



SPECIFICATION

DVB-T TUNER

1.SCOPE

The MDVBT-3KU8SP is intended for the reception of DVB-T compliant MPEG2 signals (full TES 300 744 compliant) in combination with the tuner ,all functions are integrated to deliver a corrected transport stream given DVB-T encoded signal(2k or 8k mode)with 8MHz bandwidth

The MDVBT-3KU8SP DATA Parallel output from D7 to D0

The tuner can't be used individually, but works together with MDVBT-3KU8MP because it needs external 27.7MHz clock.

VHF/UHF TUNER,COFDM DEMODULATOR,FOR
DVB-T SYSTEM.

UHF TUNER,COFDM DEMODULATOR,FOR
DVB-T SYSTEM.

2.GENERAL SPECIFICATIONS

2-1. RECEIVING FREQUENCY RANGE	474 ~ 858MHz (I ² C PLL CONTROLLER FROM OUTSIDE)
2-2. SUPPLY VOLTAGE	B1 5+/- 0.1V B2 3.3+/-0.08V B3 1.8+/- 0.05V
2-3. CONSUMPTION CURRENT	B1 5V 140mA B2 3.3V 30mA B3 1.8V 300mA

Note:

3.3V should always come before 1.8V whenever DVB-T STB is power-on under any circumstance, That 1.8V comes before 3.3V will burn out DIB3000MC.

To make sure DiB3000MC boot normally, please set up reset pin from Hi to Lo. The interval between Hi and Lo is 500ms~100ms

3.TEST CONDITIONS

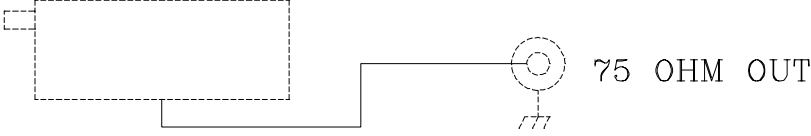
3-1. TESTING AMBIENT CONDITIONS

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	UHF SEE table8-12	474		858	MHz
1.2	Mergin frequency	UHF	-6		+3	MHz
1.3	RF input ompedance	F CONNECTOR 75 OHM				
1.5	L.O PLL synthesizer IC	TUA6034 Address 0xC0				
1.6	PLL synthesizer crystal	+/- 50 ppm		4.0		MHz
1.7	1st intermediate frequency	DVB-T		36.167		MHz
	3dB BW			8		MHz
1.10	AGC voltage input external	0V to 5V	0V min gain			Current 20uA max
			5V max gain			
2	Operating Voltage	Supply voltage	5V +/- 5%	3.3V +/- 5%	1.8 +/- 5%	
2.2	Humidity	Operating	less than 85%			
		Storage	less than 95%			
2.3	Temperature	Operation	0°C to 55°C			
		Storage	-20°C to 75°C%			

Circuit block diagram

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NO.	ITEM	CONDITION	MIN.	TYP.	MAX.	NOTES
TEST CONNDITION						
3.	Supply voltage Ambient humidity Ambient temperature	B1,B2 +5V B3+1.8V B4+3.3V 20°C to 30°C 60% to 70%				
3.1	Test circuit					
3.2	Noise Figure	UHF		7	10	dB
3.3	AGC Range AGC voltage 5V to 0.5V	UHF	35	55		dB
3.5	Gain taper				8	dB
3.6	VSWR	UHF		2		dB
3.7	IF Rejection	UHF	45	50		dB
3.8	Image Rejection	UHF	22	25		dB
3.9	RF input oscillator leakage	<890 MHz <1800 MHz			46 46	dBuV dBuV
3.10	Phase noise offset 1KHz	UHF		-58		dBc/Hz
	offset 10KHz	UHF		-75		dBc/Hz
	offset 100KHz	UHF		-95		dBc/Hz
3.2	1% cross modulation input Channel +/-2Channel level 60dBuV	UHF	80			dBuV



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NO	ITEM	CONDITION	NIM	TYP	MAX.	NOTES.
Electrical Characteristics		COFDM Demodulator	I ² C Bus intewface to DIBCOM3000C data shee			
5.1	input sensitivity	·Bandwidth 8MHz FET mode 2K Guard interval 1/32 Constllation 64QAm FEC code rate 2/3 RS uncorrected Error=0		-75		dBm
5.2	Performance with AWGN	C/N at antenna input		20		dB
5.3	protection from co-channel PAL	PAL-I 75% color bars,FM sound 1KHz		4		dB
5.4	protection from adjacent channel PAL	PAL-I 75% color bars,FM sound 1KHz		-35		dB
5.5	protection from adjacent DVB-t			-25		dB
5.6	protection from image Channel PAL	PAL-I 75% color bars,FM sound 1KHz		-46		dB
5.7	Performance with single echo inside the interval 2K mode	Te=Tg included (7.2us) Delay phase=0°		1.5		dB
5.8	Performance with single echo inside the interval	Te-Tsymbo 1/2 Delay phase=0°		19.5		dB
5.9	Typical multi-path channel	Additional END		4.0		dB



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

A0,A1,A2:5-level AGC Voltage

TABLE 8-7 Test modes	T2	T1	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 feferene divider ratios

Reference divider ratios	PLL 4MHz quartz	Mode	T2	T1	RSA	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	AL2	AL1	AL0
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 8-11 charge pump current

Charge pump current	mode	CP	T2	T1	T0
50uA	normal	0	0	0	x
250uA	normal	1	0	0	x
50uA 428.1~659 MHz	extended	0	1	1	0
125uA 659.1~759 MHz	extended	0	1	1	1
250uA 759.1~858 MHz	extended	1	1	1	0
650uA	extended	1	1	1	1

note :x=don't care.

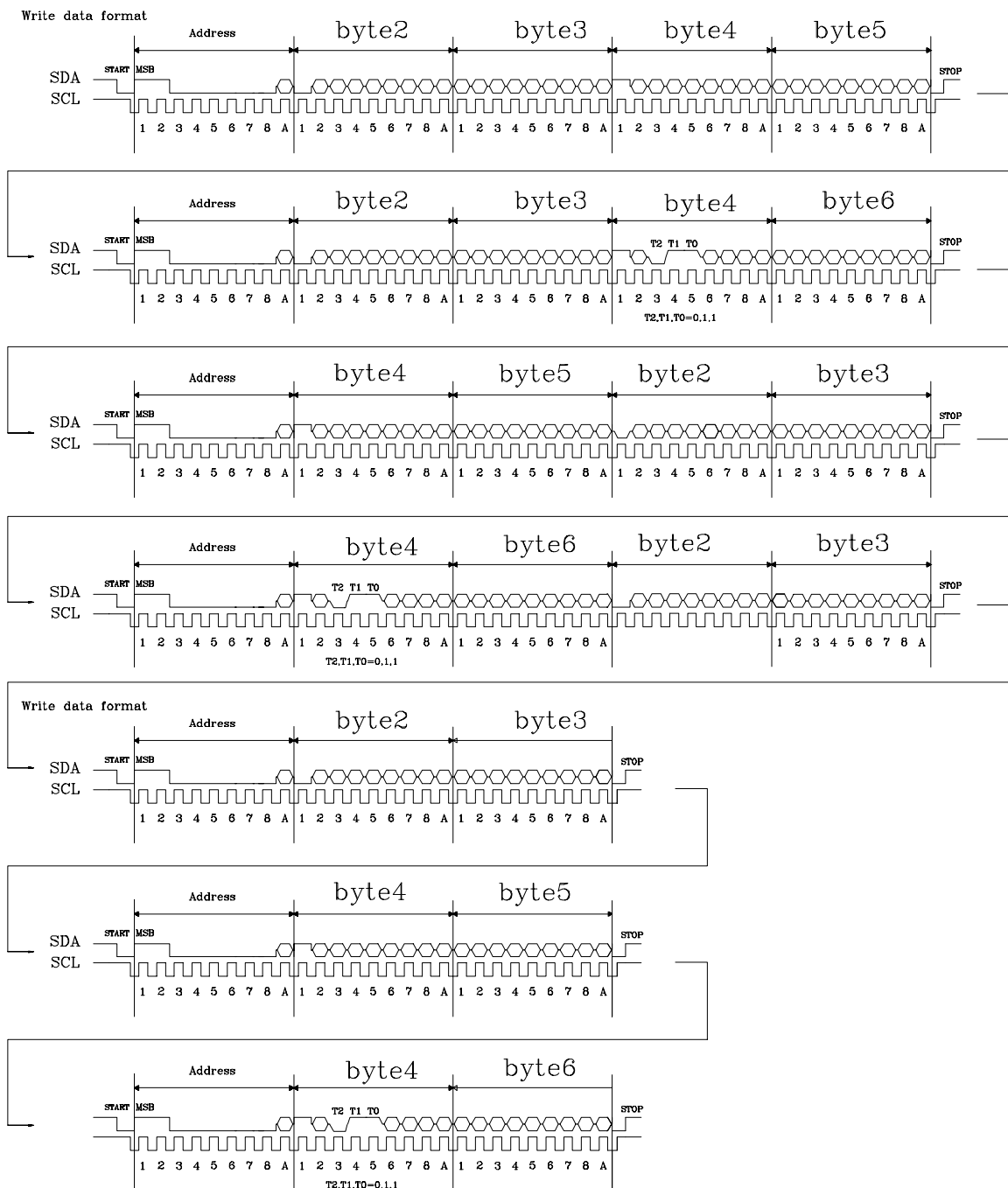
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TABLE 8-12 3-band selection and ANT switch

	P0	P1	P3
UHF	0	0	1

I2C BUS Timing Diagram and telegram examples





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6. **Electrostatic discharge**6.1 **Test**

Each front-end must be capable of normal performance following its subsection to the following tests:

MIL STD 883C HBM

Test is performed with a voltage discharge from a 100 **PF** capacitor over a 1500 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

- o Test to pins 1 through 32:
3 successive ESD discharges of **+/-2 KVDC** between each pin and the front-end frame.

IEC 1000-4-2

Test is performed with a voltage discharge from a 150 **PF** capacitor over a 330 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

- o Test for antenna input socket **+/-8 KVDC**

6.2 **Handling**

Anyone handling a front-end must wear a properly grounded anti-static discharge bracelet to minimize **ESD** damage.

After each front-end is aligned and tested, it will be packed with anti-static poly foam or material prior to transportation and storage. This protective foam is to remain in place until the front-end is assembled and soldered onto the receiver main board.

SPECIFICATION**DVB-T TUNER****7 Reliability test procedure & conditions**

Note: Room temperature = 25°C +/- 2°C

7.1 Heat load test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 60 °C
Period = 500 hrs
Cycle = 1,5 hrs on; 0,5 hrs off
Quantity = 10 pcs

- o Cool-down 0,5 hr at room temperature, then measured the DUTs within 1 hr
- o The test shall be continued to 1000 cycles for information only

7.2 Humidity load test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 40 +/- 5 °C
Period = 24 hrs
Cycle = constantly on
Quantity = 24 pcs

- o Cool-down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o Load the DUTs again into chamber of following conditions:

Temperature = 40+/-5°C
Humidity = 90 to 95%
Period = 500 hrs
Cycle = 1,5 hrs on; 0,5 hrs off
Quantity = 20 pcs

- o Cool down 0.5hr at room temperature, then measured the DUTs within 1 hr

SPECIFICATION**DVB-T TUNER****7.6 Vibration test**

- o Frequency: 3,5 Hz
- o Vertical amplitude: 15 to 25 mm
- o Duration: 1 hr
- o Quantity: 1 carton

7.7 Drop test

- o Packaged apparatus: <or = 50 kg
- o Height: depend on weight
- o 1 corner + 3 edger + 6 faces

Drop on the weakest corner (point G)

Drop on the shortest edge on contact with point G

Drop on average edge in contact with point G

Drop on the longest edge in contact with point G

Drop flat wise on the side of minimum surface

Drop flat wise on the side of opposite minimum surface

Drop flat wise on the side of avarage surface

Drop flat wise on the side of opposite avarage surface

Drop flat wise on the side of maximum aurface

Drop flat wise on the side of opposite maximum surface

- o Quantity :1 carton

7.8 Life test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 60 °C

Period = 500 hrs

Cycle = constantly on

Quantity = 20 pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1hr

8.0 To eliminate the affects of vibration and shock, all coils inside the tuner are covered with glue.

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