



BOYA Company Profile

Flash Memory Supplier



BOYA OVERVIEW

Founded: Dec. 2nd, 2014

Invested by leading experts in the Non-Volatile Memory field

Headquarter: Zhuhai, Guangdong

Subsidiaries/Offices: Shanghai, Shenzhen, Hefei, Sichuan,
Beijing, Taiwan

Technology focus: High-end general-purpose flash memory IC
development

Product: SPI NOR Flash

Process: 65/55/50nm at 12-inches wafer manufacturing
facilities

Annual Sales: 2020: RMB ¥ 220M (BP)

2019: RMB ¥ 140M

2018: RMB ¥ 100M



BOYA



BOYA GLOBALIZATION

External Foundry Resource

- HLMC, China
- SMIC, China

Final Manufacturing

- Huatian, China
- Mountek, China
- JCET, China



- ★ Head office
- ⊙ Branch office
- ▲ Foundry Partner
- ⊠ Assembly & Test

BOYA, Zhuhai



BOYA FLASH VALUE PROPOSITION

➤ Advanced Nor Flash technology process

Floating Gate	65/50nm
SONOS	55nm

- Process 50nm has been mass produced successfully. It is the first mass-produced brand supplier in China

➤ The product covers most areas of memory-related applications

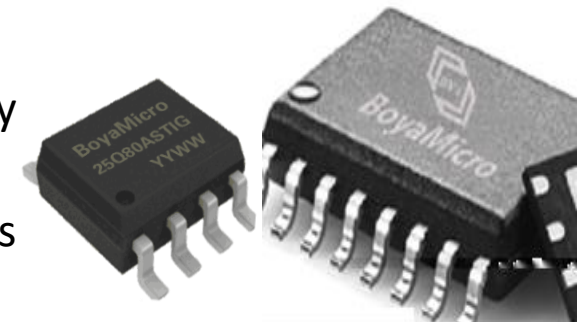
- Density from 512kb ~ 256Mb

BY25QxxAS Series	High Voltage	2.7V - 3.6V	1. Clock frequency can be up to 55MHz (erase/program/normal read) and 108MHz/120MHz (fast/dual/quad read); 2. Flexible program (256byte)and erase(4K/32K/64K/all chip); 3. 0.7ms page program time and 40ms sector erase time; 4. Operating temperature range from -40C ~ +85C or 105C
BY25QxxAL Series	Low Voltage	1.65V - 2.0V	
BY25QxxAW Series	Wide Voltage	1.65V - 3.6V	

- Provide a full range of technical support and good after-sale service

➤ BOYA has been growing rapidly steadily over the past several years

- Initial product of the company are used in the low-end market, and now they are widely used in Networking, PC application and other fields
- In the future, we will develop into high-end application field and produce high specifications and requirements products to serve the market demand



APPLICATIONS



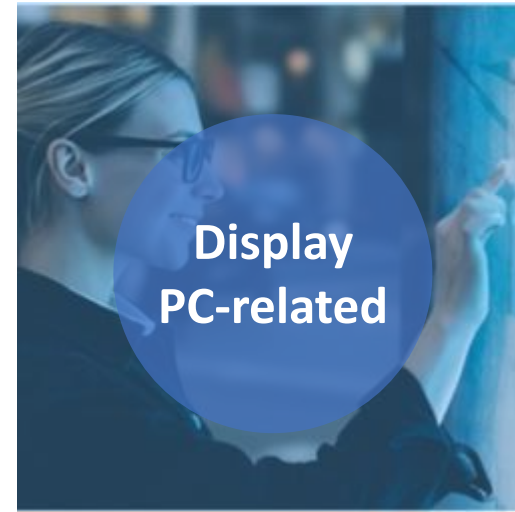
Audio Multimedia

- BT Voice Box & Headset & Soundbar
- BT connect unit
- BT Vehicle-Mounted
- BT Modules
-



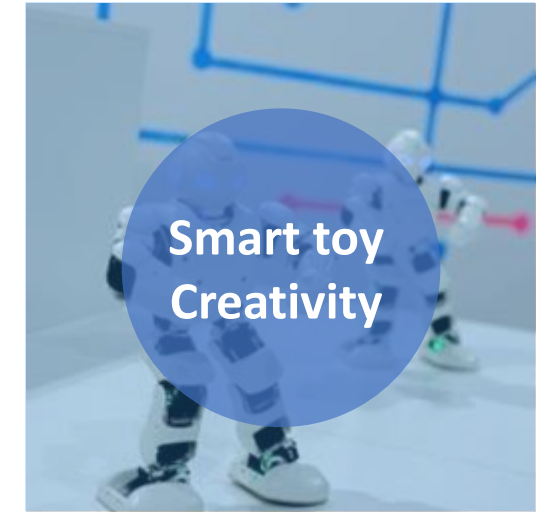
Wi-Fi

- Smart Power Plus
- Home Automation
- Wi-Fi Location-Awer Device
- IP Cameras
- Wearable Electronics
- Industrial Wireless Control
- ...



Display PC-related

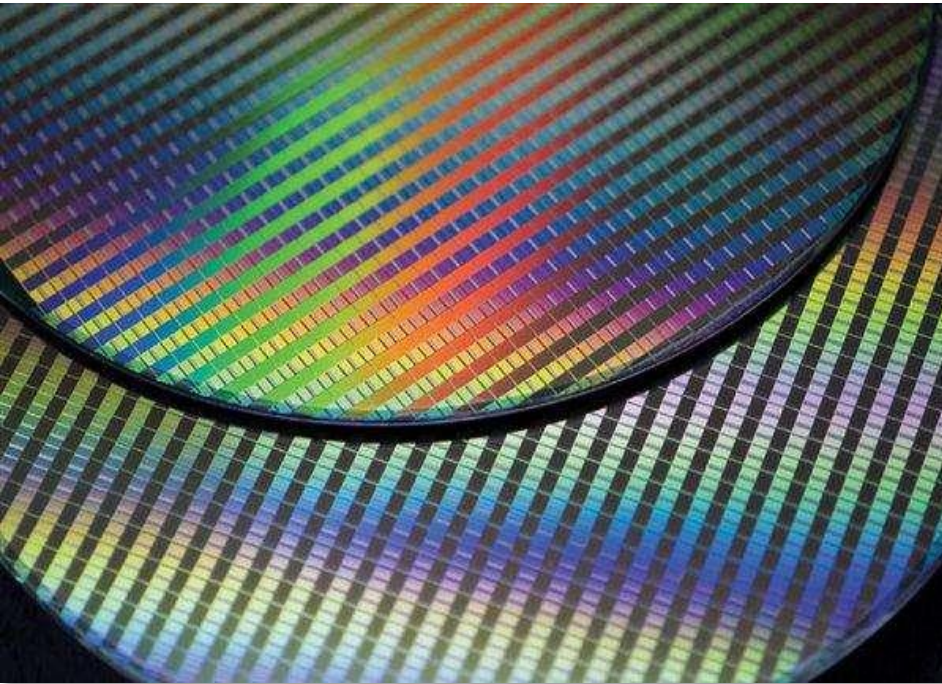
- Digital photo frame&LCD
- PC Monitors
- Printers
-



Smart toy Creativity

- Toy
- Creativity Gift
- BT Bracelet
- BT connect unit
- ...

BOYA KNOWN GOOD DIE SOLUTIONS



BOYA provides **Known Good Die (KGD)** products for custom **system-in-package (SiP)** or **multi-chip package(MCP)** solutions requiring NOR Flash memory.

- All BOYA SPI NOR products are offered in KGD option.
- KGD products are delivered in wafer form without dicing.
- Dedicated technical staff will work with KGD customers for their specific requirements.

BOYA CHIPSET PARTNERS



BOYA Manufacturing and Customers

FOUNDRY PARTNERS



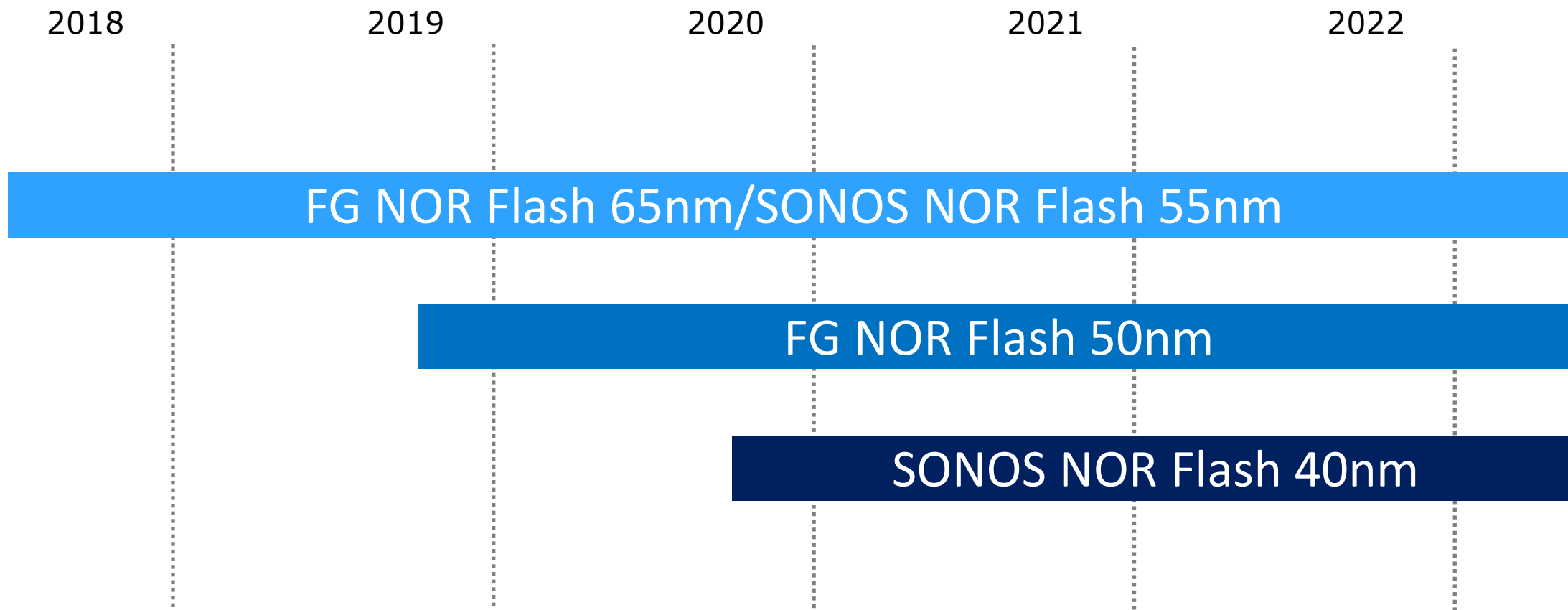
TESTING & PACKAGE EA



CUSTOMERS



BOYA TECHNOLOGY ROADMAP



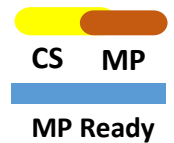
BOYA FG 3.3V SPI Flash Roadmap

Density	Current Product	Description	2019		2020				2021				2022	
			3Q19	4Q19	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
1Gb	BY25QM1GFS	3.3V, Quad SPI, QPI, DTR, 120Mhz							50nm					
512Mb	BY25QM512FS	3.3V, Quad SPI, QPI, DTR, 120Mhz							50nm					
256Mb	BY25Q256FS	3.3V, Quad SPI, QPI, DTR, 120Mhz							50nm					
128Mb	BY25Q128FS	3.3V, Quad SPI, QPI, DTR, 120Mhz							50nm					
	BY25Q128AS	3.3V, Quad SPI, 108Mhz							65nm					
64Mb	BY25Q64FS	3.3V, Quad SPI, QPI, 108Mhz							50nm					
	BY25Q64AS	3.3V, Quad SPI, 108Mhz							65nm					
32Mb	BY25Q32FS	3.3V, Quad SPI, QPI, 108Mhz							50nm					
	BY25Q32BS	3.3V, Quad SPI, 108Mhz							65nm					
	BY25Q32CS	3.3V, Quad SPI, QPI, 108Mhz							65nm					
16Mb	BY25Q16FS	3.3V, Quad SPI, QPI, 108Mhz							50nm					
	BY25Q16BS	3.3V, Quad SPI, QPI, 108Mhz							65nm					
	BY25D16AS	3.3V, Dual SPI, 108Mhz							65nm					
8Mb	BY25Q80BS	3.3V, Quad SPI, QPI, 108Mhz							65nm					
	BY25D80AS	3.3V, Dual SPI, 108Mhz							65nm					
4Mb	BY25D40AS	3.3V, Dual SPI, 108Mhz							65nm					
2Mb	BY25D20AS	3.3V, Dual SPI, 108Mhz							65nm					
1Mb	BY25D10AS	3.3V, Dual SPI, 108Mhz							65nm					
512Kb	BY25D05AS	3.3V, Dual SPI, 108Mhz							65nm					



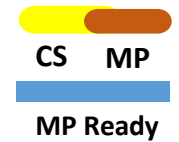
BOYA FG 1.8V SPIFlash Roadmap

Density	Current Product	Description	2019		2020				2021				2022	
			3Q19	4Q19	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
512Mb	BY25M512FL	1.8V, Quad SPI, QPI, DTR, 120Mhz								CS	MP			
256Mb	BY25Q256FL	1.8V, Quad SPI, QPI, DTR, 120Mhz							CS	MP				
128Mb	BY25Q128BL	1.8V, Quad SPI, QPI, DTR, 120Mhz						CS	MP					
64Mb	BY25Q64FL	1.8V, Quad SPI, QPI, DTR, 120Mhz							CS	MP				



BOYA SONOS SPI Flash Roadmap

Density	Current Product	Description	2019		2020				2021				2022	
			3Q19	4Q19	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
32Mb	BY25M32AW	1.65~3.6V, Quad SPI, 85Mhz								CS	MP			
16Mb	BY25Q16AW	1.65~3.6V, Quad SPI, 85Mhz							CS	MP				
8Mb	BY25Q80AW	1.65~3.6V, Quad SPI, 85Mhz												
4Mb	BY25Q40AL	1.65~2.05V, Quad SPI, 85Mhz												
	BY25Q40AW	1.65~3.6V, Quad SPI, 85Mhz												
2Mb	BY25Q20AW	1.65~3.6V, Quad SPI, 85Mhz												



BOYA NOR FLASH PRODUCT PORTFOLIO

Tech	Series	Voltage	512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb	512Mb	1Gb
65nm FG	25DXXA/B/CS	2.7V-3.6V	●	●	●	●	●	●	●	●	●	-	-	-
50nm FG	25QxxFS	2.7V-3.6	-	-	-	-	-	○	○	○	○	●	○	○
50nm FG	25QxxFL	1.65V-2.0V	-	-	-	-	-	-	-	○	○	○	○	-
55nm SONOS	25QxxAW	1.65V-3.6V	-	-	●	●	●	○	○	-	-	-	-	-

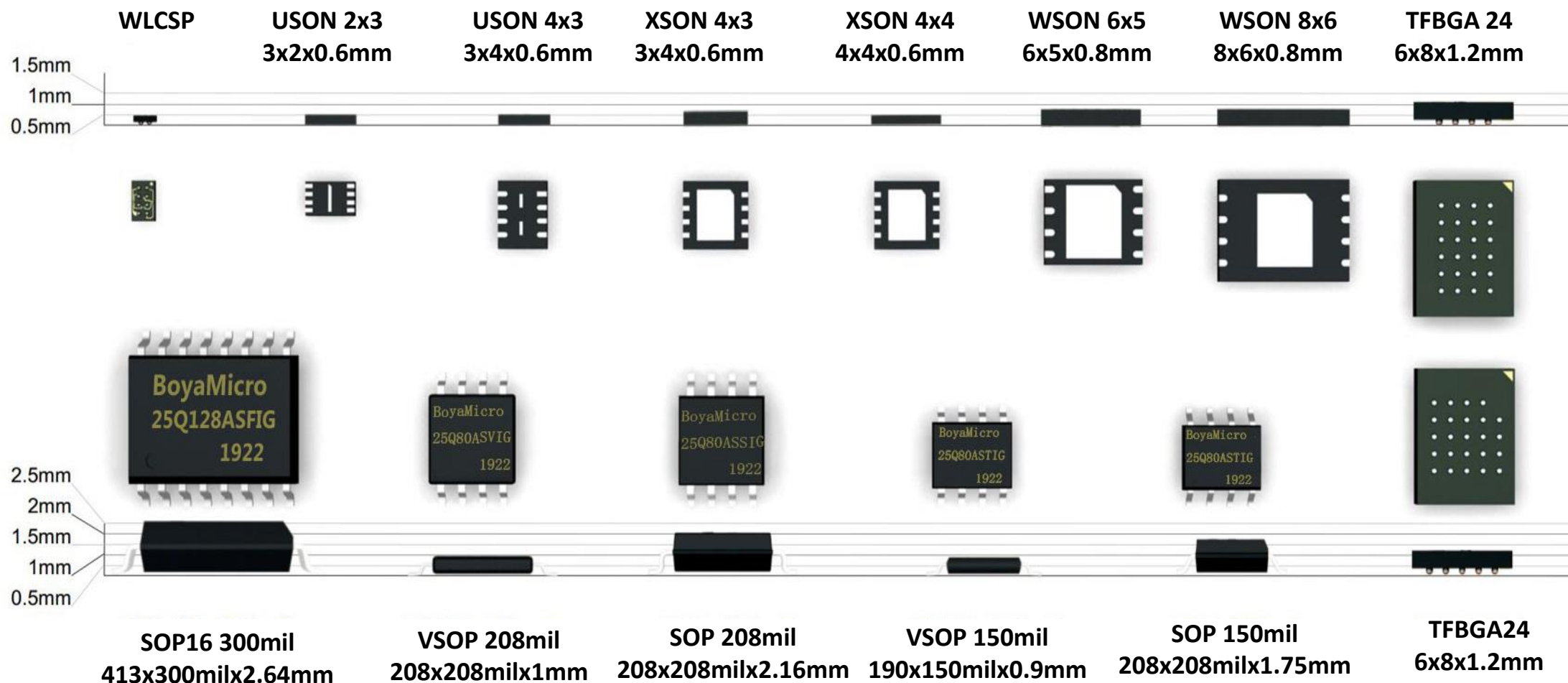
● Mass Production ○ Under Development

BOYA PACKAGE OPTIONS

Package Type	1.8V & 3.3V											1.65V--3.6V			
	512Kb	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb	256Mb	512Mb	4Mb	8Mb	64Mb	128Mb
USON8 (2x3)	●	●	●	●	●	●	○	-	-	-	-	●	○	-	-
USON8 (3x4)	-	-	-	-	-	-	●	●	-	-	-	-	-	-	-
WSON8 (6x8)	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-
WSON8 (5x6)	-	-	-	-	-	-	●	●	●	●	-	-	-	-	-
WLCSP	-	●	-	-	-	-	-	-	-	-	-	○	-	-	-
VSOP8 (208mil)	-	-	-	-	-	-	○	○	○	-	-	-	-	-	○
SOP16 (300mil)	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-
SOP8 (208mil)	-	-	-	-	●	●	●	●	●	●	-	-	○	-	-
SOP8 (150mil)	●	●	●	●	●	●	●	●	-	-	-	●	●	○	-
TSSOP8 (173mil)	●	●	●	●	●	●	-	-	-	-	-	●	○	-	-

● Mass Production ○ Under Development

BOYA NOR FLASH PACKAGES



BOYA FLASH FAMILY DECODER

Example: BY 25 Q 80 A S S I G (T)

Company Prefix :

BY=Boya Technology

Product Family:

25=SPI FLASH

29G=Parallel FLASH

Family:

Q=Quad I/O

D=Dual I/O

B=Quad I/O

QE=1

Density:

05=512Kbit

10=1Mbit

20=2Mbit

40=4Mbit

80=8Mbit

16=16Mbit

32=32Mbit

64=64Mbit

128=128Mbit

256/257 =256Mbit

M512/M513 =512Mbit

M1G /M1G1 =1Gbit

Version:

A= 65/55nm Version

B= 65/55nm Version

C= 65/55nm Version

F= 50nm Version

Voltage:

S= 2.7V-3.6V

L=1.65V-2.0V

W=1.65V-3.6V

V= 2.3V-3.6V

Packing Type:

(T)=Tube

(R)=Tape & Reel

(Y)=Tray

Special Option:

G=Pb Free+Halogen Free Green Package

P= Pb Free+Halogen Free Green Package +

Power Meter Application

E= Special Application

Temperature Range:

I=Industrial(-40°C~85 °C)

J= Industrial(-40 °C~105 °C)

Package Type:

S= SOP8 208mil

T= SOP8 150mil

O=TSSOP8 173mil

V= VSOP8 208mil

F=SOP16 300mil

L=WLCSP

M=USON8 2*3mm(0.50mm)

U=USON8 2*3mm(0.55mm)

X=USON8 2*3mm(0.45mm)

K=USON8 2*3mm(0.75mm)

N=USON8 3*3mm

H=USON8 4*3mm

W=WSON8 5*6mm

E =WSON8 6*8mm

Z=TFBGA-24Ball 6*8mm (6*4ball array)

BOYA QUALITY

ISO 9001



Product Report



ESD HUMAN REPORT

LATCH UP REPORT







REACH SVHC REPORT

RoHS 2.0 REPORT



BOYA PROGRAMMER SUPPORT

Programmer	BOYA Product Family
Prosystems 浦洛  I C 烧录行业领导品牌	SPI NOR FLASH 512Kb ~ 128Mb
Xeltek 西尔特 	SPI NOR FLASH 512Kb ~ 128Mb
ZLG 周立功  致远电子 世界因我们而不同	SPI NOR FLASH 512Kb ~ 128Mb
Hi-Lo 河洛  河洛半导体股份有限公司	SPI NOR FLASH 512Kb ~ 128Mb
WSY 金鼎科  通用系列编程器 UNIVERSAL PROGRAMMERS	SPI NOR FLASH 512Kb ~ 128Mb
STG 思泰佳 	SPI NOR FLASH 512Kb ~ 128Mb

Programmer	BOYA Product Family
Sofi 硕飞 	SPI NOR FLASH 512Kb ~ 128Mb
Dediprog 岱锴 	SPI NOR FLASH 512Kb ~ 128Mb
Leap 力浦 	SPI NOR FLASH 512Kb ~ 128Mb
UPUP 景天 	SPI NOR FLASH 512Kb ~ 128Mb
Quickpro 珍世好 	SPI NOR FLASH 512Kb ~ 128Mb
ELENC 爱科 	SPI NOR FLASH 512Kb ~ 128Mb

THANK YOU!



[BOYA TECHNOLOGY CO., LTD.](#)

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