65 55		dB dB
3.4	Gain taper				8	dB
3.5	VSWR	VHF HIGH UHF		2 2		dB dB
3.6	IF Rejection	VHF HIGH UHF	45 45	50 50		dB dB
3.7	Image Rejection	VHF HIGH UHF	30 40	40 50		dB dB
3.8	RF input oscillator leakage	<890 MHz <1800 MHz			46 46	dBuV dBuV
3.9	Phase noise offset 1KHz offset 10KHz offset 100KHz	VHF HIGH UHF VHF HIGH UHF VHF HIGH UHF		-60 -70 -75 -80 -95 -95		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz
3.2	1% cross modulation input Channel +/-2Channel level 60dBuV	VHF HIGH UHF	80 80			dBc/Hz dBc/Hz



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NO.	ITEM	CNODITION	MIN.	TYP.	MAX.	NOTES.
5.0 Electrical Characteristics Control refer to TC90502 data sheet						
5.1	C/N in AWGN 8MHz,G1/4,RF=50dBm RS uncorrected error=0	8K 64QAM R7/8		21.5		dB
		8K 16QAM R1/2		10		dB
5.2	Sensitivity in AWGN 8MHz,G1=1/4 RS uncorrected error=0	8K 64QAM R7/8		-75		dBm
		8K 16QAM R1/2		-80		dBm



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TABLE 8-4 BIT Read/Write

ADDRESS Btyle	1	1	0	0	0	MA1	MA0	0	A	BYET1
Divider Byte1		14	13	12	11	10	9	8		
	0	2	2	2	2	2	2	2	A	BYTE2
Divider Byte2		7	6	5	4	3	2	1	0	
	2	2	2	2	2	2	2	2	A	BYTE3
Control byte	1	CP	T2	T1	T0	RSA	RSB	OS	A	BYTE4
Bandswitch Byte	0	0	0	P4	P3	P2	P1	P0	A	BYTE5
Agc Control Byte*	ATC	AL2	AL1	AL0	0	0	0	0	A	BYTE6

* Byte6 replaces byte5 when T2,T1,T0=0,1,1

ADDRESS	1	1	0	0	0	MA1	MA0	1	A	BYTE1
STATUS BYTE	POR	FL	1	1	AGC	A2	A1	A0	A	BYTE2

A:ACKNOWLEDGE BIT.

MA1,MA0:VOLTAGE ADDRESS BITS.(Fix MA1,MA0=0,0)

CP:charge pump current bits bit=0 50uA or 125uA
bit=1 250uA(default)or 650uA
see table 8-11 charge pump current

T0,T1,T2:test bits.see table 8-7 test modes

RSA,RSB:reference divider bits see table 8-8 reference divider

OS:tuning control bit bit=0 enable Vt
bit=1 disable Vt

P0,P1,P2,P3:VHFLO,VHFHI,UHF,BANDSWITCH AND ANT SWITCH see table 8-12

P4:NPN port control bit bit=0(fix AGC Voltage input)

ATC:AGC timer constant bit bit=0 time 2S
bit=1 time 50ms

AL0,AL1,AL2:AGC take-over point bits,see table 8-9

POR:power-on reset flag:POR=0 AT POWER-ON

FL:PHASE LOCK DETECT FLAG.bit=1 OSC LOCK
bit=0 OSC UNLOCK

AGC:internal AGC .fiag AGC=1 when internal AGC is active (level below 3V)

A0,A1,A2:5-level AGC Voltage

TABLE 8-7 Test modes	T1	T2	T0
Normal mode, charge pump currents 50 and 250uA selectable	0	0	0
Normal mode, charge pump currents 50 and 250uA selectable(default)	0	0	1
CP is in high-impedance state	0	1	0
Byte6 will follow(otherwise byte5 will follow)	0	1	1
P0=Fdiv OUTPUT ,P1=Fref OUTPUT	1	0	0
not in use	1	0	1
Extended mode charge pump currents 50 and 250uA selectable	1	1	0
Extended mode charge pump currents 125 and 650uA selectable	1	1	1

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TABLE 8-8 reference divider ratios

Reference divider ratios	PLL 4MHz quartz	Mode	T2	T1	REA	RSB
80	50KHz	normal	0	0	0	0
128	31.25KHz	normal	0	0	0	1
24	166.67KHz	X	X	X	1	0
64	62.5KHz	X	X	X	1	1
32	125KHz	extended	1	1	0	0
28	142.86KHz	extended	1	1	0	1

TABLE 8-9 AGC Take-over point

IF output level symmetrical mode	A2	A1	A0
118 dBuV	0	0	0
115 dBuV	0	0	1
112 dBuV	0	1	0
109 dBuV	0	1	1
106 dBuV	1	0	0
103 dBuV	1	0	1

TABLE 8-10 RF INPUT LEVEL

P4 5-LEVEL ADC (reference)	A2	A1	A0
ANT INPUT LEVEL >110	0	0	0
80~110dBuV	0	0	1
70~80 dBuV	0	1	0
60~70 dBuV	0	1	0
<60 dBuV	1	0	0

TABLE 8-11 charge pump current

Charge pump current	mode	CP	T2	T1	T0
50uA	normal	0	0	0	x
250uA	normal	0	0	0	x
50uA 174~349 MHz 428.1~659 MHz	extended	0	1	1	0
125uA 349.1~397 MHz 659.1~759 MHz	extended	0	1	1	1
250uA 397.1~428 MHz 759.1~862 MHz	extended	1	1	1	0
650uA	extended	1	1	1	1

note :x=don't care.

Analog signal charge pump=50uA ,Digital signal charge=50uA~250uA

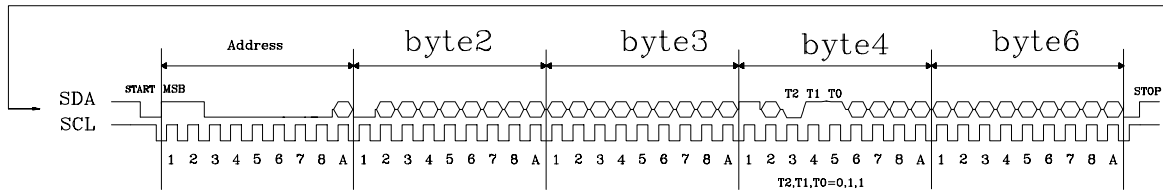
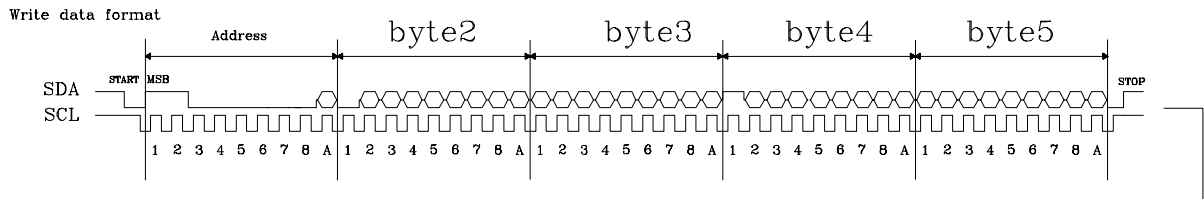
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TABLE 8-12 3-band selection and ANT switch

	P0	P1	P3	P2
UHF	0	0	1	0
VHF HIGH	1	0	0	0

I2C BUS Timing Diagram and telegram examples



	usual TS mode	2TS out put mode	parallel TS mode	flag out put mode
	pinsla="0h"	pinsla="1h"	pinsla="2h"	pinsla="3h"
SLADRS1	.test	test	RSOUT7	RERRA
SLADRS0	test	test	RSOUT6	RERRB
STSFLG1	STSFLG1	STSFLG1	RSOUT5	STSFLG1
STSFLG0	STSFLG0	STSFLG0	RSOUT4	RERRC
SLOCK	SLCOK	WPBVAL(TS2)	RSOUT3	RLOCKA
RERR	RERR	WSRDT(TS2)	RSOUT2	RLOCKB
RLOCK	RLOCK	WSRCK(TS2)	RSOUT1	RLOCKC
RSEORF	RSEORF	RSEORF(TS1)	RSEORF	RSEORF
PBVAL	PBVAL	PBVAL(TS1)	PBVAL	PBVAL
SBYTE	SBYTE	SBYTE(TS1)	SBYTE	SBYTE
SRDT	SRDT	SRDT(TS1)	RSOUT0	SRDT
SRCK	SRCK	SRCK(TS1)	RSCKO	SRCK

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