★★★ ＜第38回知的財産翻訳検定試験【第20回和文英訳】＞ ★★★
≪１級課題 –電気・電子工学≫

【問 1】
[0008]

Here, in a case where a blockchain for virtual currency is applied to evidence of agreement on a contract, the problem lies in how to prove that the contents of the contract have been agreed upon between two or more parties. As described above, the electronic signature system adopted in the blockchain for the virtual currency is based solely on the electronic signature of the remitter, and does not require the electronic signature of the remittee. Meanwhile, in a case where a contract is made between two or more parties, the contract cannot be concluded by unilateral issuance of the contract, and agreement of all the parties concerned, who are the parties to the contract, is always required. However, since only the electronic signature of a sender is included in a single transaction forming a blockchain, evidence of agreement on a contract by a recipient will not remain in the transaction.
[0009]

As a simple solution to the problem described above, for example, it is conceivable to include the electronic signatures of all parties concerned in a single transaction. A mechanism called multi-signature is adopted for virtual currency, which allows for the creation of an address where a transaction is not approved without a certain number or more of electronic signatures. However, a procedure for including multiple electronic signatures in a single transaction becomes complicated in terms of, for example, which electronic signatures are required in advance, how a pre-approval transaction is shared between the parties concerned, and where multiple private keys are collected for signing.

【問 2】
[0021]

According to a planar component arrangement such as in a surface mount product, the wiring between components tends to be redundant. In contrast, according to an RFID tag including a multilayer printed wiring board as in the present invention, it is possible to shorten the wiring length

by utilizing a space between the layers of the multilayer board, and it is therefore possible to reduce power loss due to wiring resistance. It is thus possible to reduce the size of the RFID tag 10 and to maintain the communication performance of the RFID tag 10.

[0022]

Here, the data communication principle of the RFID tag 10 is described.

In order to read/write the identification data of the RFID tag 10, an RFID reader/writer device (not illustrated) transmits radio waves to the RFID tag 10. The radio waves are reflected by the metal body 30 to which the RFID tag 10 is attached, so that interference occurs. At this time, surface waves are generated on the surface of the metal body 30 with which the radio waves have collided. The surface waves are then collected by the first antenna circuit 16a due to dielectric action. The surface waves collected by the first antenna circuit 16a are sent through through-holes 18 to the second antenna circuit 16b and a third antenna circuit 16c, where the radio waves of a specific frequency are resonated and used. The resonated and amplified radio waves of the specific frequency are sent to the RFID tag chip 14. When receiving the radio waves, the RFID tag chip 14 sends the radio waves that carries data stored in the RFID tag chip 14, back to the RFID reader/writer device via the second antenna circuit 16b and the third antenna circuit 16c. The RFID reader/writer then receives the radio waves sent back. The data communication is thus completed.

That is, the first antenna circuit 16a is an antenna circuit for capturing the surface waves generated on the metal body 30, and the second antenna circuit 16b and the third antenna circuit 16c are antenna circuits for resonating the radio waves collected by the first antenna circuit 16a at the specific frequency to send the radio waves to the RFID tag chip 14, and for transmitting the radio waves carrying the data in the RFID tag chip.

[0023]

In addition, since the RFID tag 10 utilizes the metal body 30 as an antenna circuit that collects the radio waves transmitted from the RFID reader/writer device, communication gain is higher than that in a case where the object to which the RFID tag 10 is attached is a non-metal body.

【問 3】

[Claim 1]

A semiconductor device comprising:

a semiconductor substrate having a high impurity concentration;

a parallel pn layer provided on a surface of the semiconductor substrate, the parallel pn layer including first conductivity type semiconductor regions and second conductivity type semiconductor regions that are arranged alternately;

a base region of a second conductivity type provided on a surface layer of each of the second conductivity type semiconductor regions;

a source region of a first conductivity type provided on a surface layer of the base region;

a gate electrode provided on a surface of the parallel pn layer via a gate oxide film; and

a source electrode electrically connected to the source region and the base region and provided apart from the gate electrode,

wherein the semiconductor device comprises an insulating film selectively provided between the surface of the parallel pn layer and the gate electrode, the insulating film being thicker than the gate oxide film,

wherein a first area in which the gate electrode covers a neck portion except the base region and the source region on the surface of the parallel pn layer and a second area in which the gate electrode covers the insulating film in the first area satisfy a relation of $0.1 \leq$ second area/first area ≤ 0.4,

wherein, in a direction perpendicular to an interface between each first conductivity type semiconductor region and the corresponding second conductivity type semiconductor region, a plurality of islands of the insulating film are respectively provided on surfaces of the neck portions each located between the first conductivity type semiconductor regions adjacent to each other, and

wherein the insulating films that are different from each other are provided so as to respectively cover a plurality of electric field concentration regions each generated between the adjacent first conductivity type semiconductor regions.