

Inkjet Head Report



Y O L E D É V E L O P P E M E N T

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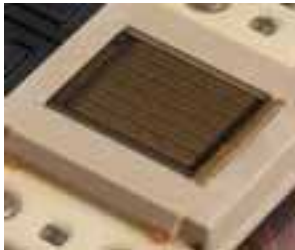
Introduction

What is Inkjet Head device?

- **Definition of Inkjet head:**
 - The element of a printer that applies ink onto a substrate.
 - Inkjet heads are mostly MEMS-based devices today.
- **Inkjet head is the device integrated in printing or dispensing systems.**



Disposable inkjet head



HP non-disposable head

- **Several type of technologies compete to eject ink from the head: Continuous, drop-on-demand (piezo or thermal ejecting techniques).**
- **2 types of inkjet heads are manufactured:**
 - **Disposable:** Inkjet head is bonded on ink cartridges
 - **Non-disposable:** inkjet head and ink cartridges are separated devices.

Introduction

Inkjet Head and applications

- **Main markets for inkjet heads are: about 95% for consumer and about 5% for industrial.**
 - Consumer market representing 95% of global sales for inkjet heads.
 - Industrial and large format market, representing about 5 other percent.



Inkjet printer

- **Emerging applications:**
 - Retail kiosk systems
 - Inkjet in large companies
 - Printed electronics
 - Biomedical

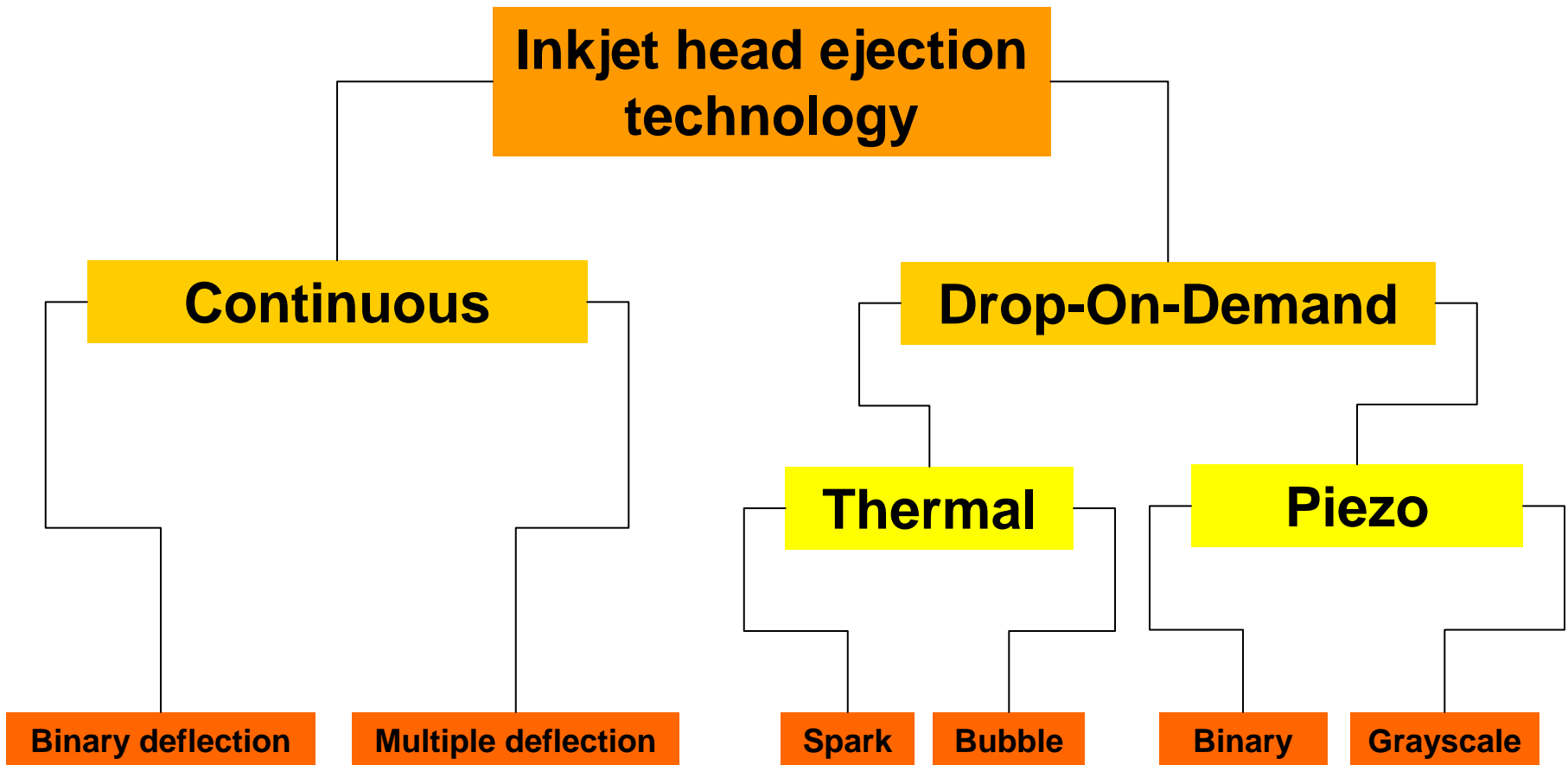


Retail kiosk systems

- **Market drivers are mainly the need for digital imaging. Digital imaging (from cameras, mobile phones) will increase dramatically the need for high quality, performance and reliable inkjet head.**

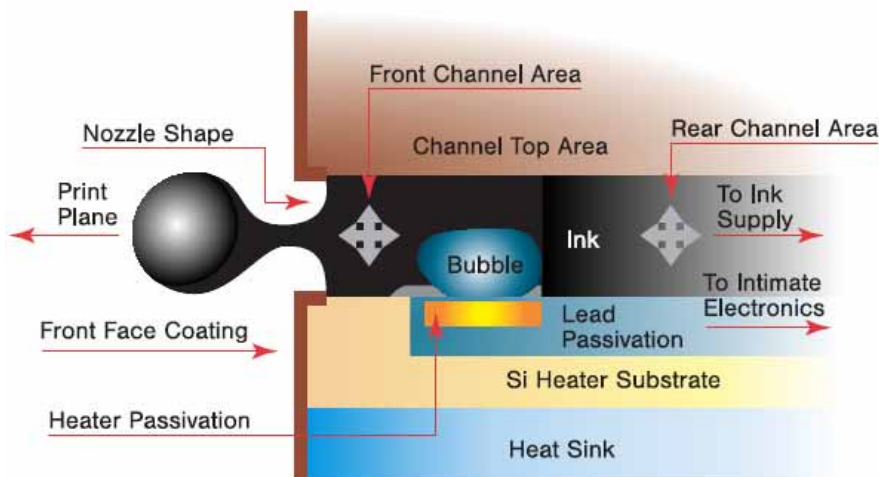
Inkjet head ejection

- Today, different inkjet heads are manufactured with specific technologies to eject ink on the substrate.

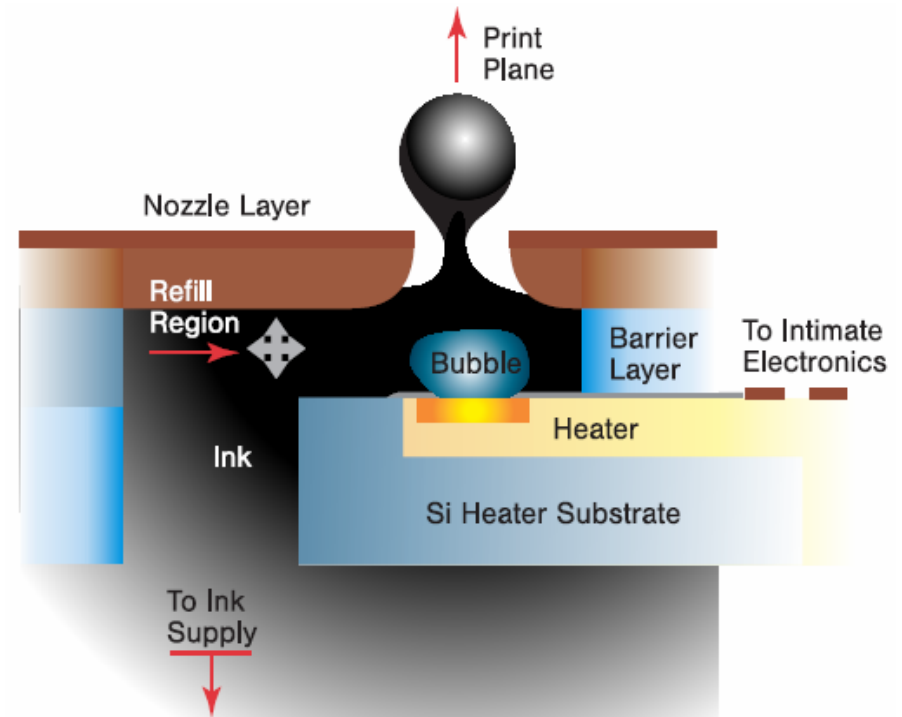


Structure of a Thermal inkjet head

Thermal head eject droplets on the Top of the printhead (roofshooter) or on the side (Edgeshooter)



Schematic Edgeshooter Thermal head



Schematic roofshooter Thermal head

Structure of an IJ head (ctned): use of DRIE

DRIE

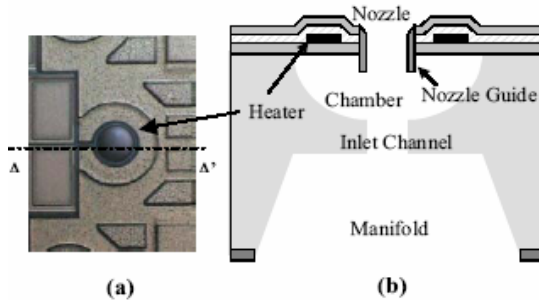
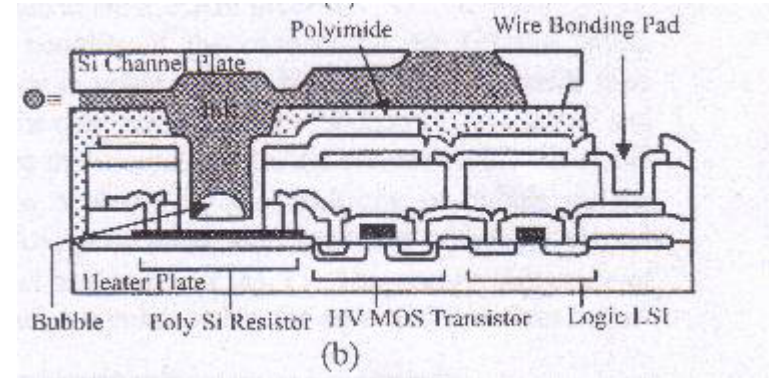


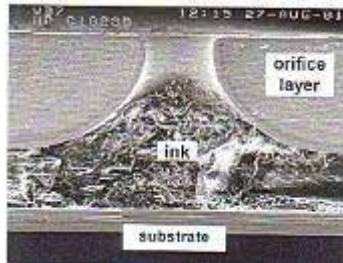
Figure 1. Schematic view of DomeJet (a) Top view of SEM photograph (b) Schematic view of section A-A'

**Deep Etching of Inlet Channel
(Roof nozzle, single wafer,
Samsung source)**

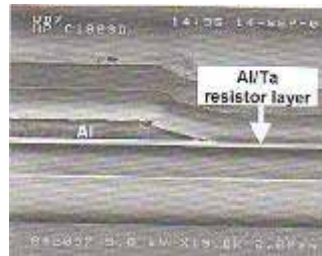


**Deep Etching of Edge
Nozzle (Xerox source)**

**Non
DRIE**

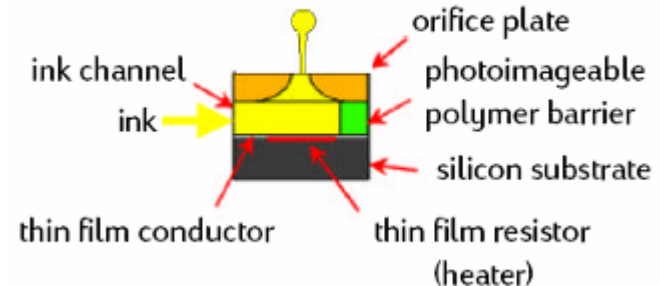


Inkjet orifice (HP source)

















Film heaters (HP source)

IJ heads on Si substrate (HP source)

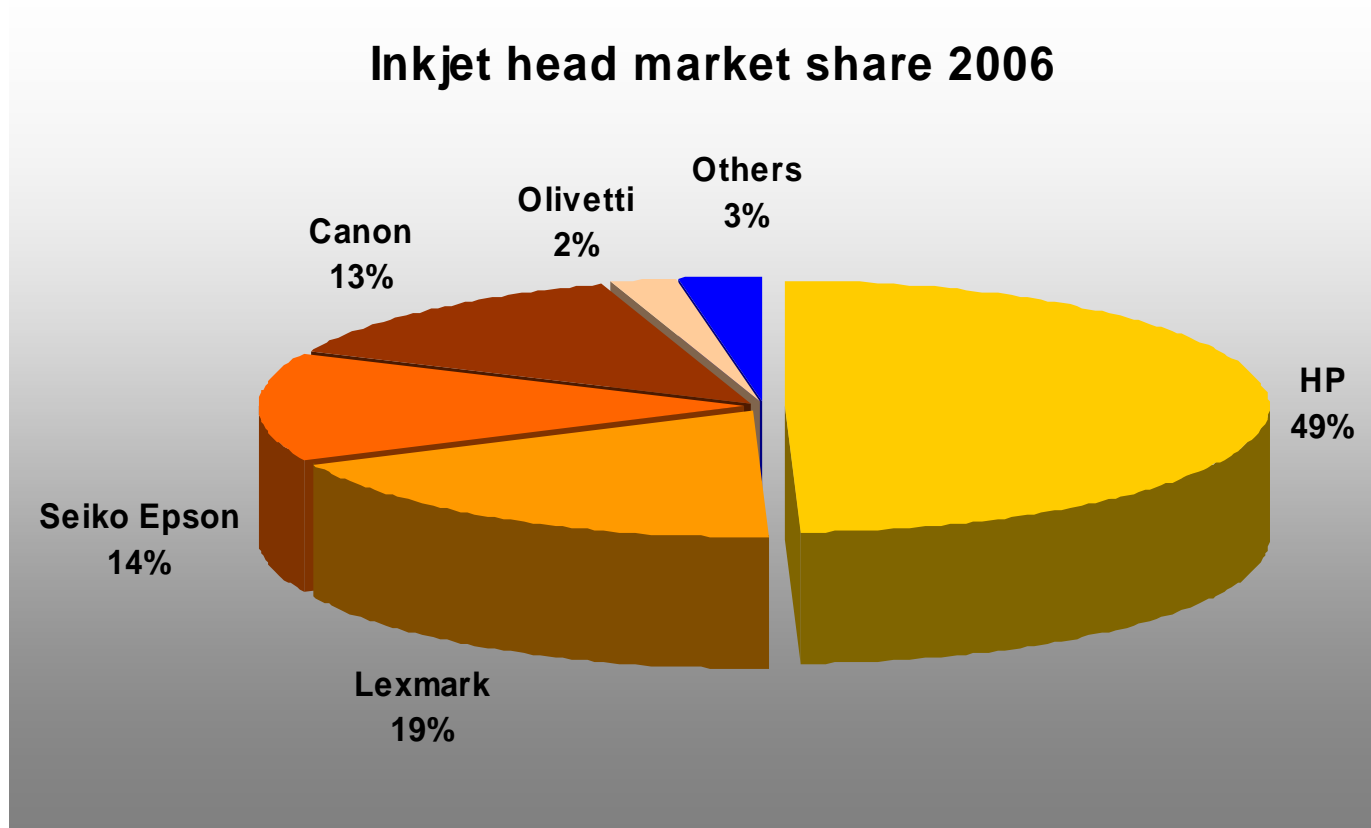


Inkjet head device manufacturers

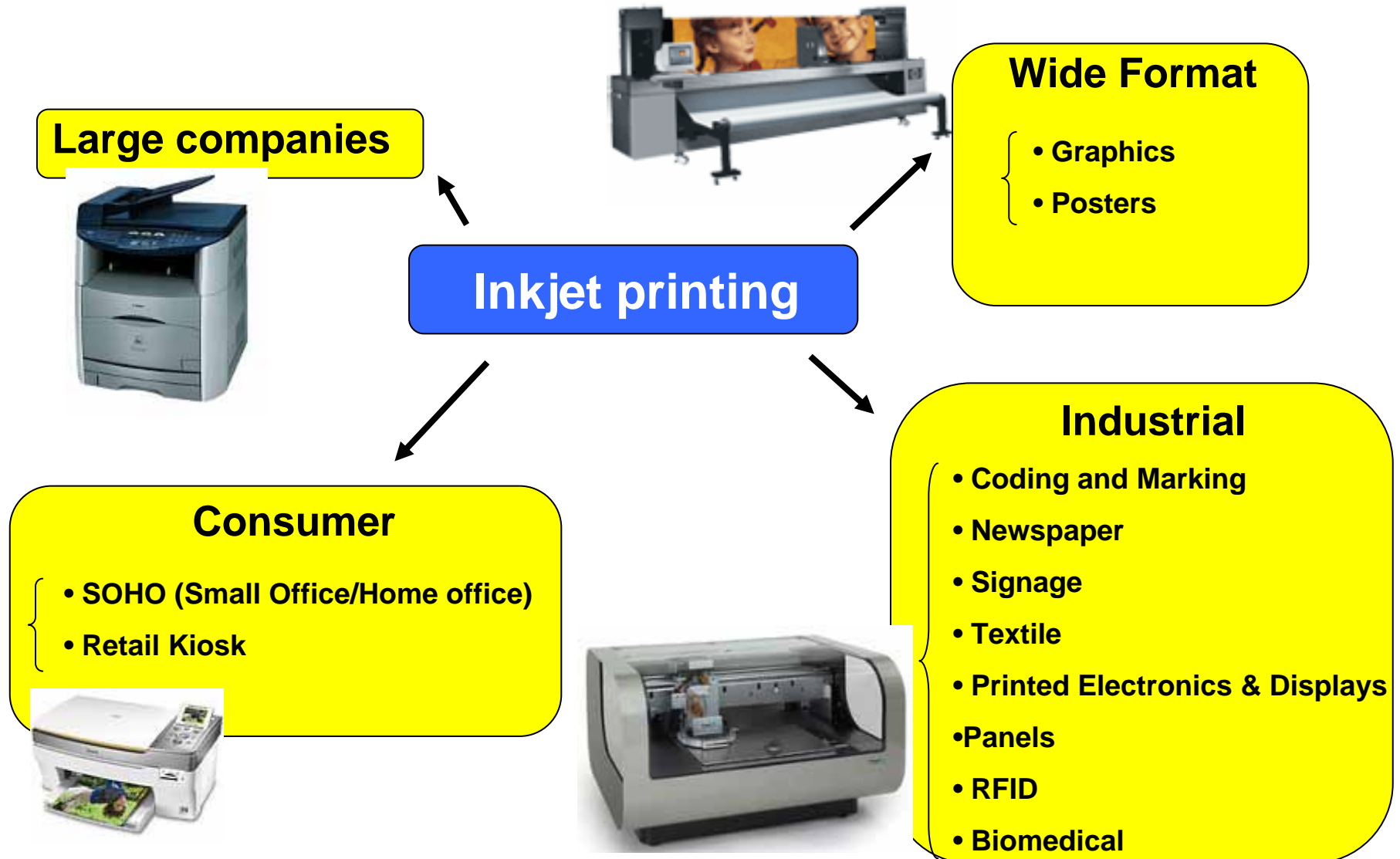
	R&D	Consumer		Industrial		
		Photo retail	SOHO	Large enterprise	Graphics – Wide format	Printing/ Manufacturing/ microdispensing
THERMAL	  	    				
PIEZO		  		  		

Key players

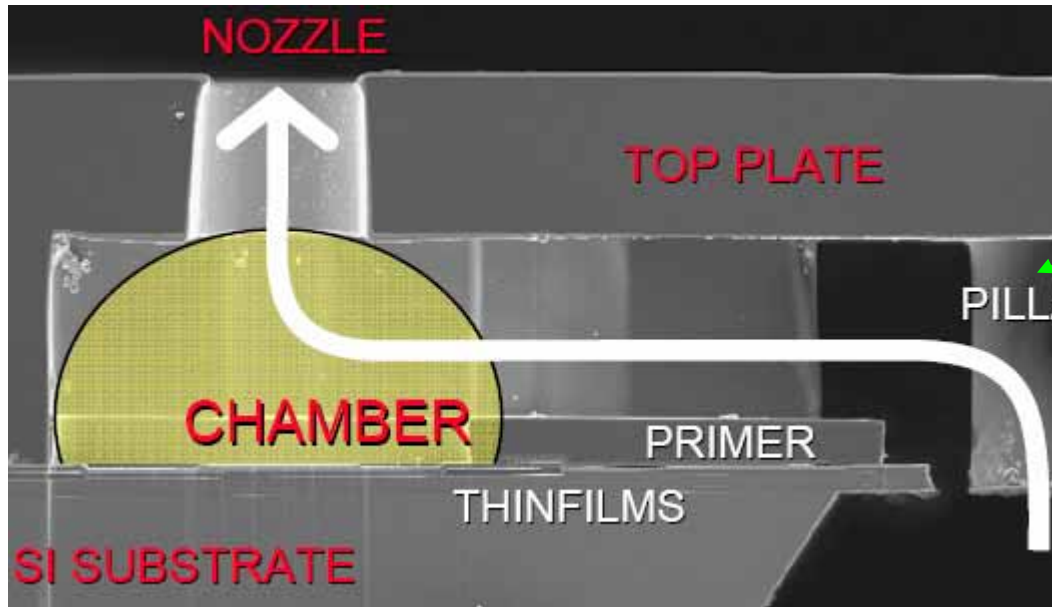
- Top 5 players for inkjet head are mainly involved in the consumer market and record more than 97% of the global market.



Description of current applications



SPT Process flow



Pillar

