

## MTI RFID Reader SiP (System in Package) MS310/510/710



Microelectronics Technology Inc. (MTI), established in 1983, is the first RF and Microwave company in Taiwan. For almost 40 years, MTI has been internationally recognized as a global leader in the design and high-volume manufacturing of RF and Microwave products. MTI has over 1,000 employees with locations in Taiwan, China, United States and Denmark. In 2005, MTI was recognized as the first Asian company to receive formal EPC Gen2 UHF RFID Reader certification from GS1.

MTI RFID Reader SiP is specially designed to fulfill the applications wherever need small sized RAIN\* RFID reader chip, such as portable RFID devices, printers, or any equipment requiring embedded RAIN RFID solution. Not only suitable for those applications, it can also fit into the design of traditional handheld and fixed readers since it still keeps the flexibility to support variable design approaches. MTI RFID Reader SiP is the world's smallest integrated reader solution with best-in-class performance powered by an embedded Impinj E family reader chip and MTI optimized RF front-end circuit. With its optimized RF performance it can significantly ease the effort of hardware design and shorten the cycle of time-to-market.

\*RAIN is an alternative name of UHF RFID introduced by RAIN Alliance, <https://rainrfid.org/>

## Main Features

### The most compact design in the market

11mm x 11mm x 1.4mm SiP provides up to +27dBm output power

### Optimized embedded RF front-end

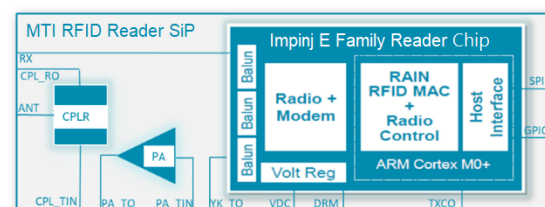
Optimised RF front-end circuit, based on MTI 40 years experience on RF design, includes PA, coupler and PLL

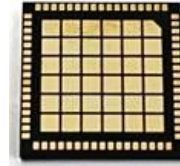
### Empowered by Impinj market leading solution

Industry leading performance with Impinj E family reader chip

### Less design effort

Highly integrated sub-system in package can significantly reduce the required design effort enabling faster time-to-market





## MTI RFID Reader SiP Product Specifications

<b>Air Interface</b>	EPCglobal UHF Class 1 Gen 2 / ISO 18000-63; DSB and PR-ASK transmit modulation modes; Dense Reader Mode (DRM); 860 – 930 MHz, Worldwide Operation; Mono-Static or Bi-Static Modes
<b>Transmitter Output Power</b>	Integrated PA configurable up to +27 dBm; External power amplifier supported up to +33 dBm
<b>Receiver Performance</b>	FCC DRM with +10 dBm SJ; Exclusive SJC technology ensures read reliability with high antenna reflections
MS310/MS510/MS710:Read Rate Sensitivity	+300/ +700/ +1000 tags/sec -75/ -82/ -88 dBm
<b>Modem</b>	Industry-leading modem architecture supporting Dynamic RF modes
<b>MCU</b>	ARM Cortex-M0+, 96 MHz, 256 kB Flash, 32 kB SRAM
<b>Host Interface</b>	SPI up to 4 MHz
<b>Power</b>	2.7W@25dBm, 3.6W@27dBm (3.3VDC)
<b>Operating Temperature Range</b>	Industrial: -40 to 85 °C
<b>Package</b>	68-pin, 11mm x 11mm x 1.4 mm LGA

### Reference information for possible turnkey reader/module design based on MTI RFID Reader SiP

	Using MTI SiP internal +27 dBm PA	Using MTI SiP with external PA up to +33 dBm
<b>External components required for turnkey module</b>	TCXO, SAW BPF, Voltage Regulator, R/L/C	PA, TCXO, SAW BPF, Voltage Regulator, R/L/C Optional: Switched BPF Filter Bank, Switched DRM Filter Bank
<b>Estimated turnkey module size (layout dependent)</b>	~ 20 mm X 20 mm	~ 30 x 30 mm

**Development Kit available now ...**