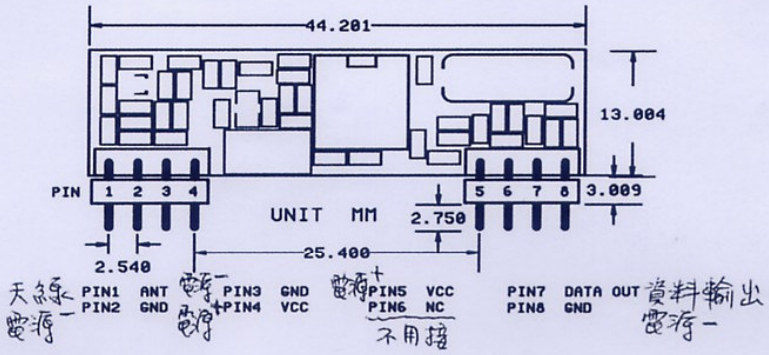
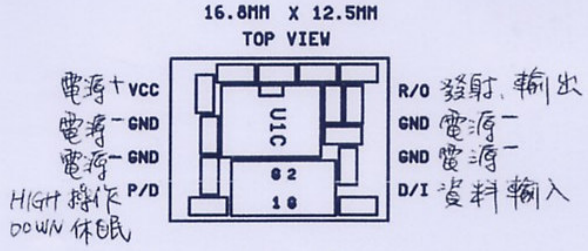
SHY-J4386 TRX模組

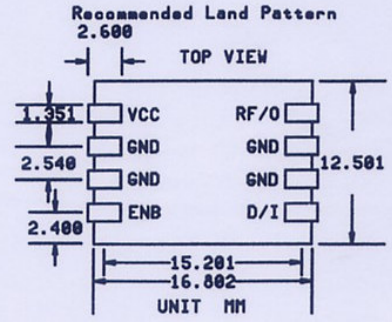
FSK RF Module for 434/868Mhz Wireless RF Applications

FEATURES:

- **Low Power Consumption for 5V±0.5V Operation.**
- **Designed for 434/868Mhz communication systems.**
- **ASK Modulation/Demodulation**
- **Low spurious noise**
- **Data rate 20K bps/TX, 4.8K bps/RX typical**
- **Dimension (Tx:16.8×12.5×2.4mm； Rx:44.2×13.1×5.3mm)**







PRODUCT SPECIFICATION

315MHZ Single chip RF Transceiver **YH-FTR**

FEATURES

- True FSK transceiver module
- Few external components required
- No set up or configuration
- No coding of data required
- 20kbit/s data rate
- 2 channels
- Wide supply range
- Very low power consumption
- Standby mode

APPLICATIONS

- Alarm and Security Systems
- Automatic Meter Reading (AMR)
- Home Automation
- Remote Control
- Surveillance
- Automotive
- Telemetry
- Toys
- Wireless Communication

GENERAL DESCRIPTION

YH-FTR is a true UHF transceiver module designed to operate in the 315MHz ISM (Industrial, Scientific and Medical) frequency band. It features Frequency Shift Keying (FSK) modulation and demodulation capability. **YH-FTR** operates at bit rates up to 20kbit/s. Transmit power can be adjusted to a maximum of 5dBm. **YH-FTR** features a standby mode which makes power saving easy and efficient. **YH-FTR** operates from a single +3-5V DC supply.

QUICK REFERENCE DATA

Parameter	Value	UNIT
Frequency, Channel#1 / Channel#2	314.7/315	MHz
Modulation	FSK	
Frequency deviation	±10	kHz
Max. RF output power @50Ω,3V	5	dBm
Sensitivity @50Ω,BR=20kbit/s,BER<1/1000	-100	dBm
Maximum bit rate	12	kbit/s
Supply voltage	2.7-5.25	V
Receive supply current	11	mA
Transmit supply current @5dBm output power	27(3V)	mA
Standby supply current	10	μA

IMPORTANT TIMING DATA

Timing information

The timing information for the different operations is summarized in Table 1.

(TX is transmit mode, RX is receive mode and Std. By is Standby mode.)

Change of Mode	Name	Max Delay	Condition
TX→RX	t_{TR}	3ms	Operational Mode
RX→TX	t_{RT}	1ms	
Std. by→TX	t_{ST}	2ms	
Std. by→RX	t_{SR}	3ms	
V_{DD}=0→TX	t_{VT}	4ms	Start-up
V_{DD}=0→RX	t_{VR}	5ms	

Table 1: Switching times for **YH-FTR**

Switching TX←→RX(operational mode).

When switching from RX-mode to TX-mode data (DIN) may not be sent before the TXEN-input has been high for at least 1ms, see Figure (1).

When switching from TX-mode to RX-mode the receiver may not receive data (DOUT) before the TXEN-input has been low for at least 3ms, see Figure (2).

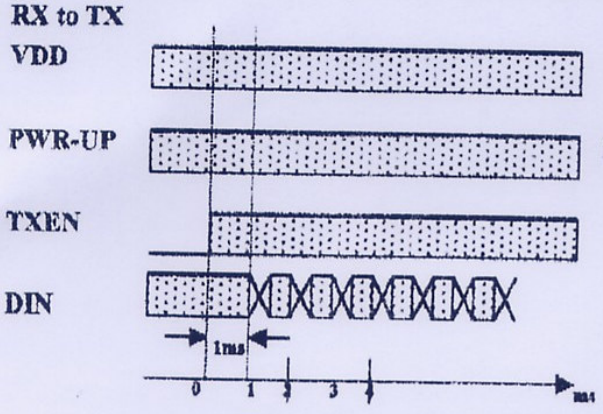


Figure (1)

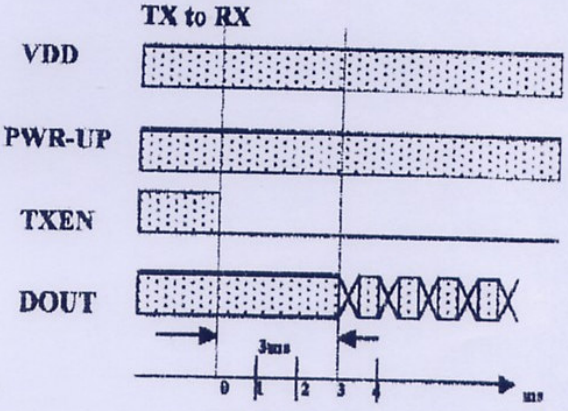


Figure (2)

Timing diagram for **YH-FTR** for switching from RX to TX is shown as Figure (1) and TX to RX is shown as Figure (2). Switching between standby and RX-mode (operational mode).

The time from the PWR-UP input is set to "1" ,until the data (DOUT) is valid is t_{SR}.,

Worst case t_{SR} is 3ms for **YH-FTR** as can be seen in Figure (1).

Switching between standby and TX-mode (operational mode).

The time from the PWR-UP input is set to "1", until the synthesized frequency is stable is t_{ST}, see Table.

ELECTRICAL SPECIFICTIONS

Conditions: VDD=+3V DC,VSS=0V,T_A=-25℃ to +85℃

Symbol	Parameter (condition)	Min.	Typ.	Max.	Units
VDD	Supply voltage	2.7	3	5.25	V
VSS	Ground		0		V
I_{DD}	Total current consumption				
	Receive mode		11		mA
	Transmit mode @5dBm RF power		28		mA
	Stand by mode		8		μA
P_{RF}	Max. RF output power @50Ω load		7		dBm
V_{IH}	Logic "1" input voltage	0.7.V_{DD}		V_{DD}	V
V_{IL}	Logic "0" input voltage	0		0.3.VDD	V
V_{OH}	Logic "1" output voltage (I_{OH}=-1.0mA)	0.7.V_{DD}		V_{DD}	V
V_{OL}	Logic "0" output voltage (I_{OL}=1.0mA)	0		0.3.V_{DD}	V
I_H	Logic "1" input current (V_I=VDD)			+20	μA
I_L	Logic "0" input current (V_I=VSS)			-20	μA
f_1	Channel #1 frequency Logic "0"		314.70		MHz
f_2	Channel #2 frequency Logic "1"		315		MHz
	Dynamic range	90			dB
	Modulation type		FSK		
Δf	Frequency deviation		±10		kHz
f_{IF}	IF frequency		400		kHz
BW_{IF}	IF bandwidth	65		85	kHz
f_{XTAL}	Crystal frequency				MHz
	Frequency stability requirement			±45	Ppm
	Sensitivity @50Ω, BR=20kbit/s, BER<1/1000		-100		dBm
	Bit rate	0		12	kbit/s
Z_I	Recommended antenna port differential impedance		50		Ω

YH-FTR electrical specifications

(1) Maximun 5dB sensitivity degradation at temperature extremes.

(2) With a PCB loop antenna or a differential to single ended matching network to a 50Ω antenna.