



NXP UCODE G2iL series

UCODE G2iL series provides unparalleled performance and features for RFID systems

Leading-edge read range enables simple, small antenna designs while unique features make RFID more reliable, more flexible, and easier to work with.

Key features

- ▶ High chip sensitivity: $P_{min} = -18$ dBm
- ▶ Unique set of special features
 - Product status flag, Read Protect, Real Read Range Reduction, Tag Tamper Alarm, Digital Switch, Digital Transfer, Battery-assist mode
- ▶ Extended EPC number range: 128 bit
- ▶ Unalterable extended TID range (64 bit) with 32-bit serial number included
- ▶ Worldwide usage: EPCglobal 1.2.0 compliant
- ▶ Available as sawn wafer, SOT886, or Flip-Chip Strap

Key benefits

- ▶ Longer read ranges, smaller inlays
- ▶ Better theft deterrence
- ▶ Greater consumer privacy
- ▶ Easier electronic device configuration

Key applications

- ▶ Retail fashion, apparel and footwear
- ▶ Fast moving consumer goods (FMCG)
- ▶ Electronic device market

- ▶ Anti-counterfeiting, brand protection
- ▶ Asset tracking

NXP's UCODE G2iL series transponder ICs offer leading-edge read range and support industry-first features such as a Tag Tamper Alarm, Data Transfer, Digital Switch, and advanced privacy-protection modes.

Very high chip sensitivity (-18 dBm) enables longer read ranges with simple, single-port antenna designs. When connected to a power supply, the READ as well as the WRITE range can be boosted to a sensitivity of -27 dBm.

In fashion and retail, these ICs improve read rates and provide for theft deterrence. In the electronic device market, they're ideally suited for device configuration, activation, production control, and PCB tagging. In authentication applications, they protect brands and guard against counterfeiting. They can also be used to tag containers, electronic vehicles, airline baggage, and more.



UCODE G2iL features

The G2iL supports two special features.

Product status flag (PSF) – indicates whether a product has undergone quality checks or passed certain process check points. It can also be used as an electronic article surveillance (EAS) alarm, ensuring fast and reliable detection and identification of stolen items.

Read Protect – limits access to product information (such as EPC or TID), to authorized personnel only and protects confidential memory content. Both features are backward compatible to the UCODE G2X custom commands.

UCODE G2iL+ features

In addition to the PSF and Read Protect, G2iL+ offers several special features:

Tag Tamper Alarm – indicates if the tag has been ripped, torn, removed from its original position or otherwise manipulated. It can identify if a label has been cut off a garment, serving as a simple seal on hang tags or for items such as containers or jewelry.

Digital Switch – also used to prevent theft, lets the electronic device be activated at the point of sale, once it's been purchased, and can be used to lock or disable the device throughout the supply chain.

Data Transfer – loads firmware into a microcontroller via the RFID air interface. It enables contactless product configuration at any point in the supply chain or during the product lifetime as it eliminates the need for galvanic connectors on the PCB. These two commands also let device manufacturers enable or disable specific features for different device models.

Real Read Range reduction (4R) – reduces the read range to a few inches or centimeters.

Battery assist mode – when connected to a power supply, the write and read performance is boosted to a sensitivity level of -27 dBm, providing extra long read ranges and improving read rates in harsh environments.

All the special features of the UCODE G2iL and G2iL+ series can be set or reset repeatedly by using 32-bit password protection.

Design support

NXP's design support works at every level - from the label to the end application. It includes reference antenna designs and customization, as well as optimization of the RFID system. For added support, the experts in our Application and System Center (ASC) can evaluate and optimize an existing design or assist with new development projects. In addition, our Customer Application Support (CAS) group offers dedicated customer training, front-line design support, and consultancy services.

Selection guide

Product	UCODE G2iL	UCODE G2iL+
Sensitivity	-18 dBm	-18 dBm
Custom commands	Product status flag (PSF), Read Protect	Product status flag (PSF), Read Protect, Real Read Range Reduction (4R); Tag Tamper Alarm, Digital Switch, Data Transfer, Battery-assist mode (-27 dBm R/W sensitivity)
EPC	128 bit	128 bit
TID	64 bit (including 32-bit serial number)	64 bit (including 32-bit serial number)
Password	32 bit access, 32-bit kill	32-bit access, 32-bit kill
Standard	EPCglobal 1.2.0	EPCglobal 1.2.0
Frequency range	840 to 960 MHz	840 to 960 MHz

Ordering information

Item	Description	UCODE G2iL	UCODE G2iL+
Sawn wafer	8-inch wafer, 75 µm thick, 15 µm scribe lines	9352 905 61003	9352 905 62003
SOT886	Small outline package (1 x 1.45 x 0.5 mm)	9352 910 37115	9352 910 38115
FCS2 Al	JEDEC-compliant Flip-Chip Strap (FCS) on polymer substrate with aluminum landing pads	9352 910 44118	Not yet available
FCS2 Cu	JEDEC-compliant Flip-Chip Strap (FCS) on polymer substrate with copper landing pads	9352 910 43118	Not yet available



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