

PL102BA-S V2.0 FM/AM RECEIVE MODULE GUIDE

1、FEATURES:

- a: Worldwide FM bands (76-108MHz) and AM bands (520-1710KHz) compatible.
- b: Advanced FM/AM seek tuning and digital tuning technology.
- c: RDS/RBDS processor and optional digital audio output (SI4731 only) .
- d: DSP FM stereo demodulator.
- e: Programmable reference clock support.
- f: Integrated VCO、AFC、AGC control or LDO regulator (2.7-5.5V supply voltage) .
- g: Standby mode, volume、soft mute control or programmable de-emphasis.
- h: Adaptive stereo noise cancellation (SNC) function.
- I: AM wide range of ferrite loop sticks and air loop antennas support.
- J: Universal I²C 2-wire serial control bus interface.
- k: Firmware upgradeable.
- l: No manual alignment necessary and EN55020 compliant.

2、ELECTRICAL SPECIFICATIONS:

a、Operation conditions (Maximum ratings): (V_{cc}=3.3V Ta=25℃)

DESCRIPTION	SYMBOL	PARAMETER (CONFINE)			UNITS	TEST CONDITION
		MIN	TYP	MAX		
Operation supply voltage	V _{DD}	2.7	3.3	5.5	V	2.7-5.5V (Max)
Operation supply current	I _{FM/RDS}	15	20	25	mA	FM/digital/RDS mode
	I _{AM}	15	18	22	mA	AM mode
Power down current	I _{pd}	—	10	—	uA	Stand-by mode
Interface reference voltage	V _{I/O}	1.5	—	3.6	V _{PP}	-0.5-3.9 (Range)
Interface CLOCK frequency		—	32.768	—	KHz	±20ppM
SCLK frequency	f-CLK	—	—	400	KHz	I ² C operation
		—	—	2.5	MHz	3-wire/SPI operation
RF input level		—	0.4	—	V _{pk}	FMI and AMI pins
Operating temperature	T _a	-20	25	85	℃	-20-85℃ (Range)
Storage temperature	T _{stg}	-55	25	150	℃	

b、FM receive characteristics: (V_{cc}=2.7-5.5V; Ta=25℃)

SPECIFICATIONS DESCRIPTION		SYMBOL	PARAMETER			UNITS	TEST CONDITION	REMARK
			MIN	TYP	MAX			
FM Input frequency range		F _{RF}	76	—	108	MHz	Worldwide FM band	
sensitivity	headphone	F _{sen}	—	2.2	3.5	uV	(S+N)/N=26dB	EMF
	50Ω network	F _{sen}	—	1.1	—	uV	Δf=2KHz	
	RDS/RBDS	F _{sen}	—	15	—	uV	RDS BLER<5%	
Audio output S/N	Mono mode	SNR	55	63	—	dB	F _{mon} =1KHz; Δf=22.5KH	Analog mode
	Stereo mode	SNR	—	58	—	dB	z; V _{EMF} =1mV	
Audio output THD		T.H.D	—	0.1	0.5	%	V _{EMF} =1mV; Δf=75KHz	
Stereo separation (L-R/R-L)		Ass	25	—	—	dB	V _{EMF} =1mV; Δf=75KHz	

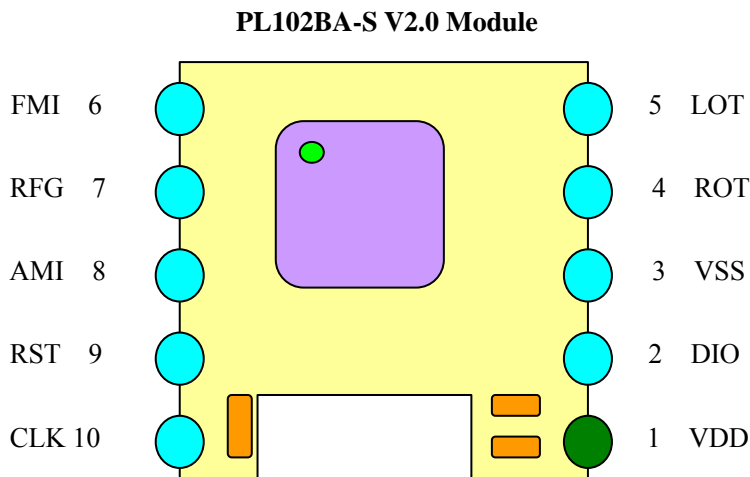
Audio output L/R imbalance	V _{AIMB}	-1	0	+1	dB	V _{in} =-20dBV; L+R	
Audio output voltage range	V-rang	70	80	90	mV	22.5KHz dev	V _{RMS}
audio output loading resistance	R _L	10	—	—	kΩ	Single-ended	
audio output load capacitance	C _L	—	—	50	pF	Single-ended	
Adjacent channel selectivity	ACS ₂₀₀	35	50	—	dB	Δf=±200KHz SINAD≥26dB	
Alternate channel selectivity	ACS ₄₀₀	60	70	—	dB	Δf=±400KHz SINAD≥26dB	
AM suppression	A _{sup}	40	50	—	dB	m=0.3	
Seek/Tuner time		—	—	80	mS/CH	RCLK=100ppm	
Power-up time		—	—	110	mS	From power-down	

c、AM receive characteristics: (V_{cc}=2.7-5.5V; T_a=25°C)

SPECIFICATIONS DESCRIPTION	SYMBOL	PARAMETER			UNITS	TEST CONDITION	REMARK
		MIN	TYP	MAX			
AM Input frequency range	F _{-RF}	520	—	1710	KHz	Worldwide AM band	
AM receiver sensitivity	F _{sen}	—	25	35	uV	(S+N)/N=26dB Δf=10KHz; F-RF=1000KHz	EMF
Audio output S/N	SNR	50	56	—	dB	Δf=10KHz; F-RF=1000KHz	
Audio output THD	T.H.D	—	0.1	0.5	%	Δf=10KHz; F-RF=1000KHz	
Power supply rejection ratio		—	40	—	dB	ΔV _{DD} =100mV; 100Hz	
Audio output voltage range	V-rang	54	60	67	mV		V _{RMS}
AM antenna inductance		180	—	450	uH		
Power-up time		—	—	110	mS	From power-down	

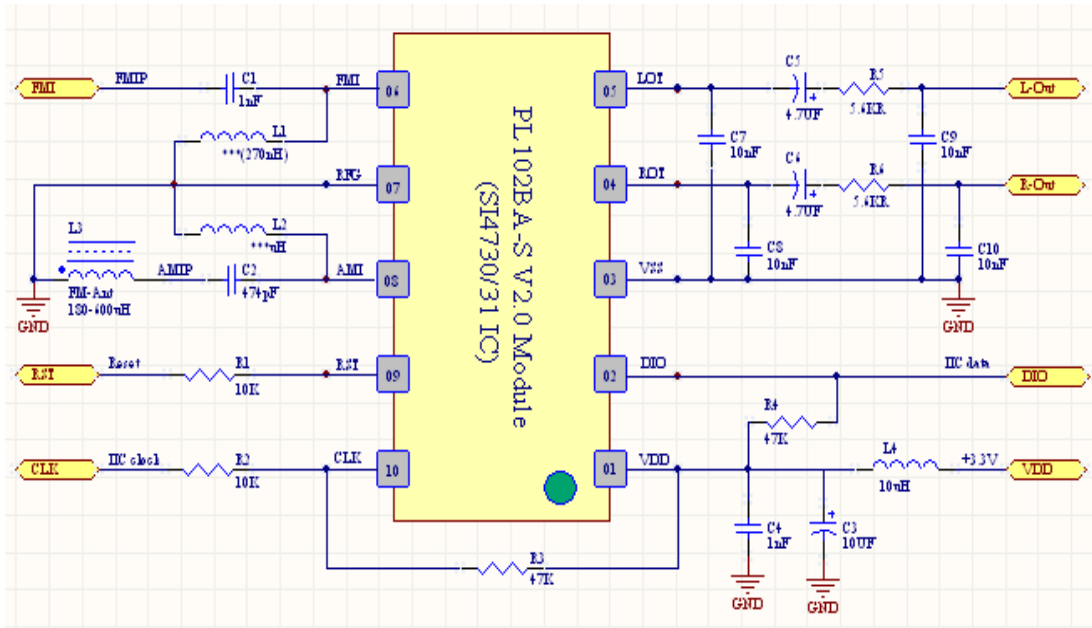
3、APPLICATION DIAGRAM:

a、PIN function description:



PIN NO:	PIN function description	PIN NO:	PIN function description
1	VDD (+3.3VDC power supply input)	6	FMI (FM-RF receiving antenna input)
2	DIO (I ² C BUS data input/output)	7	RFG (FM/AM-RF ground)
3	VSS (Communal ground)	8	AMI (AM-RF receiving antenna input)
4	ROT (Right audio output)	9	RST (Device reset input, Active low)
5	LOT (Left audio output)	10	CLK (I ² C BUS serial clock input)

b、 Typical application diagram:

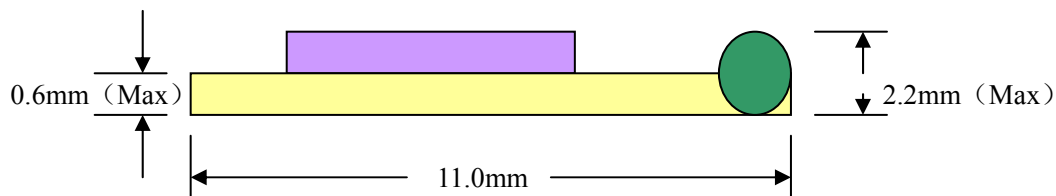


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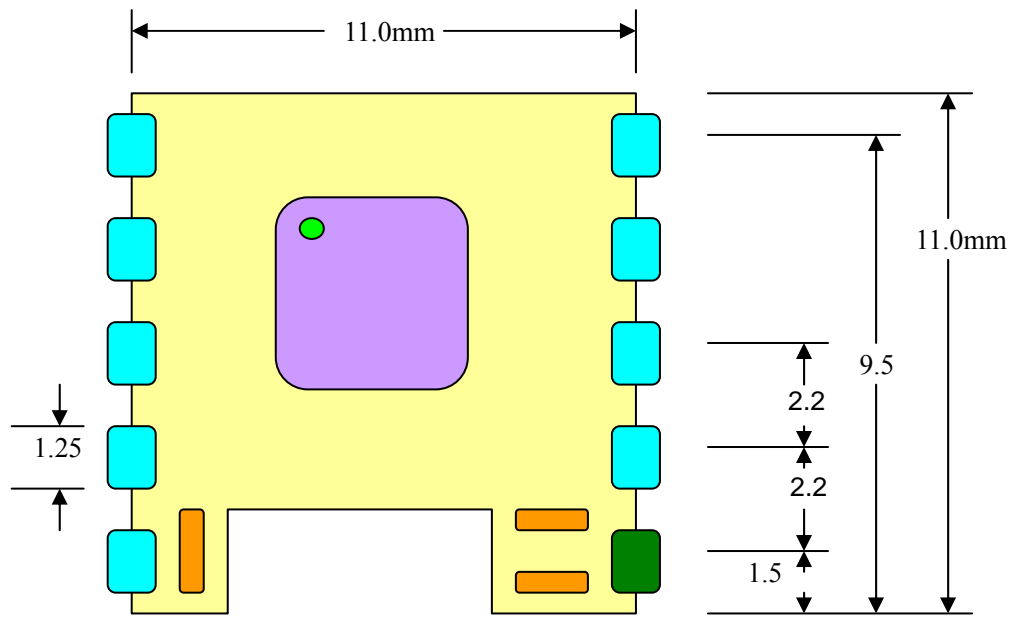
- 1、 This is “PL102BA-S V2.0” FM/AM Receive Typical application, Reference above example change electronic component parameter for idiographic applications to design layout.
- 2、 AM antennas be capable of selection wide range ferrite loop sticks and air loop antennas.
- 3、 Place AM ferrite loop sticks antennas close to “RFG” pins.
- 4、 All grounds connect directly to GND plane on PCB.
- 5、 Power supply capacitance filter close to module “Vcc” pins.
- 6、 Advice add “10-50K” Pull-up resistor to “DAT、 CLK” pin for I²C BUS.
- 7、 Recommend in advance a “600-1.5KΩ/100MHz” PAD location work in 3-Wire earphone FM-RF antenna mode.

4、 EXTERIOR PACKING INFORMATION:

a、 module height (Side view): UNIT: “mm”



b、 module exterior size (Top view): UNIT: "mm"



5、 PARKING PRESENTATIONS:

Please reference practical parts packing. (default)