SUPER 35 MM MICROMODULES

Super 35 mm Micromodules for Smartcards and Memory Cards

■ Micromodules were developed specifically for embedding in Smartcards and Memory Cards

■ The Micromodule provides:
  – Support for the chip
  – Electrical contacts
  – Suitable embedding interface for gluing the module to the plastic package

■ Physical dimensions and contact positions compliant to the ISO 7816 standard

■ Micromodules delivered as a continuous Super 35 mm tape. (This differs from the standard 35 mm tape in the spacing distance between the indexing holes.)

DESCRIPTION

Smartcards and Memory Cards consist of two main parts: the plastic card, and the embedded Micromodule (which, in turn, carries the silicon chip).

The plastic card is made of PVC, ABS or similar material, and can be over-printed with graphics, text, and magnetic strips. The Micromodule is embedded in a cavity in the plastic card.

The Micromodules are mounted on Super 35mm metalised epoxy tape, and are delivered on reels. These contain all of the chips from a number of wafers, including those chips that were found to be non-functioning during testing. Traceability is ensured by a label fixed on the reel.

The assembly flows for the various module types are summarised in Table 1. The range of products
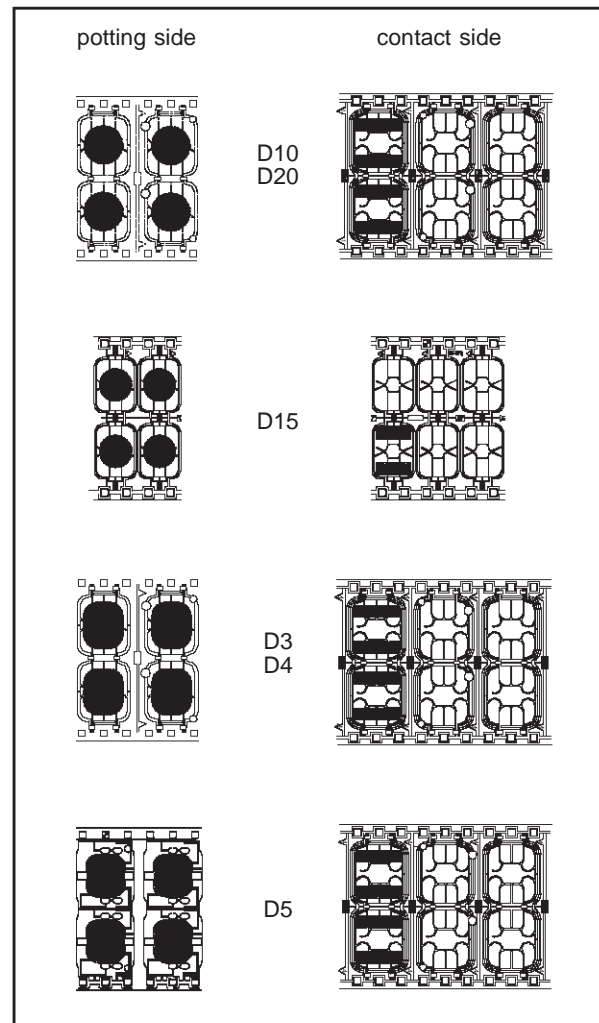

potting side   contact side

D10 D20

D15

D3 D4

D5

Table 1. Manufacturing Flow

	D10	D15	D20	D22	D3	D4	D5
1	Dice sawing			Dice sawing			Dice sawing
2	Dice attach			Dice attach			Dice attach
3	Wire bonding			Wire bonding			Wire bonding
4	Potting			Ring deposition			Ring deposition
5	Milling			Potting			Moulding

Table 2. Memory Card and Smartcard Integrated Circuits

Module	Please see the data briefing sheets of these products, especially those shown in bold, for example illustrations of these micromodules
D10	ST1200, ST1305B, ST1331, ST1333, ST1335, ST1336
D15	**ST14C02**, ST1305B, ST1335, ST1336
D20	**ST14C02, M14C04, M14C16, M14C32**
D22	**M14C64, M14128, M14256**
D3	ST16ST2G, ST16600, ST16601, ST16SF41, ST16SF42
D4	ST16SF44, ST16SF48, ST16SF4F, ST16CF54B, ST19SF08, ST19SF16, ST19SF32, ST19SF64, ST19CF68, ST19KF16
D5	ST16R820, ST16RF42, ST16RF58

and types of Micromodule are summarised in Table 2. For large volumes, ST is able to offer customised module tape.

DELIVERY

The modules are delivered in a continuous tape, wound on to a reel. The typical quantity is 10,000 modules per reel, with priority given to lot integrity on the reel. The maximum quantity is 15,000 per reel.

Parts which are faulty (mechanically or electrically defective) are identified by punch holes.

Tape joins (tape splicing) are never more than 10 per 10 metre length.

At least 2.1 m of leader, and 2.1 m of trailer is included on each reel. Each is made of PVC Super 35 mm tape, without metalisation, and is opaque to infrared and white light.

A "failure" marking of reject holes is included at the beginning and end of the tape of a minimum of 5 consecutive module pitches (double positions).

Modules should be stored within the temperature range -40 °C to + 85 °C, for no more than 1 year.

Each reel is packed in an antistatic bag, along with a desiccant bag, and a humidity indicator card. This card indicates the level of humidity as follows:

30 - Blue: protection assured

40 - Pink: renew the desiccant bag

50 - Pink: protection no longer ensured

Three self adhesive plastic identification labels are attached: one to the reel, one to the antistatic bag, and one to the reel box. Each label carries the following information:

– PRODUCT: sales type
– LOT NUMBER: reel number
– POS: total number of positions
– GOOD: number of good positions
– FAIL: number of fail positions
– DATE: date of sealing

In addition, the antistatic bag and the delivery box carry a self adhesive plastic "ESD" warning label, 85 x 38 mm in size, indicating "Electrostatic sensitive devices".

Each reel is packed in a reel box, made of recycled cardboard. The size of the reel box depends on its origin. Up to 3 reel boxes are packed in a delivery box, which is also made of recycled cardboard.

A delivery note is provided, listing the following information:

– Date of sealing
– Reel numbers
– Total number of positions, with the details of positions per reel
– Order number and customer name
– Sales type
– Tape type