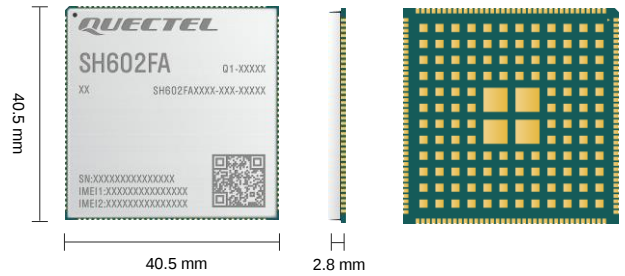


Quectel SH602FA Series

Multi-mode Smart LTE Module with Wi-Fi & Bluetooth



SH602FA series is Quectel’s new generation of multi-mode smart LTE Cat 4 module with built-in Android 16 OS. Based on MT8786 high-performance 64-bit octa-core processors (2 × A75 @ 2.0 GHz + 6 × A55 @ 1.8 GHz) with ARM Mali-G52 2EEMC2 GPU, it is an ideal solution for a wide range of industrial and consumer applications requiring high data rates and multimedia functions. SH602FA series has four variants: SH602FA-EM*, SH602FA-NA*, SH602FA-JP* and SH602FA-WF*.

SH602FA series module supports multiple-input multiple-output (MIMO) technology. The concurrent use of multiple antennas at the receiver end on the same frequency band greatly minimizes bit error rate and optimizes the data speed, thereby improving communication quality. The module also supports multi-constellation GNSS (GPS, GLONASS, BDS, Galileo and QZSS, L1) receiver for fast and accurate positioning.

A rich set of interfaces (such as LCM, camera, touch panel, video, audio, UART, USB, I2C, I2S and SPI) are integrated to extend the applicability of the module to a wide range of M2M applications, including smart cash registers, smart POS, tax control machines, smart safety, on-board equipment, high-end information acquisition equipment, smart robots, smart home, smart hardware, industrial smart handheld equipment, audio and video recorders, smart interphones, smart wearables, vending machines, logistics cabinets, etc.



Key Features

- ✓ Exceptional system performance based on MTK MT8786 64-bit octa-core ARM processors
- ✓ Built-in high-performance ARM Mali-G52 2EEMC2 GPU
- ✓ Worldwide LTE, UMTS/ HSPA+ and GSM/ GPRS/ EDGE coverage
- ✓ MIPI DSI FHD+ 1080 × 2520 @ 60 fps
- ✓ Dual concurrently-working cameras supported
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Recording and playback 2560 × 1440 @ 30fps



Octa-core 64-bit ARM Processor
(2 × A75 + 6 × A55)



ARM Mali-G52 2EEMC2 GPU



Android OS



LTE Cat 4
Max. 150 Mbps (DL)
Max. 50 Mbps (UL)



IEEE 802.11
a/ b/ g/ n/ ac



Bluetooth 5.0
(BR/ EDR + BLE)



GPS/ GLONASS/
BDS/ Galileo/ QZSS, L1



Powerful Multimedia
Function



LCC
Package

Quectel SH602FA Series

LTE Cat 4	SH602FA-EM*	SH602FA-NA*	SH602FA-JP*	SH602FA-WF*
Region/ Operator	EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa	North America	Japan	Global
CPU	MT8786 2 × A75 @ 2.0 GHz + 6 × A55 @ 1.8 GHz	MT8786 2 × A75 @ 2.0 GHz + 6 × A55 @ 1.8 GHz	MT8786 2 × A75 @ 2.0 GHz + 6 × A55 @ 1.8 GHz	MT8786 2 × A75 @ 2.0 GHz + 6 × A55 @ 1.8 GHz
Memory	4 GB LPDDR4X + 64 GB eMMC (Default) 2 GB LPDDR4X + 32 GB eMMC (Optional)	4 GB LPDDR4X + 64 GB eMMC (Default) 2 GB LPDDR4X + 32 GB eMMC (Optional)	4 GB LPDDR4X + 64 GB eMMC (Default) 2 GB LPDDR4X + 32 GB eMMC (Optional)	4 GB LPDDR4X + 64 GB eMMC (Default) 2 GB LPDDR4X + 32 GB eMMC (Optional)
OS	Android 16*	Android 16*	Android 16*	Android 16*
Dimensions (mm)	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8	40.5 × 40.5 × 2.8
Package	LCC	LCC	LCC	LCC
Weight (g)	10.39	10.39	10.39	10.39
Temperature Range				
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Frequency Bands				
LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 66/ 71	B1/ 3/ 5/ 8/ 11/ 18/ 19/ 21/ 26/ 28	-
LTE-TDD	B38/ 40/ 41	B41	B41	-
WCDMA	B1/ 2/ 4/ 5/ 8	-	B1/ 6/ 8/ 19	-
GSM	850/900/1800/1900MHz	-	-	-
WLAN	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac
Bluetooth	2.1 EDR/ 3.0 HS/ 4.1 LE/ 4.2 BLE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.1 LE/ 4.2 BLE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.1 LE/ 4.2 BLE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.1 LE/ 4.2 BLE/ 5.0 LE
GNSS	GPS/GLONASS/BDS/Galileo/QZSS, L1	GPS/GLONASS/BDS/Galileo/QZSS, L1	GPS/GLONASS/BDS/Galileo/QZSS, L1	-
Certifications				
Carrier	TBD	TBD	TBD	TBD
Regulatory/ Conformance	Europe: CE* Australia/New Zealand: RCM*	Global: GCF* North America: PTCRB* America: FCC* Canada: IC*	Japan: JATE*/ TELEC*	America: FCC* Canada: IC* Europe: CE* Australia/ New Zealand: RCM* Taiwan, China: NCC* Japan: JATE*/ TELEC* South Korea: KC* Brazil: Anatel* UK: UKCA*
Others	RoHS*/ REACH*	RoHS*/ REACH*	RoHS*/ REACH*	RoHS*/ REACH*
Data Rates				
LTE-FDD (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	-
LTE-TDD (Mbps)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	-
DC-HSPA+ (Mbps)	42 (DL)/ 11.5 (UL)	-	42 (DL)/ 11.5 (UL)	-
WCDMA (kbps)	384 (DL)/ 384 (UL)	-	384 (DL)/ 384 (UL)	-
EDGE (kbps)	236 (DL)/ 236 (UL)	-	-	-
GPRS (kbps)	85.6 (DL)/ 85.6 (UL)	-	-	-
Enhanced Features				
3GPP E-UTRA	Release 11	Release 11	Release 11	Release 11
Bandwidth (MHz)	1.4/ 3/ 5/ 10/ 15/ 20	1.4/ 3/ 5/ 10/ 15/ 20	1.4/ 3/ 5/ 10/ 15/ 20	-
Rx-diversity	●	●	●	-
DL MIMO 2 × 2	●	●	●	-
(U)SIM Card Detection	●	●	●	-
Dual SIM Dual Standby	●	●	●	-
Firmware Upgrade via USB	●	●	●	●
Firmware Upgrade via OTA	●	●	●	●

Notes:
1. ●: Supported.
2. -: Not Supported.
3. *: Under development/ planning/ in progress.
4. TBD: To Be Determined.



Quectel SH602FA Series

LTE Cat 4	General Features
Interfaces	
LCM	4-lane MIPI DSI, MIPI DSI FHD+ 1080 × 2520 @ 60 fps
Camera	2 groups of 4-lane MIPI CSI; 1 group of 1-lane MIPI CSI up to 2.5 Gbps/ lane ISP: 25MP @ 30fps
Touch Panel	Capacitive touch panel, controlled by I2C
Video	Encode: H.264/HEVC 2560 × 1440 @ 30fps Decode: HEVC, H.264, VP9 @30 fps/40 Mbps and H.263, MPEG-4, MPEG2 @60 fps/40 Mbps
Audio IO	3 analog input: MIC0, MIC1 (earpiece), MIC2 3 analog output: Line-out, earpiece, headphone
USB	× 1, supports USB 2.0, USB OTG etc.
(U)SIM	× 2, supports 1.8/ 3 V (U)SIM cards; supports (U)SIM card hot-plug detection and dual-SIM dual-standby
SD Card	× 1, SD 3.0 Supports 8-bit/16-bit/32-bit access for FIFO in PIO mode; Supports 1-bit/4-bit/8-bit MMC/ eMMC bus width
ADC	× 1, general-purpose ADC interface
UART	× 2 Debug UART: 2-wire serial port, dedicated for debugging UART1: 4-wire UART with the speed rate up to 3 Mbps; supporting RTS and CTS hardware flow control
I2C ^①	× 8 (Multiplexed)
SPI ^①	× 6 (Multiplexed)
I2S ^①	× 2 (Multiplexed)
PWRKEY	0–5 V, pull it down to power on
GPIO ^①	× 47
Antenna	× 4, Main, Rx-diversity, GNSS, Wi-Fi/ Bluetooth antennas respectively (SH602FA-WF*: × 1, Wi-Fi & Bluetooth antenna interface)
Electrical Features	
Supply Voltage Range	3.55–4.4 V, typ. 3.8 V
Power Consumption (Typical)	TBD

Notes:

- ①: SPI, I2C, I2S and GPIO outputs are multiplexed. Let us know your requirements if you need to customize them. We will assist you in customizing the software needed
- *: Under development/ planning/ in progress