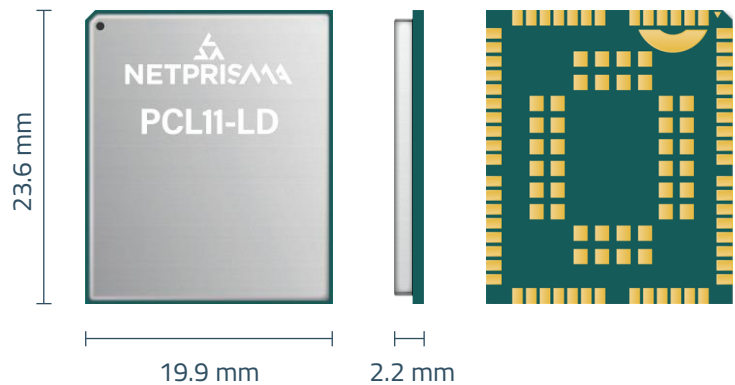


PCL11-LD

LTE Cat M1/ Cat NB2/
EGPRS module



Product features

- ▶ LTE Cat M1/Cat NB2/EGPRS module with ultra-low power consumption
- ▶ Easy migration from GSM/GPRS, UMTS/HSPA and LTE modules
- ▶ Integrated RAM/flash in the baseband chipset
- ▶ Comprehensive set of hardware-based security features
- ▶ Supports VoLTE (Cat M1 only), CS voice for GSM, eSIM, etc.
- ▶ Fast time-to-market: reference designs, evaluation tools and timely technical support minimize design-in time and development efforts
- ▶ Compact SMT form factor ideal for size-constrained applications
- ▶ Robust mounting and interfaces

PCL11-LD is a multi-mode LPWA module supporting LTE Cat M1/Cat NB2/EGPRS, with integrated GNSS. It is 3GPP Rel-14 compliant and offers maximum data rates of 588 kbps downlink and 1119 kbps uplink under LTE Cat M1. It features ultra-low power consumption by leveraging the integrated RAM/flash as well as the ARM Cortex A7 processor supporting ThreadX, achieving up to 70% reduction in PSM leakage and 85% reduction in eDRX current consumption compared to its predecessor.

PCL11-LD boasts a comprehensive set of hardware-based security features and enables trusted applications to run directly on the Cortex A7 TrustZone engine.

With a cost-effective SMT form factor of 23.6 mm × 19.9 mm × 2.2 mm and high integration level, PCL11-LD enables integrators and developers to easily design their applications and take advantage of the module's low power consumption and mechanical intensity. Its advanced LGA form factor allows fully automated manufacturing for high-volume applications.

A rich set of Internet protocols, industry-standard interfaces and abundant functions extend the suitability of the module to a wide range of M2M applications such as wireless POS, smart metering, tracking, wearable devices, etc.



Version: 1.0.0
Status: Preliminary

PCL11-LD

Mechanical data

Region/operator	Global
Dimensions (mm)	23.6 × 19.9 × 2.2

Temperature range

Operating temperature	-35 °C to +75 °C
Extended temperature	-40 °C to +85 °C

Frequency bands

LTE-FDD	Cat M1: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 26/ 27/ 28/ 66/ 85 Cat NB2: B1/ 2/ 3/ 4/ 5/ 8/ 12/ 13/ 18/ 19/ 20/ 25/ 28/ 66/ 71/ 85
EGPRS (MHz)	GSM 850/ EGSM 900/ DCS 1800/ PCS 1900
GNSS	GPS/ GLONASS/ BDS/ Galileo/ QZSS
Wi-Fi (for positioning)	-

Data transmission

LTE-M data rate (kbps)	Cat M1: Max. 588 (DL) / Max. 1119 (UL)
NB-IoT data rate (kbps)	Cat NB2: Max. 127 (DL) / Max. 158.5 (UL) Cat NB1: Max. 32 (DL) / Max. 70 (UL)
EDGE data rate (kbps)	Max. 296 (DL) / Max. 236.8 (UL)
GPRS data rate (kbps)	Max. 107 (DL) / Max. 85.6 (UL)

Interfaces

(U)SIM	× 1 (1.8 V only)
UART	× 3
USB 2.0	× 1
PCM	× 1 (for VoLTE only)
I2C	× 1 (for VoLTE only)
Antenna	× 2
GPIO	× 9
GRFC	× 2

Voice

Voice	VoLTE for Cat M1/ CS Voice for GSM
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SMS

Short Message Service	Point-to-point MO/MT SMS cell broadcast Text and PDU mode
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Enhanced features

DFOTA	Supported
SoftSIM	Under development
nuSIM	Under development
IoT platform access	AWS/ Azure

Software features

Protocols	PPP/ TCP/ UDP/ SSL/ TLS/ FTP(S)/ HTTP(S)/ NITZ/ PING/ MQTT/ LwM2M/ CoAP/ IPv6
USB serial driver	Windows 7/8/8.1/10/11, Linux 2.6–5.15, Android 4.x–12.x
GNSS/RIL driver	Android 4.x–12.x

Certifications

Carrier	Europe: Vodafone/ Deutsche Telekom America: Verizon/ AT&T/ T-Mobile Japan: NTT DOCOMO/ KDDI Australia: Telstra Canada: Rogers
Regulatory	Global: GCF Europe: CE North America: PTCRB America: FCC The UK: UKCA Canada: IC Brazil: Anatel South Korea: KC Japan: JATE/ TELEC Australia/New Zealand: RCM
Others	RoHS

Electrical features

Supply voltage ¹ (V)	3.3–4.3, typ. 3.8
Max output power (dBm)	Power Class 3, 23 @ LTE Bands
Power consumption @ PSM (µA)	6
Power consumption @ LTE Cat M1 (mA)	Sleep mode: 1.56 @ DRX = 1.28 s 0.72 @ e-IDRX = 81.92 s Idle mode: 17.3 @ DRX = 1.28 s 16.6 @ e-I-DRX = 81.92 s Active mode: 226 @ 23 dBm, GNSS off
Power consumption @ LTE Cat NB1 (mA)	Sleep mode: 1.43 @ DRX = 1.28 s 0.68 @ e-IDRX = 81.92 s Idle mode: 13.5 @ DRX = 1.28 s 13.1 @ e-I-DRX = 81.92 s Active mode: 190 @ 23 dBm, GNSS off

¹: Please refer to the hardware design manual to see more specific requirements for the power supply voltage.