

SKA2Dxx

60G mmW RF stamp hole module

1. Overview

SKA2Dxx is a series of RF stamp hole modules with various of horn antenna configuration. SKA2Dxx is based on leading edge ST60A2 60G mmW RF transceiver, which could achieve very low power, very high speed, short distance data transfer. These stamp hole modules can be easily mounted on other PCB motherboard.

2. Features

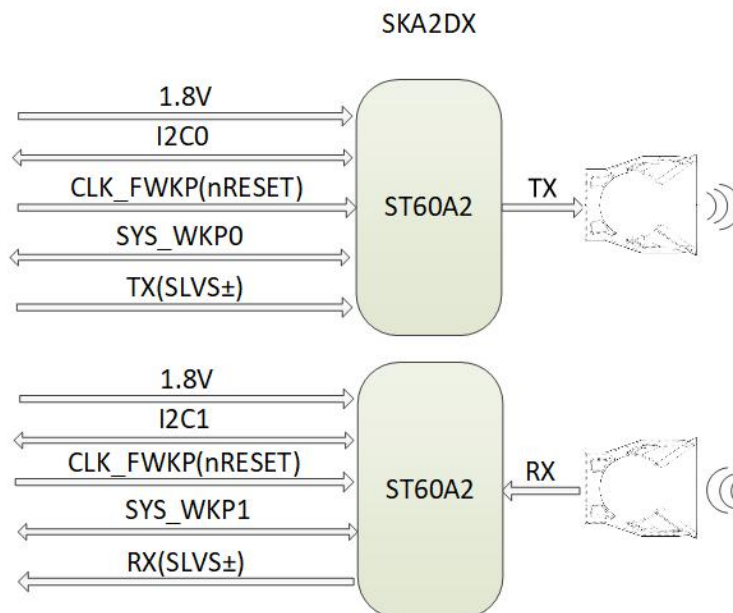
- 60GHz V-Band transceiver with ST Sparclink technology
- 6Gbps data rate, few centimeter transmission distance, preferred 2cm
- Full duplex
- Stamp hole, simple installation
- I2C&GPIO control mode optional
- Used in pair

3. Application

- Contactless high-speed connector

4. Block

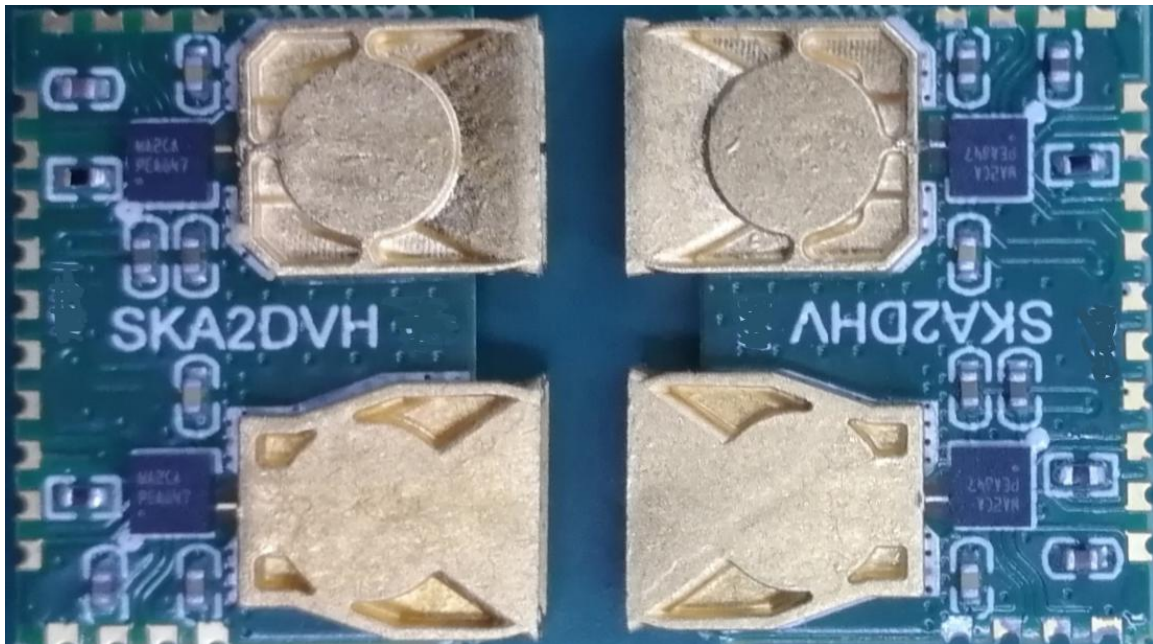
Internal block diagram:



Connection schematic:



Photo view:

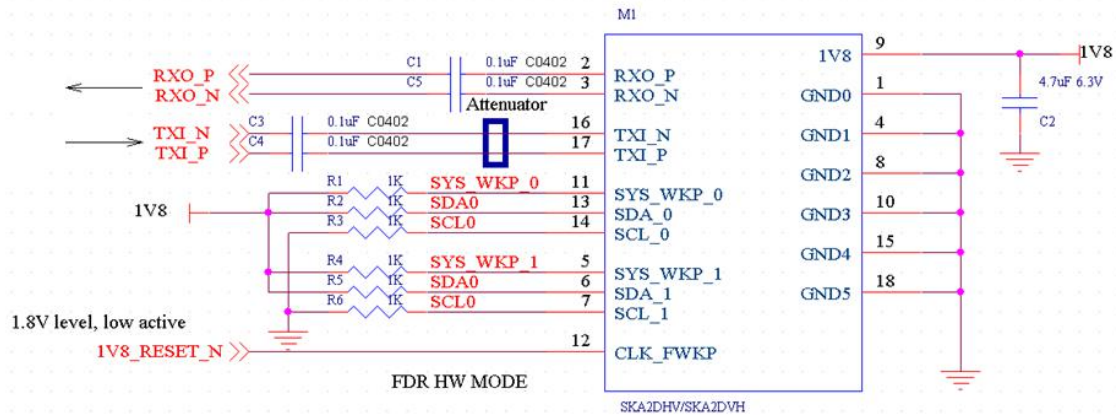


5. Pin definition

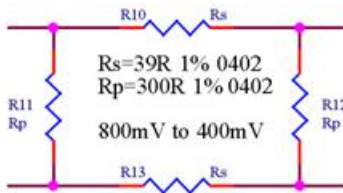
Pin Number	Signal Name	Description
1	GND0	Ground
2	RXO P	SERDES data for reception from the air
3	RXO N	
4	GND1	Ground
5	SYS_WKP_1	Boot Strap pin, 1.8V level
6	SDA_1	Boot Strap pin 1.8V level
7	SCL_1	Boot Strap pin 1.8V level
8	GND2	Ground
9	1V8	Power supply, 1.8V
10	GND3	Ground
11	SYS_WKP_0	Boot Strap pin, 1.8V level
12	CLK_FWKP	Reset signal, low active. Keep low at least 2ms after 1.8V stabilization

13	SDA_0	Boot Strap pin, 1.8V level
14	SCL_0	Boot Strap pin, 1.8V level
15	GND4	Ground
16	TXI_N	SERDES data for transmission the air
17	TXI_P	
18	GND5	Ground

6. Reference Design



Attenuator sample: 800mV to 400mV



Note:

1. DC blocking capacitor close to module for RXO
2. DC blocking capacitor close to CPU for TXI
3. Resistor attenuator for level shift. ST60 supports Max 400mv Vpp for differential signal input.

Mode configuration:

SCL	SDA	SYS_WKP	Mode	Date Rate
0	0	Don't care	HW forced	LDR-SE
0	1	1	HW forced	FDR-DIFF
0	1	0	HW forced	HDR_DIFF
1	Don't care	Don't care	I2C	All rates possible

LDR: low Date Rate-Single Ended, from 1Mbit/s to 100Mbit/s, with input/output on SYS_WKP digital pin;

FDR: Full Date Rate - Differential, from 1Mbit/s up to 5Gbit/s with input/output on differential SLVS pair.

HDR: High Date Rate – Differential, from 500Mbit/s up to 6Gbit/s, with signal input/output on different SLVS pair.

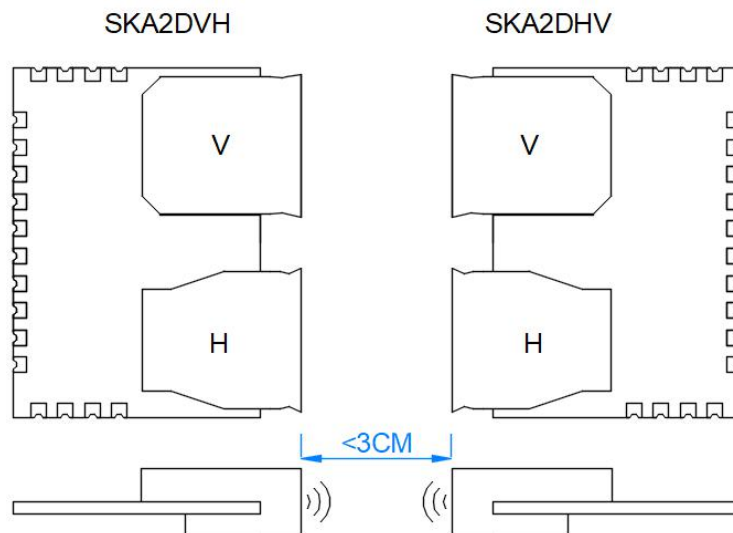
7. Characteristics

Recommended operating conditions and electrical characteristics

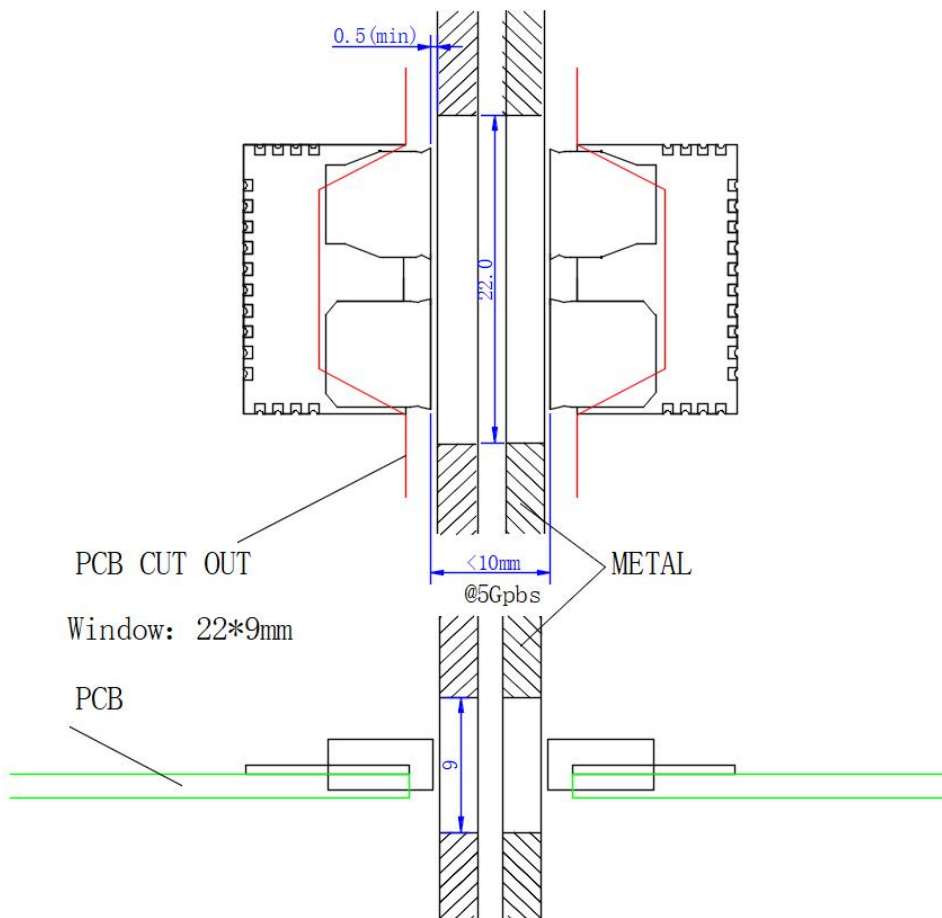
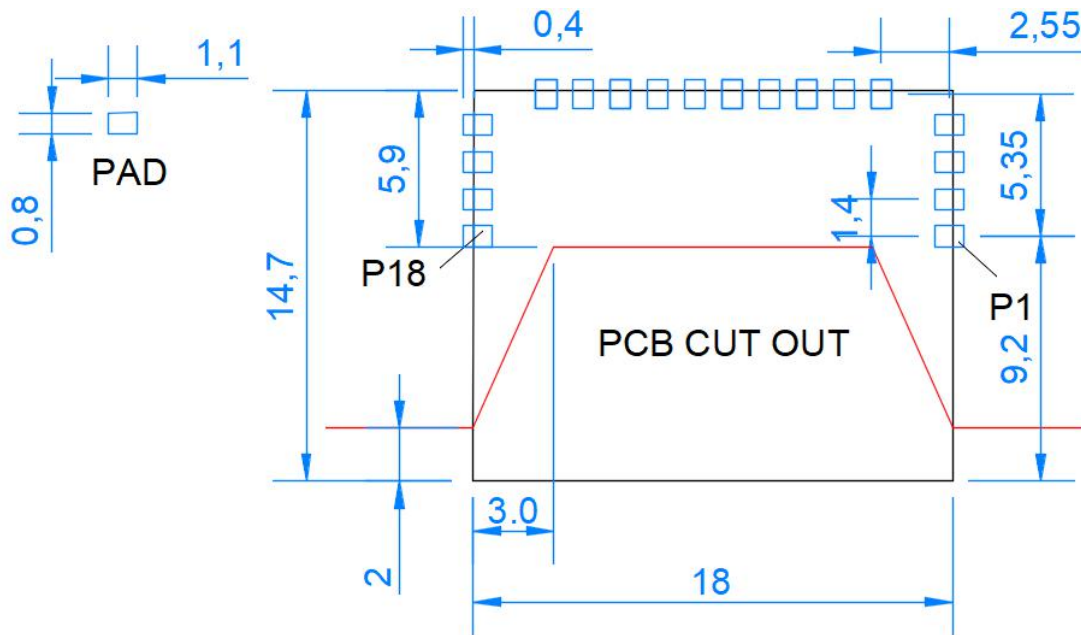
Symbol	Description	Minimum	Typical	Maximum	Unit
V _{IN}	Power supply	1.7	1.8	1.98	V
C _{IN}	Input current(*)	-	49	-	mA
P	Total Power consumption	-	0.09	-	W
T _A	Ambient Operating Temperature	-20	-	85	°C
T _J	Maximum Junction Temperature	-	-	125	°C
T _{STG}	Storage Temperature	-40		105	°C
V _{IH}	High level input voltage	1.2	1.3		V
V _{OH}	High level output voltage	1.6			V
V _{IL}	Low level input voltage		0.5	0.6	V
V _{OL}	Low level output voltage			0.2	V
RX_IN_ N/P	SLVS common mode level	80	200	300	mV
	Output differential impedance		100		Ω
TX_OUT T_N/P	SLVS common mode level	100	200	300	mV
	Output differential impedance	87	92	97	Ω
F _{osc}	Carrier Frequency	60.3	60.4	60.5	GHz

* when the module is transceiving at 5Gbps .

8. Assembly



PCB installation:



Unit: mm

- (1) Note: If a metal cover is used, a window should be added for microwave signal. Plastic or other microwave insensitive materials can be used to fill the window.
- (2) The distance between the two modules is determined by the speed of the data and the assembly environment. It is recommended that the installation distance be less than 30mm

9. Order Information

Part number	DESCRIPTION
SKA2DHV	Full duplex stamp hole module with H-antenna for RX, V-antenna for TX
SKA2DVH	Full duplex stamp hole module with H-antenna for TX, V-antenna for RX

IMPORTANT:

The SKA2DXX module is a low-power product based on 60G millimeter wave communication. It is very sensitive to its application environment. Customers must confirm with the supplier whether the installation environment is suitable.

Revision History

	Version	Changes
18 SEP 2020	1.4	Update electrical characteristics
11 NOV 2019	1.3	Add picture and change PCB motherboard cut out
20 SEP 2019	1.2	Assembly window update
19 AUG 2019	1.1	Adjust pad size
15 AUG 2019	1.0	Based on SKA2x spec, deleted SKA2P1 portion
5 AUG 2019	0.9	First Draft