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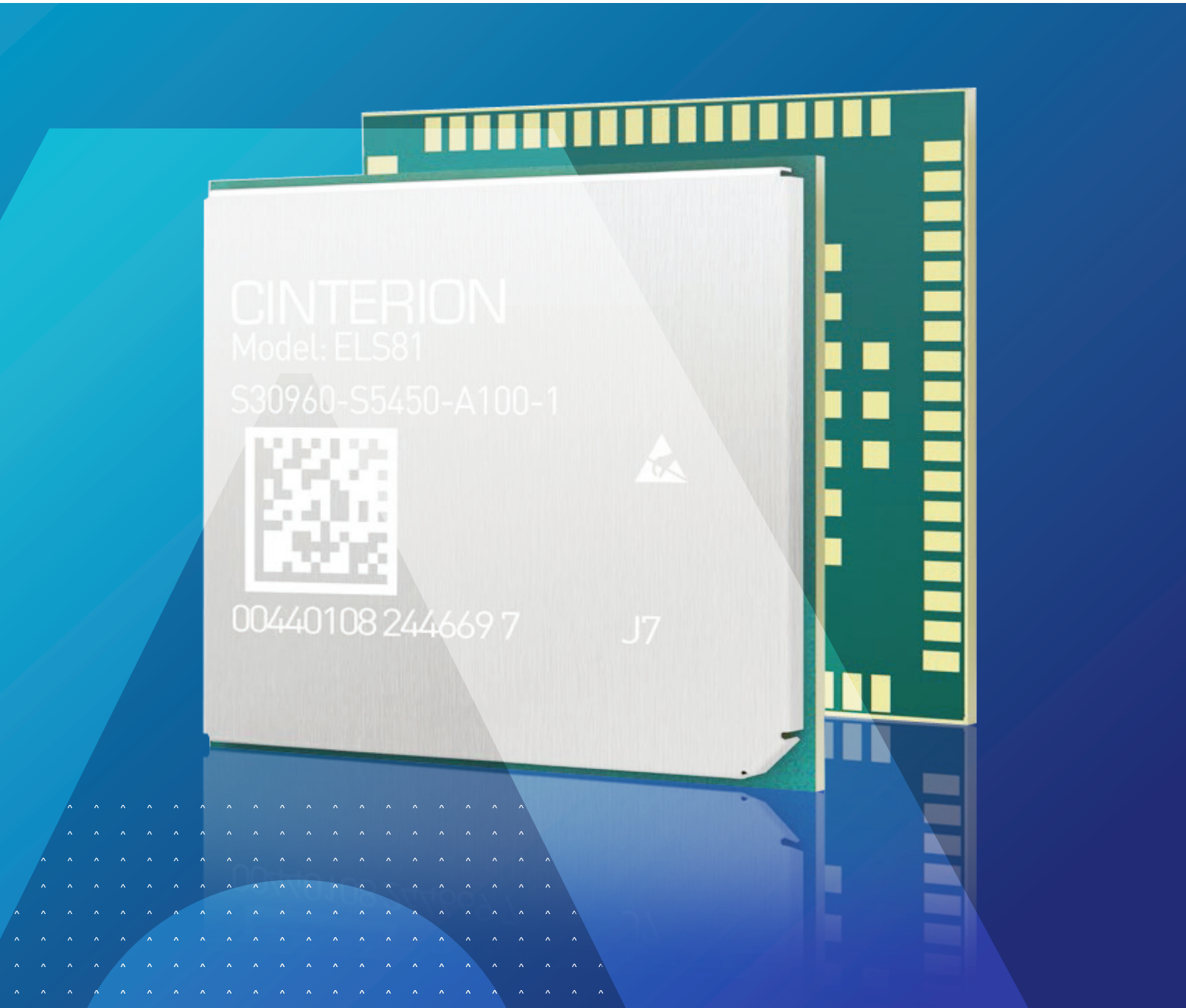
Cinterion® ELS81 Wireless Module

High Speed LTE Cat 4 Connectivity with 2G / 3G Fallback



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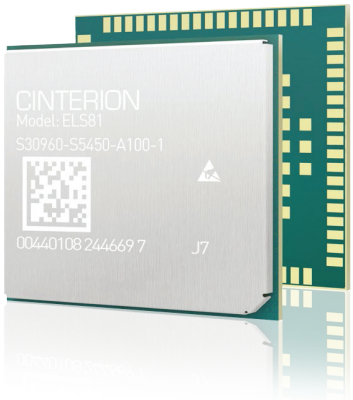


ELS81

- Multi Band LTE Cat4
- Tri Band 3G HSPA
  Dual Band 2G GSM
- USB 2.0 High Speed Compatible
- Embedded TCP/IP Stack
- Incremental Firmware Update
- JavaTM Embedded
- RLS Monitoring (Jamming Detection)
- Multi Design Capability (LGA)
- Cell ID for On-Demand Positioning
- Bearer Independent Protocol

The Thales Cinterion® ELS81 IoT wireless module marries sizzling speed and high throughput with rugged IoT durability delivering Cat 4 LTE connectivity with seamless fall back to 2G and 3G networks. Enabling data speeds of 150 Mbit/s download and 50 Mbit/s uplink, the ELS81 IoT module is ideal for data intensive solutions such as digital signage, video security monitoring, advanced retail POS terminals and kiosks and tablets.

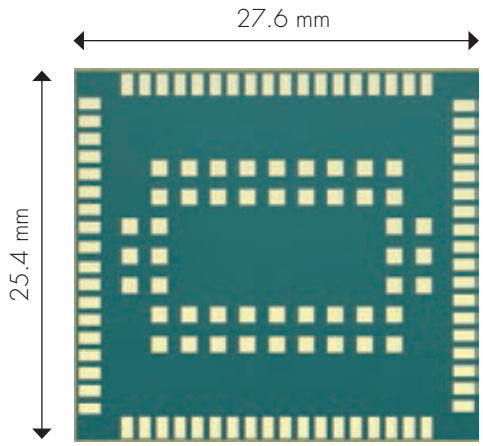
Key Features

The Cinterion ELS81 module comes in dedicated variants for European and North American Markets. The module offers a built-in TCP/IP stack which supports a range of IP services protected by an advanced security concept. Evolved from the compact and proven Cinterion Cat1 module design, the compact package is suitable for size constrained devices. Incremental firmware updates over the air extend longevity and optimize performance for the long life of IoT solutions. In addition, a powerful Java® embedded system leverages ARM11 architecture and the Java client runtime platform. Shared Java resources such as memory, existing code and software building blocks help speed time to market and reduce total cost of ownership. An extended security concept with the latest TLS/SSL engine provides secure and reliable TCP/IP connectivity when required. Sophisticated sandbox modeling and layered architectures simplify device management allowing simultaneous progress of network operator approvals and application code development for a shorter time to market.

Industrial Plus Famiy Benefits

The Cinterion ELS81 wireless module is part of Thales's Industrial family, which offers reliability, M2M-optimized features and extreme efficiency for a range of cellular standards from 2G to 3G to LTE Cat. 4 as well as Low-Power Wide-Area categories including LTE-M and NB-IoT. All Industrial modules share an identical footprint enabling seamless backward and forward migration to protect your IoT investment as technology needs change. Smart module variants with embedded systems powered by Java improve design simplicity and Total Cost of Ownership. All Cinterion modules are compatible with Thales's comprehensive suite of solutions, services and platforms that help enterprises Connect, Secure and Monetize™ IoT technology.

LTE Cat 4 Delivers Speed and High Throughput



High Throughput for Size Constrained Devices

Delivering 150 Mbit/s download and 50 Mbit/s uplink, sharing the same Cat 1 Module footprint, the ELS81 provides high throughput for size constrained IoT devices. This makes it ideal for devices that communicate large data and video including industrial tablets, routers and gateways as well as digital signage and video security monitoring.

True Industrial Grade, Mature Design

Extreme durability, long life components and a unique LGA footprint are ideal for industrial devices. The mature evolution design concept allows a single device design with any Cinterion Industrial IoT module and quick and cost effective updates as technology needs evolve.

Embedded System

A powerful Java™ embedded system offers easy and fast application development, a broad choice of tools, high code reusability, easy maintenance, a proven security concept, on-device debugging as well as multi-threading programming and program execution.

The Thales Advantage

- Trusted partner to 450+ global MNOs ensures products evolve in sync with networks and modules are pre-certified for all global mobile networks
- Core competency in MIM, SIM and eUICC technology allows simplified integration with modules and lower Total Cost of Ownership
- Expert design consulting, local market engineering support and a skilled 24/7 help desk streamline development and deployment
- Global leader in digital security solutions and platforms
- Experienced provider of software solutions for Quality of Service and product lifecycle management
- Extensive RF test capabilities and GCF/PTCRB pretests to validate readiness for solution approval process

Cinterion® ELS81 Features

General Features

- LTE (FDD) 3GPP Rel.9 compliant protocol stack, with DL-MIMO/RX-Diversity
- Regional variants
  ELS81-E: Penta Band LTE: Bands 1, 3, 8, 20, 28 (700, 800, 900, 1800, 2100 MHz), Dual-Band WCDMA900 and 2100 MHz (bands 1, 8), Dual Band GSM 900 and 1800MHz
  ELS81-US: Quad Band LTE: Bands 2, 4, 5, 12 (700, 850, 1700/2100 (AWS) and 1900 MHz), Tri Band UMTS: Bands 5, 4, 2 (WCDMA/FDD 850, 1700/2100 (AWS) and 1900 MHz)
- SIM application toolkit, letter classes b, c, e with BIP and RunAT support
- Control via standardized and extended AT commands (Hayes,TS 27.007 and 27.005)
- Embedded IP stack with IPv4/IPv6 support
- TCP/IP stack access via AT command and transparent TCP/UDP services
- Secure connection with TLS
- Internet services TCP/UDP server/client, DNS, Ping, HTTP, SMTP, FTP client
- LGA pad soldering mount, MSL4
- Supply voltage range: 3.0 - 4.5 V
- Dimension: 27.6 x 25.4 x 2.2 mm
- Weight: 4g
- Operating temperature: -40°C to +85°C
- RoHS compliant

Specifications

- FDD LTE Cat. 4 DL: max.150 Mbps, UL: max. 50Mbps
- HSDPA+ Cat.12/HSUPA Cat6 data rates
  DL: max.14.4 Mbps, UL: max. 5.76 Mbps
- EE/GPRS Class 12 DL: max. 237 kbps, UL: max. 237kbps
- SMS text and PDU mode support

Special Features

- USB Interface features a composite mode, compliant to Windows, Linux and Mac
- Full and incremental firmware update via USB, ASC and from Flash File System
- Incremental firmware update over-the-air
- RLS monitoring (jamming detection)Approvals
- Informal network scan
- Cell ID based location support
- Preinstalled agent for IoT services

Java Open Platform

- Java™ embedded
- Multi-Threading programming and Multi-Application execution
- Incremental firmware updates
- 18 MB RAM and 31 MB flash file system
- Secure data transmission with HTTPS/SSL

Interfaces (LGA Pads)

- Power supply
- Pads for RX-diversity antennas
- USB 2.0 HS interface up to 480 Mbps with CDC ACM, ECM and MBIM channels
- High speed serial modem interface ASC0 (up to 3 Mbps)
- 16 GPIO lines shared with DSR, DTR, DCD (all ASC0), ASC1 (RXD, TXD, RTS, CTS), SPI, fast shutdown,network-status-indication, PWM, pulse-counter lines
- ADC and I2C interface
- UICC and U/SIM card interface 1.8V / 3V
- Lines for module-on and reset

Drivers

- USB, MUX driver for Microsoft® Windows 7TM Windows 8TM and Microsoft® Windows 10TM
- RIL Driver for Android versions KitKat (V4.x) and Lollipop (V5.x) and Marshmallow (V6.x)
- RIL, USB driver for Microsoft® Windows EmbeddedHandheld™ >= 6.x

Approvals

- RED, GCF
- EuP, WEEE, RoHS and REACH compliant
- FCC, PTCRB, IC, UL
- AT&T certification

Thales in IoT: Driving digital transformation with the power of the IoT

Thales delivers innovative IoT technology that simplifies and speeds enterprise digital transformation. For more than 20 years, our customers – in a wide range of industries - trust our IoT solutions to seamlessly connect and secure their IoT devices, maximise field insights, and accelerate their global business success.

Thales solutions:

- **Connect** assets to wireless networks and cloud platforms
- **Manage** the long lifecycle of IoT solutions
- **Secure** devices and their data
- **Analyse** real-time data transforming it into business intelligence that improves decision making

Our 360° approach provides the essential building blocks needed to simplify design, streamline development and accelerate time-to-market.

For more information, please visit **www.thalesgroup.com/IoT** or follow **@ThalesIoT on Twitter**

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