

DATA SHEET

ADDENDUM

mifare[®]

Standard 4Kbyte Card IC

MF1 IC S70 01

Specification “sawn wafer on UV-tape”

Product Specification

August 2004

Revision 3.0

PUBLIC

Sawn wafer on UV-tape**MF1 IC S70 01**

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Sawn wafer on UV-tape

MF1 IC S70 01

1 SCOPE

The MF1 IC S70 01 is a contactless Smart Card IC designed for card IC coils following the MIFARE[®] Card IC Coil Design Guide and is qualified to work properly in Philips' reader environment, which is built according to Philips' specification.

This specification describes electrical, physical and dimensional properties of wafers.

2 REFERENCE DOCUMENTS

2.1 Philips Documents

- Data Sheet "General Wafer Specification for 8" Wafers on UV-tape"
- Data Sheet "Standard 4Kbyte Card IC MF1 IC S70 Functional Specification"
- Product Qualification Package "Standard Card IC MF1 IC S70 01"
- Application Note "MIFARE[®] Card IC Coil Design Guide"

3 MECHANICAL SPECIFICATION

3.1 Wafer

- Diameter: 8"
- Thickness: 150 $\mu\text{m} \pm 15 \mu\text{m}$
- PGDW: 15601
- PCM location: reticle area

3.2 Wafer Backside

- Material: Si
- Treatment: ground and etched
- Roughness: R_a max. 0.5 μm
 R_t max. 5 μm

3.3 Chip Dimensions

- Chip size: 1.42 x 1.34 mm
- Scribe lines: x-line: 86.4 μm
y-line: 86.4 μm

3.4 Passivation

- Type: sandwich structure
- Material: PSG / Nitride(on top)
- Thickness: 500 nm / 600 nm

3.5 Bondpads

- Pad size:
 - LA, LB¹ 118 x 118 μm
 - TESTIO² 95 x 110 μm
 - VSS² 108 x 108 μm
- Material: Al-Cu
- Thickness: 0.85 μm

4 ORDERING INFORMATION

4.1 Die on sawn wafer

- Order Code: MF1ICS7001W/V9D
- 12NC: 9352 774 53005

Note: Substrate is connected to VSS.

¹ Passivation window: 90 x 90 μm

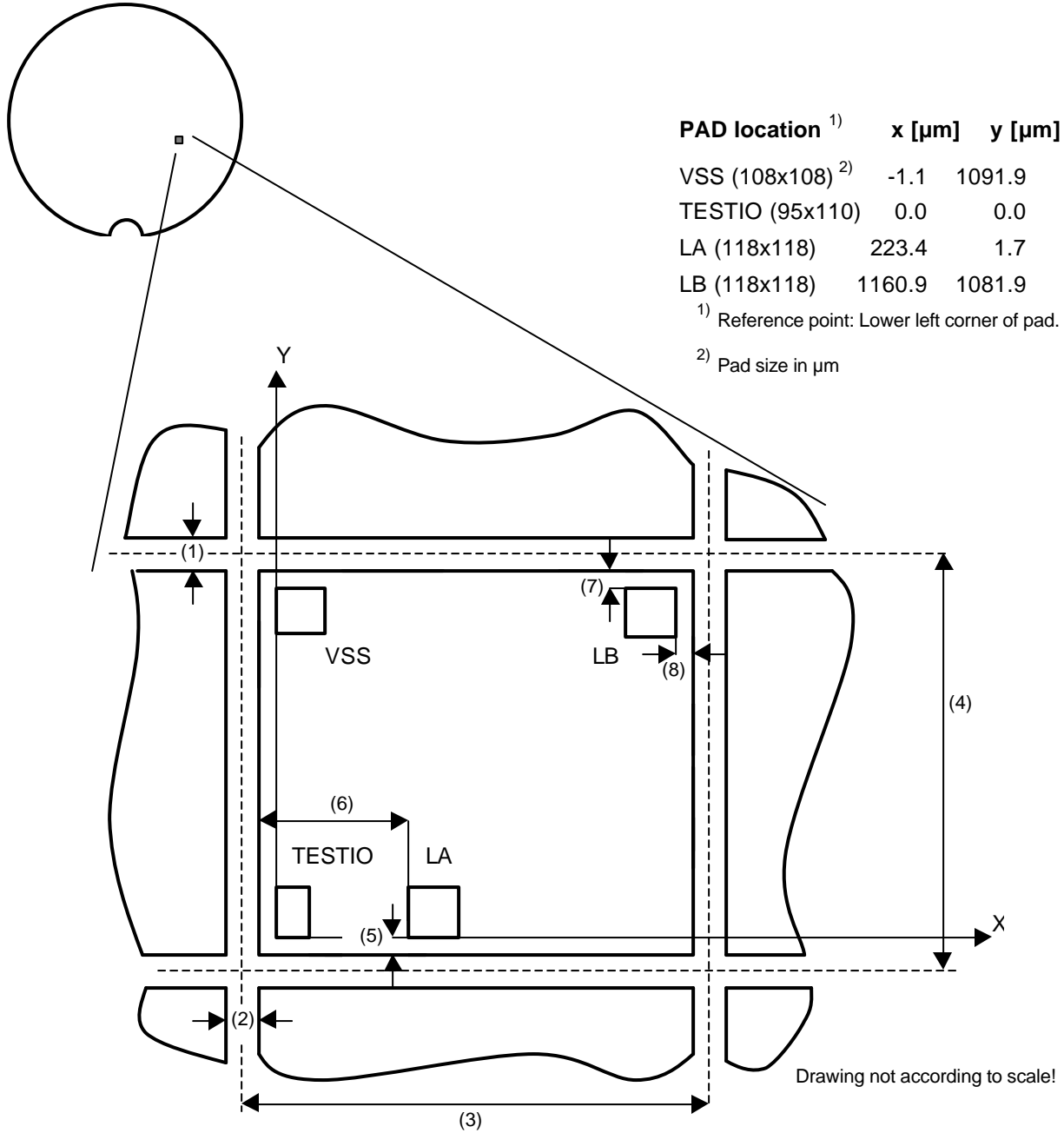
² Pads VSS and TESTIO are disconnected when wafer is sawn.

Sawn wafer on UV-tape

MF1 IC S70 01

5 CHIP ORIENTATION AND BONDPAD LOCATIONS

Widths and lengths are measured from metal to metal (top layer).



- (1) X-Scribeline width: 86.4 μm
- (2) Y-Scribeline width: 86.4 μm
- (3) Chip step, x-length: 1.42 mm
- (4) Chip step, y-length: 1.34 mm
- (5) LA pad edge to chip edge, y-length: 28.6 μm
- (6) LA pad edge to chip edge, x-length: 251.8 μm
- (7) LB pad edge to chip edge, y-length: 26.8 μm
- (8) LB pad edge to chip edge, x-length: 26.2 μm

Figure 1

Sawn wafer on UV-tape**MF1 IC S70 01****6 ELECTRICAL SPECIFICATIONS****6.1 Absolute Maximum Ratings**

SYMBOL	PARAMETER	MIN	MAX	UNIT
I_{IN}	input current	-	30	mA
P_{TOT}	total power dissipation	-	200	mW
T_{STOR}	storage temperature	-55	125	°C
T_{OP}	operating temperature	-25	70	°C
V_{ESD}	electrostatic discharge voltage ³ LA-LB	2	-	kV
I_{LU}	latchup current	±100		mA

6.2 AC Characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
f_{IN}	input frequency		-	13.56	-	MHz
C_{IN}	Input capacitance (LCR meter HP4258)	22°C, Cp-D, 13.56 MHz, 2V	14.4	16.1	17.4	pF
t_W	EEPROM write time		-	2.9	-	ms
t_{RET}	EEPROM data retention		10			years
N_{WE}	EEPROM write endurance		10^5			cycles

³ MIL Standard 883-C method 3015; Human body model: C = 100 pF, R = 1.5 kΩ

Sawn wafer on UV-tape**MF1 IC S70 01****7 DEFINITIONS**

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics section of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

8 LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so on their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

9 REVISION HISTORY**Table 1** Wafer Specification MF1 IC S70 01 Revision History

REVISION	DATE	CPCN	PAGE	DESCRIPTION
3.0	August 2004			Initial version.

Philips Semiconductors - a worldwide company

Contact Information

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