



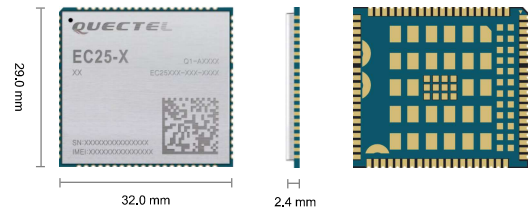
**THE DATASHEET OF
ECA-1JM222**



Quectel EC25 Series

IoT/M2M-optimized

LTE Cat 4 Module



Quectel EC25 is a series of LTE Cat 4 module optimized specially for M2M and IoT applications. Adopting the 3GPP Rel. 11 LTE technology, it delivers maximum data rates up to 150 Mbps downlink and 50 Mbps uplink. Designed in the compact and unified form factor, EC25 series is compatible with Quectel multi-mode LTE Standard EC21 series/EC20 R2.1/EG25-G/EG21-G modules and UMTS/HSPA+ UC200T series modules, which allows for flexible migration among them in design and manufacturing.

EC25 series contains 12 variants: EC25-E, EC25-EU, EC25-EUX, EC25-J, EC25-A, EC25-V, EC25-AF, EC25-AFX, EC25-AFXD (Data-only), EC25-MX, EC25-AU and EC25-AUX. This makes it backward-compatible with existing EDGE and GSM/GPRS networks, ensuring that it can be connected even in remote areas devoid of 4G or 3G coverage.

EC25 series supports Qualcomm® IZat™ location technology Gen8C Lite (GPS, GLONASS, BeiDou/Compass, Galileo and QZSS). The integrated GNSS greatly simplifies product design, and provides quicker, more accurate and more dependable positioning.

A rich set of Internet protocols, industry-standard interfaces and abundant functionalities (USB serial drivers for Windows 7/8/8.1/10, Linux, Android) extend the applicability of the module to a wide range of M2M and IoT applications such as industrial router, industrial PDA, rugged tablet PC, video surveillance, and digital signage.



Key Features

- ✓ LTE Cat 4 module optimized for M2M and IoT applications
- ✓ Worldwide LTE, UMTS/HSPA(+) and GSM/GPRS/EDGE coverage
- ✓ Multi-constellation GNSS receiver available for applications requiring fast and accurate fixes in any environment
- ✓ Feature refinements: supports DFOTA and DTMF
- ✓ MIMO technology meets demands for data rate and link reliability in modem wireless communication systems



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



Max. 42 Mbps (DL)
Max. 5.76 Mbps (UL)



LCC Package



Wi-Fi



BT*



Multi-constellation
GNSS



Embedded Abundant
Protocols



USB 2.0 High Speed
Interface



Quectel Enhanced
AT Commands



USB Drivers

Quectel EC25 Series

LTE Cat 4	EC25-E	EC25-EU	EC25-EUX	EC25-J
Region/Operator	EMEA/South Korea/Thailand/India	EMEA/Thailand	EMEA/Thailand	Japan
Dimensions (mm)	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4
Temperature Ranges				
Operating Temperature	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C
Extended Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Frequency Bands				
LTE-FDD	B1/B3/B5/B7/B8/B20	B1/B3/B7/B8/B20/B28A	B1/B3/B7/B8/B20/B28A	B1/B3/B8/B18/B19/B26
LTE-TDD	B38/B40/B41	B38/B40/B41	B38/B40/B41	B41
WCDMA	B1/B5/B8	B1/B8	B1/B8	B1/B6/B8/B19
GSM/EDGE	B3/B8	B3/B8	B3/B8	/
GNSS	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)
Certifications				
Carrier	Global: Vodafone Europe: Deutsche Telekom/Telefónica South Korea: SKT/KT*/LGU+*	Europe: Deutsche Telekom/ British Telecom	/	Japan: NTT DOCOMO/SoftBank/KDDI
Regulatory	Global: GCF Europe: CE South Korea: KC Taiwan (China): NCC Australia/New Zealand: RCM Thailand: NBTC Russia: FAC South Africa: ICASA	Global: GCF Europe: CE Taiwan (China): NCC Australia/New Zealand: RCM	Global: GCF Europe: CE Taiwan (China): NCC Australia/New Zealand: RCM	Japan: JATE/TELEC
Others	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL
Data Transmission				
LTE-FDD Data Rates (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)
LTE-TDD Data Rates (Mbps)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)
DC-HSPA+ Data Rates (Mbps)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)
WCDMA Data Rates (kbps)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)
EDGE Data Rates (kbps)	296 (DL)/ 236.8 (UL)	296 (DL)/ 236.8 (UL)	296 (DL)/ 236.8 (UL)	/
GPRS Data Rates (kbps)	107 (DL)/ 85.6 (UL)	107 (DL)/ 85.6 (UL)	107 (DL)/ 85.6 (UL)	/
Interfaces				
(U)SIM	x 1	x 1	x 1	x 1
UART	x 2	x 2	x 2	x 2
USB 2.0	x 1	x 1	x 1	x 1
Audio Digital (PCM)	x 1	x 1	x 1	x 1
I2C	x 1	x 1	x 1	x 1
SDIO	x 2	x 2	x 1	x 2
SGMII	x 1	x 1	x 1	x 1
Bluetooth*	x 1	x 1	/	x 1
ADC	x 2	x 2	x 2	x 2
Voice				
Speech Codec Modes	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB
Echo Arithmetic	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression
VoLTE	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)
Enhanced Features				
DTMF	●	●	●	●
DFOTA	●	●	●	●
QMI/RmNet	●	●	●	●
Audio Playback*/Audio Recording*	Optional	Optional	Optional	Optional
QuecLocator®	●	●	●	●
QuecFile®	●	●	●	●
(U)SIM Card Detection	●	●	●	●
Drivers				
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x
GNSS Driver	Android 4.x–9.x	Android 4.x–9.x	Android 4.x–9.x	Android 4.x–9.x
RIL Driver	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x
NDIS	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM	Windows 8/8.1/10, Linux 3.18–5.4	Windows 8/8.1/10, Linux 3.18–5.4	/	Windows 8/8.1/10, Linux 3.18–5.4
GobiNet Driver	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4
QMI_WWAN Driver	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4
Electrical Features				
Supply Voltage Range	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.
Power Consumption	11 µA @ Power off 1.16 mA @ Sleep, Typ. 19.5 mA @ Idle	11 µA @ Power off 1.16 mA @ Sleep, Typ. 19.5 mA @ Idle	9.0 µA @ Power off 0.9 mA @ Sleep, Typ. 14.5 mA @ Idle	10 µA @ Power off 1.1 mA @ Sleep, Typ. 21 mA @ Idle

Notes:
1. * means under development.
2. ● means supported.

Quectel EC25 Series

LTE Cat 4	EC25-A	EC25-V	EC25-AF	EC25-AFX	EC25-AFXD (Data-only)
Region/Operator	North America	America Verizon	North America	North America	North America
Dimensions (mm)	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4
Temperature Ranges					
Operating Temperature	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C
Extended Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Frequency Bands					
LTE-FDD	B2/B4/B12	B4/B13	B2/B4/B5/B12/B13/B14/B66/B71	B2/B4/B5/B12/B13/B14/B66/B71	B2/B4/B5/B12/B13/B14/B66/B71
LTE-TDD	/	/	/	/	/
WCDMA	B2/B4/B5	/	B2/B4/B5	B2/B4/B5	B2/B4/B5
GSM/EDGE	/	/	/	/	/
GNSS	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)
Certifications					
Carrier	America: AT&T/T-Mobile Canada: Rogers/Telus	America: Verizon	America: Verizon/ AT&T (FirstNet) / T-Mobile/U.S. Cellular Canada: Rogers/Telus	America: Verizon/ AT&T (FirstNet)	America: Verizon* / AT&T (FirstNet)* / T-Mobile*
Regulatory	America: FCC North America: PTCRB Canada: IC	Global: GCF America: FCC	Global: GCF America: FCC North America: PTCRB Canada: IC	Global: GCF America: FCC North America: PTCRB Canada: IC	Global: GCF America: FCC North America: PTCRB
Others	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL
Data Transmission					
LTE-FDD Data Rates (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)
LTE-TDD Data Rates (Mbps)	/	/	/	/	/
DC-HSPA+ Data Rates (Mbps)	42 (DL)/ 5.76 (UL)	/	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)
WCDMA Data Rates (kbps)	384 (DL)/ 384 (UL)	/	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)
EDGE Data Rates (kbps)	/	/	/	/	/
GPRS Data Rates (kbps)	/	/	/	/	/
Interfaces					
(U)SIM	x 1	x 1	x 1	x 1	x 1
UART	x 2	x 2	x 2	x 2	x 2
USB 2.0	x 1	x 1	x 1	x 1	x 1
Audio Digital (PCM)	x 1	x 1	x 1	x 1	x 1
I2C	x 1	x 1	x 1	x 1	x 1
SDIO	x 2	x 2	x 2	x 1	x 1
SGMII	x 1	x 1	x 1	x 1	x 1
Bluetooth*	x 1	x 1	x 1	/	/
ADC	x 2	x 2	x 2	x 2	x 2
Voice					
Speech Codec Modes	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	/
Echo Arithmetic	Echo Cancellation/ Noise Suppression	Echo Cancellation/ Noise Suppression	Echo Cancellation/ Noise Suppression	Echo Cancellation/ Noise Suppression	/
VoLTE	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	/
Enhanced Features					
DTMF	●	●	●	●	/
DFOTA	●	●	●	●	●
QMI/ RmNet	●	●	●	●	●
Audio Playback*/ Audio Recording*	Optional	Optional	Optional	Optional	Optional
QuecLocator®	*	●	●	●	●
QuecFile®	●	●	●	●	●
(U)SIM Card Detection	●	●	●	●	●
Drivers					
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x
GNSS Driver	Android 4.x–9.x	Android 4.x–9.x	Android 4.x–9.x	Android 4.x–9.x	Android 4.x–9.x
RIL Driver	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x
NDIS	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM	Windows 8/8.1/10, Linux 3.18–5.4	Windows 8/8.1/10, Linux 3.18–5.4	Windows 8/8.1/10, Linux 3.18–5.4	/	/
GobiNet Driver	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4
QMI_WWAN Driver	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4
Electrical Features					
Supply Voltage Range	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.
Power Consumption	10 µA @ Power off 1.1 mA @ Sleep, Typ. 21 mA @ Idle	10 µA @ Power off 0.85 mA @ Sleep, Typ. 20 mA @ Idle	10 µA @ Power off 1.0 mA @ Sleep, Typ. 23.3 mA @ Idle	8.0 µA @ Power off 0.83 mA @ Sleep, Typ. 14.9 mA @ Idle	8.0 µA @ Power off 0.83 mA @ Sleep, Typ. 14.9 mA @ Idle

Notes:

- * means under development.
- means supported.

Quectel EC25 Series

LTE Cat 4	EC25-MX	EC25-AU	EC25-AUX
Region/Operator	Mexico	Latin America/Australia/New Zealand	Latin America/ Australia/New Zealand
Dimensions (mm)	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4	32.0 × 29.0 × 2.4
Temperature Ranges			
Operating Temperature	-35°C to +75°C	-35°C to +75°C	-35°C to +75°C
Extended Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Frequency Bands			
LTE-FDD	B2/B4/B5/B7/B28/B66	B1/B2 ^① /B3/B4/B5/B7/ B8/B28	B1/B2 ^① /B3/B4/B5/B7/B8/B28
LTE-TDD	/	B40	B40
WCDMA	B2/B4/B5	B1/B2/B5/B8	B1/B2/B4/B5/B8
GSM/EDGE	/	B2/B3/B5/B8	B2/B3/B5/B8
GNSS	/	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)	GPS/GLONASS/BeiDou (Compass)/Galileo/QZSS (Optional)
Certifications			
Carrier	/	Australia: Telstra	
Regulatory	America: FCC North America: PTCRB Mexico: IFETEL	Global: GCF America: FCC Taiwan (China): NCC Brazil: Anatel Australia/New Zealand: RCM	Europe: CE America: FCC Taiwan (China): NCC Brazil: Anatel Australia/New Zealand: RCM South Africa: ICASA*
Others	RoHS/WHQL	RoHS/WHQL	RoHS/WHQL
Data Transmission			
LTE-FDD Data Rates (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)
LTE-TDD Data Rates (Mbps)	/	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)
DC-HSPA+ Data Rates (Mbps)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)
WCDMA Data Rates (kbps)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)
EDGE Data Rates (kbps)	/	296 (DL)/ 236.8 (UL)	296 (DL)/ 236.8 (UL)
GPRS Data Rates (kbps)	/	107(DL)/ 85.6 (UL)	107 (DL)/ 85.6 (UL)
Interfaces			
(U)SIM	x 1	x 1	x 1
UART	x 2	x 2	x 2
USB 2.0	x 1	x 1	x 1
Audio Digital (PCM)	x 1	x 1	x 1
I2C	x 1	x 1	x 1
SDIO	x 1	x 2	x 1
SGMII	x 1	x 1	x 1
Bluetooth*	/	x 1	/
ADC	x 2	x 2	x 2
Voice			
Speech Codec Modes	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB	HR/FR/EFR/AMR/AMR-WB
Echo Arithmetic	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression	Echo Cancellation/Noise Suppression
VoLTE	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)	Digital Audio and VoLTE (Voice over LTE) (Optional)
Enhanced Features			
DTMF	●	●	●
DFOTA	●	●	●
QMI/ RmNet	●	●	●
Audio Playback*/ Audio Recording*	Optional	Optional	Optional
QuecLocator[®]	●	●	●
QuecFile[®]	●	●	●
(U)SIM Card Detection	●	●	●
Drivers			
USB Serial Driver	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x	Windows 7/8/8.1/10, Linux 2.6–5.4, Android 4.x–9.x
GNSS Driver	/	Android 4.x–9.x	Android 4.x–9.x
RIL Driver	Android 4.x–10.x	Android 4.x–10.x	Android 4.x–10.x
NDIS	Windows 7/8/8.1/10	Windows 7/8/8.1/10	Windows 7/8/8.1/10
MBIM	/	Windows 8/8.1/10, Linux 3.18–5.4	/
GobiNet Driver	Linux 2.6–5.4	Linux 2.6–5.4	Linux 2.6–5.4
QMI_WWAN Driver	Linux 3.4–5.4	Linux 3.4–5.4	Linux 3.4–5.4
Electrical Features			
Supply Voltage Range	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.	3.3–4.3V, 3.8 V Typ.
Power Consumption	19 μA @ Power off 1.0 mA @ Sleep, Typ. 12.9 mA @ Idle	11 μA @ Power off 1.3 mA @ Sleep, Typ. 22 mA @ Idle	9.0 μA @ Power off 0.9 mA @ Sleep, Typ. 16.9 mA @ Idle

Notes:

- ① LTE-FDD B2 of EC25-AU and EC25-AUX does not support Rx-diversity.
- * means under development.
- means supported.

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