



TTCIOTSDK

HY-40R204I/IC

V23

2020 8 25

/

SIG

;

V1.0	2017/08/07	GKL	LYC	
V20	2017/10/17	WF/ZLL	LYC	1. 2 3. FCC IC 4.
V21	2017/10/25	WF	LYC	1. RF IC ID
V22	2019/06/12	FJ	LYC	1. RF
V23	2020/08/25	Joe	GWB	

1.	1
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1.

HY-40R204I /IC

HY-40R204I /IC

HY-40R204I /IC

3V

AAA

0.15uA

1-1



/



HID

1-2

➤ 4.2/5.0



➤ GAP GATT L2CAP SMP

➤ BQB BLE 5.0, CE, FCC, Canada IC . , (FCC IC
HY-40R204PC PCB);



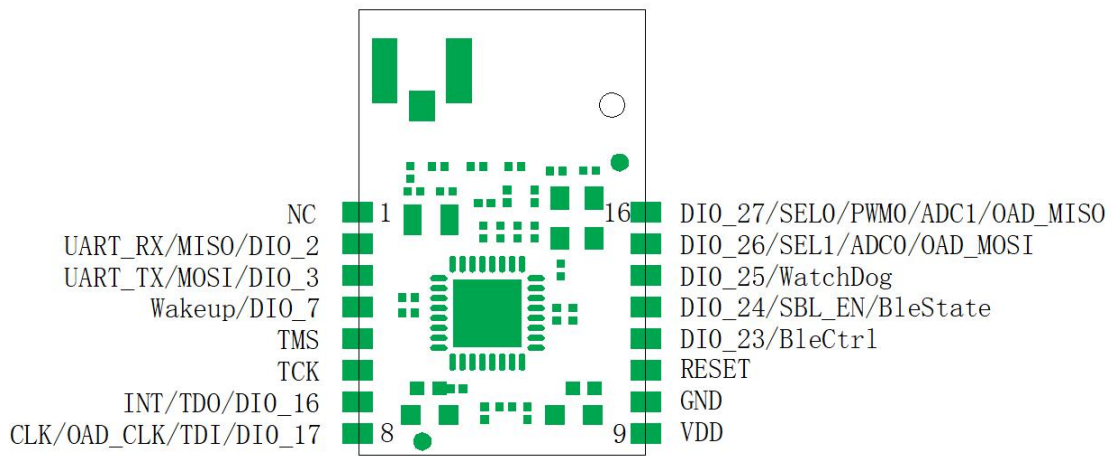
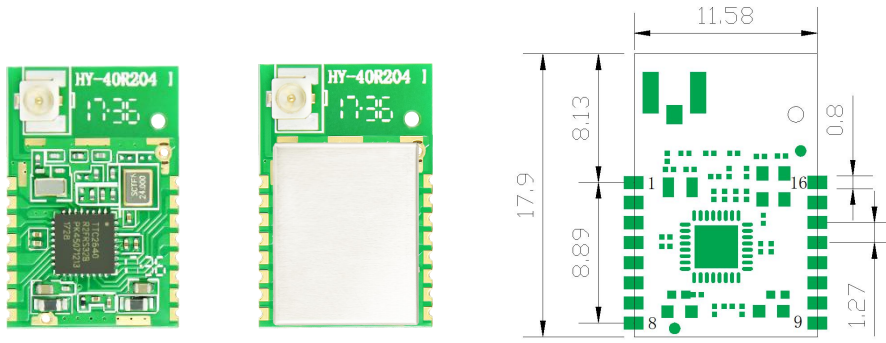
1) 3uA RTC RAM / CPU

2) 150nA

➤ ARM Cortex-M3

2

HY-40R204I / HY-40R204I C (IPEX)



3

3-1.

IC

PCB

IC

3-1a:

10

<0.1V,

0± 100V

3-2

IC

3-3

,VDDS

24~3.3V

3-4.

(
)

3-5.

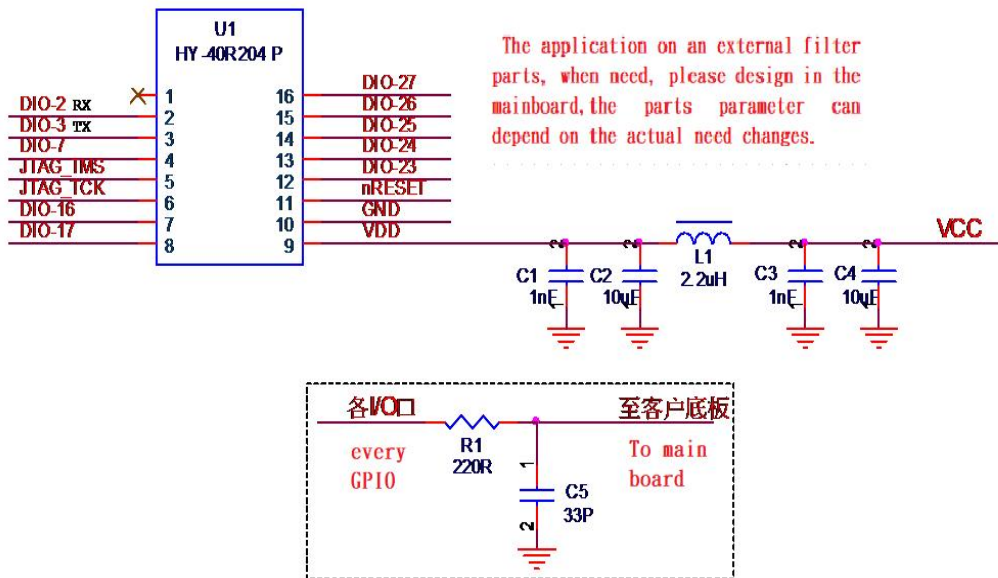
IPC/

JEDECJ-STD-020

2



3-6.



3-7.

1

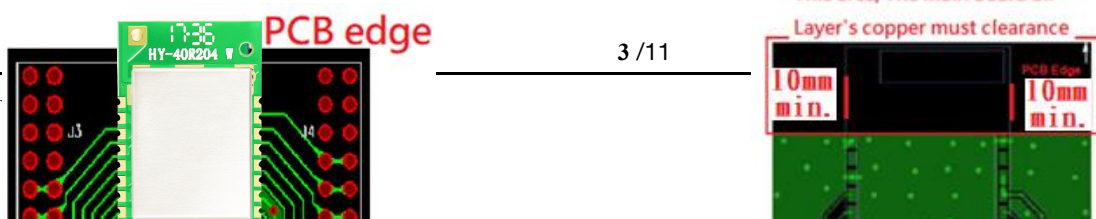
RF

PCB

3-8.

2

():



If the PCB not ground isolation signals between different layers, Trace do not intersect between different layers layout, prevent crosstalk

若 PCB不同層間沒有接地面隔離信號, 不同層間的線路不要交叉布局,防止串擾.

4.

1	NC	NC	Not connect
2	DIO_2	Digital I/O	UART RX; G PIO, Sensor Controller (I:4mA max),
3	DIO_3	Digital I/O	UART TX; G PIO, Sensor Controller (I:4mA max)
4	DIO_7	Digital I/O	Wake Up, D on't floating. G PIO, Sensor Controller. high-drive capability (8mA max).
5	JTAG TMS C	Digital I/O	JTAG TMS C; high-drive capability
6	JTAG TCK C	Digital I/O	JTAG TCK C
7	DIO_16 TDO	Digital I/O	G PIO, JTAG_TDO, high-drive capability(8mA max).
8	DIO_17 TDI	Digital I/O	G PIO, JTAG_TDI. high-drive capability(8mA max).
9	VDD	Power supply	+1.8V to +3.8V (Recommended 2.7~3.3V)
10	GND	Power GND	G round
11	RESET_N	Digital input	Reset, active-low. Module have pull up.
12	DIO_23	Digital I/O	G PIO, Sensor Controller, A nalog(I: 4mA max)
13	DIO_24	Digital I/O	G PIO, Sensor Controller, A nalog(I: 4mA max)
14	DIO_25	Digital I/O	G PIO, Sensor Controller, A nalog(I: 4mA max)
15	DIO_26	Digital I/O	G PIO, Sensor Controller, A nalog(I: 4mA max)
16	DIO_27	Digital I/O	G PIO, Sensor Controller, A nalog(I: 4mA max)

5.

(:Ta = 25 , VDD = 3.0V DC-DC , :1Mbps
GFSK ,FRF = 2440MHz .)

5-1.

- GFSK
- 2402~2480MHz 2.4G ISM
- IC -21~+5dBm typical
- RF : +3 dBm typical. (RF TX +5dBm)
- RF : -93dBm typical (PER < 30.8%)
- :RF ± 60ppm , MCU clock 32.768K Hz ± 350ppm ()
- BQB BLE 5.0, CE, FCC, Canada IC. ,(FCC IC HY-40R204PC PCB);



- 1.RF TX 6.1mA 0dBm
- 2.RF TX 9.1mA 5dBm
- 3.RF RX 5.9mA
- 4. 550uA RAM
- 5. 3uA RTC RAM / CPU
- 6. 150nA

5-2

VDDS	-0.3	3.8	V
	VSS-0.3	VDDS+0.3	V
	-40	+125	° C

5-3. ESD

V _{ESD}	(HBM)	ANSI /		± 2500	V
	ESDA / JEDEC/JS001				
	JESD 22-C101		RF	± 750	
			RF	± 750	

5-4.

10mV_{pp}

VDD()	22	36	V
VDD()	24	33	V
	-40	+85	°C

- ：
- (1).VDD : 27~3.3V DC.
 - (2). ,VDDS 24~3.6V ,
 - (3). , VDDS
 22μF , (6-6
)

5-5.GPIO DC

8-mA	GPIO	IOCURR = 2,	GPIOs	2.68	V
8-mA	GPIO	IOCURR = 2,	GPIOs	0.33	V
4-mA	GPIO	IOCURR = 1		2.72	V
4-mA	GPIO	IOCURR = 1		0.28	V

5-6

		0		100	mV/ μ s
		0		20	mV/ μ s
1	---			3	mV/ μ s
2				5	$^{\circ}$ C/s
RESET_N		1			μ s

(1)

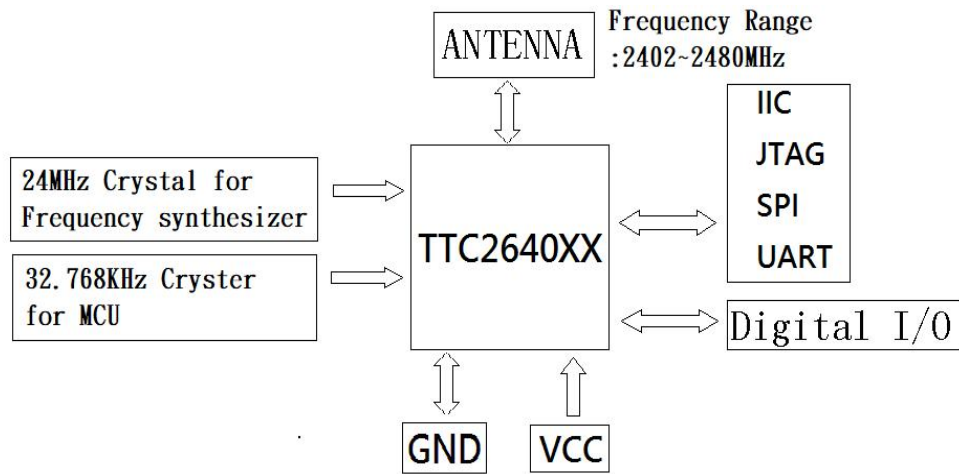
 $V_{DD5} = 22\mu F$

(2)

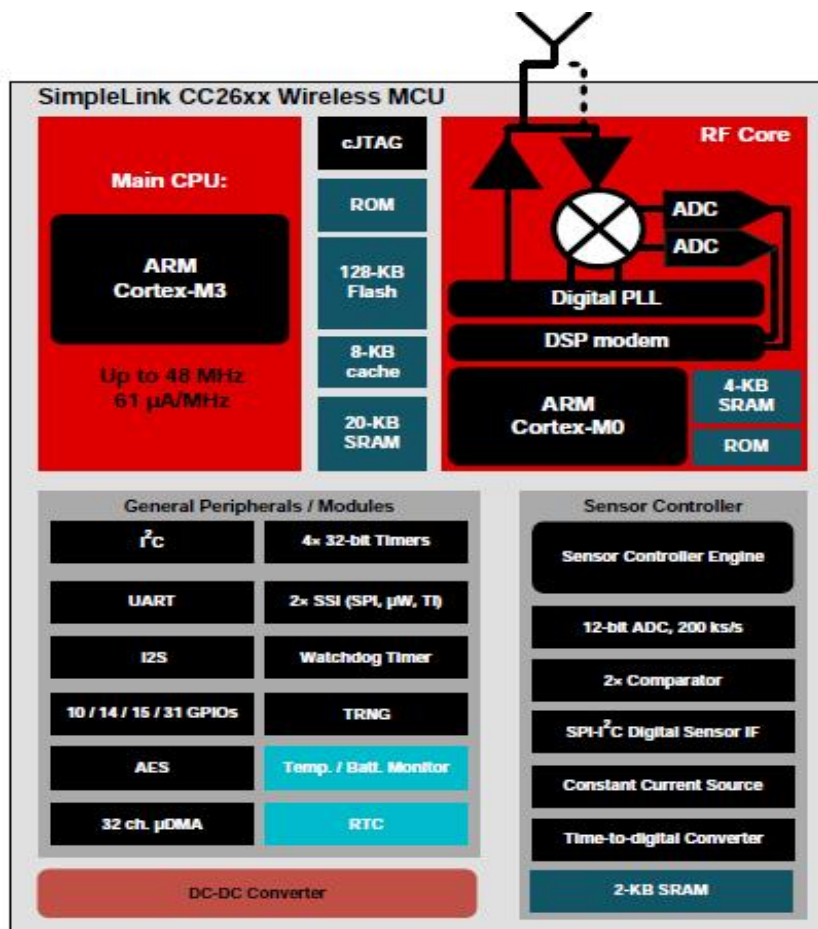
 $RCOSC_LF$
5-7.
 $T_c = 25^{\circ} C \quad V_{DD5} = 3.0V$

Idle	Active			14	μ s
Standby	Active			151	μ s
Shutdown	Active			1015	μ s

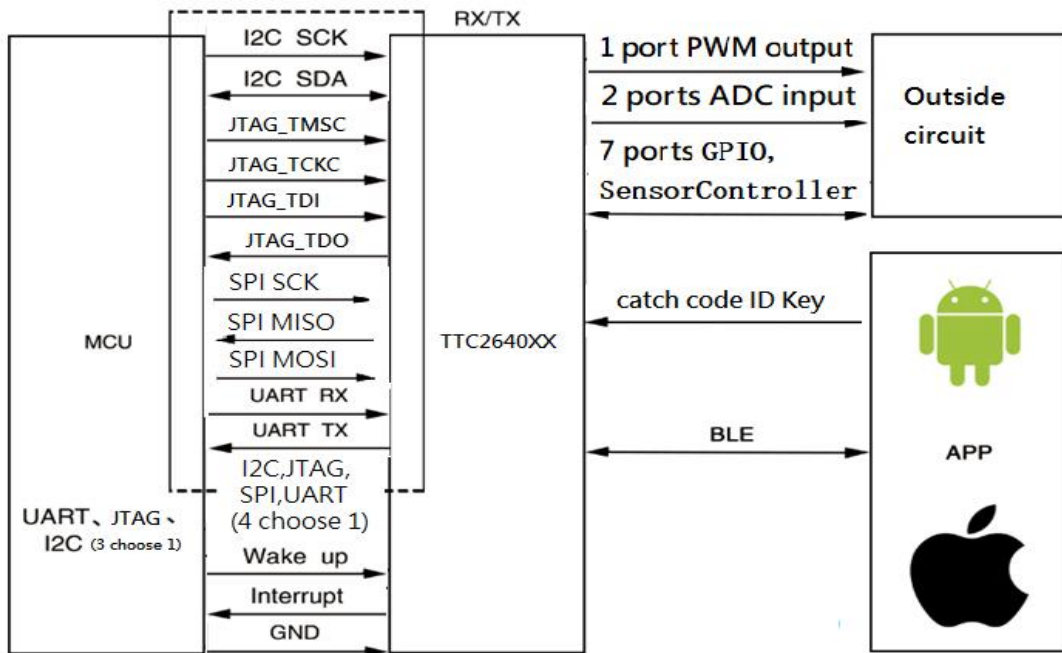
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7. IC

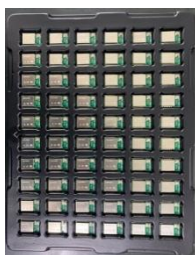


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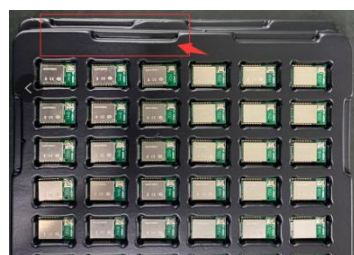


9.

9.1 60 ();
PS ();
9.2 1500, 25 , 1500PCS , < IC / >
()
9.3 (),
TTC



图一



图二



图三

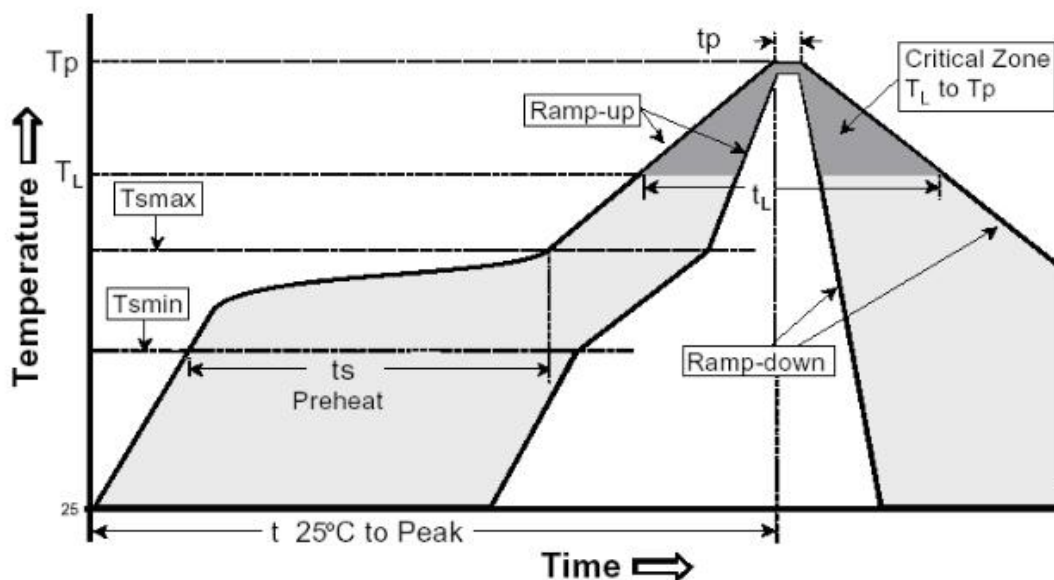


图四

10

(: Sn 96.5%, Ag 3%, Cu 0.5%)

Profile Feature	Pb-Free Assembly	
	Large Body	Small Body
Average ramp-up rate(T_L to T_P)	3° C/second max	
Preheat -Temperature Min ($T_{S_{min}}$) -Temperature Max ($T_{S_{max}}$) -Time (min to max)(t_s)	150° C 200° C 60-180 seconds	
$T_{S_{max}}$ to T_L -Ramp-up Rate	3° C/second max	
Time maintained above T_L -Temperature (T_L) -Time (t_L)	217° C 60-150 seconds	
Peak Temperature (T_P)	245 +0/-5° C	250 +0/-5° C
Time within 5° C of actualPeakTemperature (t_p)	10-30 seconds	20-40 seconds
Ramp-down Rate	6° C/second max	
Time 25° C to PeakTemperature	8 minutes max	



11. HY -40R201PC FCC IC

FCC /

FCC

HY -40R201PC/WMD 40R201SR6PC Module FCC/Industry Canada Statement (to be placed on End Products)Federal Communications Commission (FCC) Statement
FCC Statements
(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§ 15.107 and if applicable § 15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in § 15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

The final host device, into which this RF Module is integrated" has to be labeled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: 2ADXE -HY -40R204PC

"This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation."

"Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."
the Integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

- 1) The radio elements have the radio frequency circuitry shielded.

- 2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.
- 3) The module contains power supply regulation on the module.
- 4) The module contains a permanently attached antenna.
- 5) The module demonstrates compliance in a stand-alone configuration.
- 6) The module is labeled with its permanently affixed FCC ID label.
- 7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.
- 8) The module complies with RF exposure requirements.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Statement

This device complies with Industry Canada licence exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Canada, avis de l'Industrie Canada (IC)

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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