

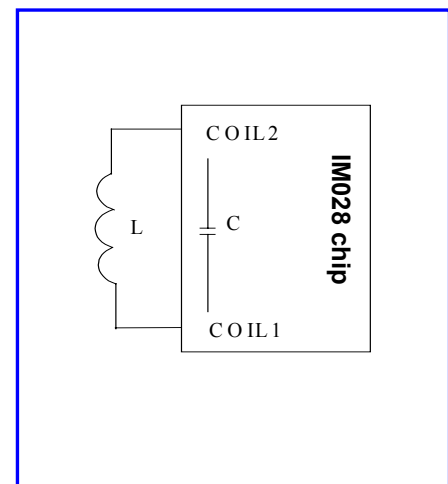
PRODUCT BRIEF

Typical Applications

- Transponders with additional cap
- Transponder without additional cap
- Smart labels
- ISO and Clamshell cards

Features

- Operating frequency: 13.56MHz.
- Read-only
- User memory: 64 bits
- Modulation: APM
- Wide dynamic range due to on-chip buffer capacitance and voltage limiter on chip
- Full wave rectifier on chip
- Low power consumption
- Optional on-chip resonant capacitor to obtain a resonant system with external adapted coil only
- Delivery form: 6" wafers



Product Description

The IM028 is a fully integrated 13.56KHz RFID transponder circuit. It is specially designed for being the space and cost efficient kernel of a low-cost read-only tag module. Thanks to its on-chip

integrated capacitor, IM028 can be mounted with additional coil only, in order to complete the resonant circuit necessary for inductive 13.56MHz reading.

General functional description

The chip is embeddable into a contactless ID card and designed for the 13.56 MHz frequency operation.

Antenna coil features: C ~ 75 pF
 L ~ 2 μ H
 3-4 windings

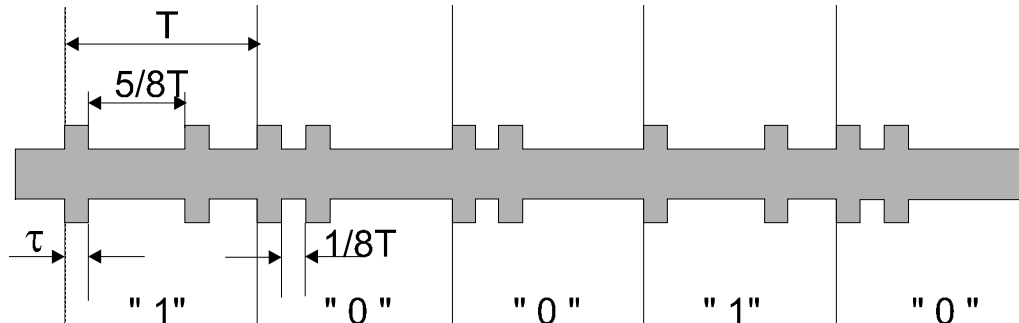
Code Message Format:

Cycling sequence of 79 bits:

| | | |
|---------|---|--|
| 15 bits | - | free area |
| 32 bits | - | header |
| 24 bits | - | unique ID card code |
| 4 bits | - | checksum (formed by XORing of 24 bits) |
| 4 bits | - | stop bits |

Modulation: APM

Code fragment:

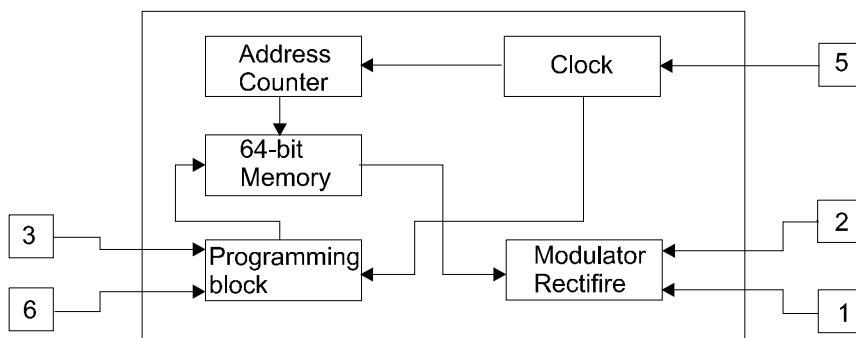


The bit period is determined by the built-in oscillator. If the phase-to-phase distance of the modulated signal is $\leq 1/8 T$, this corresponds to the logical "0". If it is $\leq 5/8T$, this corresponds to logical "1".

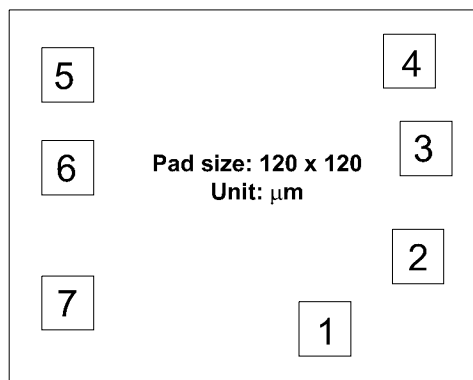
$$T = 110 \div 160 \mu\text{s}$$

$$\tau = 1/8 T = 14 \div 20 \mu\text{s}$$

Block Diagram:



Pad Diagram:



Pad center co-ordinates against the "0" mark:

| | X | Y |
|---|-------|-------|
| 1 | 2.158 | 0.140 |
| 2 | 2.475 | 0.430 |
| 3 | 2.358 | 0.642 |
| 4 | 2.358 | 0.889 |
| 5 | 0.184 | 0.802 |
| 6 | 0.184 | 0.332 |
| 7 | 0.184 | 0.075 |

Pin Description:

| | | |
|---|---|----------------------------------|
| 1 | - | Coil |
| 2 | - | Coil |
| 3 | - | Data input (in Programming mode) |
| 4 | - | Power supply (+Vcc) |
| 5 | - | Clock input |
| 6 | - | Programming input |
| 7 | - | GND |

Code programming is performed by blowing fuses in respective memory locations when a logic "1" is applied to the Programming input.