

μSerDes™ Serialization Solution for Cell Phone & Display Applications

μSerDes™ www.fairchildsemi.com/userdes

μSerDes™ (micro-SerDes) Overview

Fairchild's μSerDes™ is a family of ultra-compact serial interface products designed for parallel interconnects in cellular phones and small-form-factor display applications. μSerDes™ offers ideal design solutions with smaller flex cable size, power consumption, and electromagnetic interference (EMI). Moreover, μSerDes™ is available in BGA and MLP packages to resolve the design challenges of board space and component counts for space-limited portable devices.

	FIN12AC	FIN24AC	FIN24C	FIN212AC*	FIN224AC*	FIN324C*
Function	Serializer / Deserializer	Serializer / Deserializer	Serializer / Deserializer	Serializer / Deserializer	Serializer / Deserializer	Serializer / Deserializer
Number of Bits	12	22	24	12	22	24
Max Frequency	40MHz	20MHz	20MHz	40MHz	26MHz	15MHz
Factory Options (Contact Factory)			26MHz	48MHz & 2.5x2.5 package		Higher frequency version
Dynamic Current (Serializer)	8.5mA @ 5MHz	9.5mA @ 5MHz	11mA @ 10MHz	9.5mA @ 5MHz	9mA @ 5MHz	4mA @ 5.44MHz
VDDA/S	2.5 to 3.3V	2.5 to 2.9V	2.5 to 2.9V	2.5 to 3.6V	2.5 to 3.3V	2.5 to 3.0V
VDDP	1.65 to 3.6V	1.65 to 3.6V	1.65 to 3.6V	1.65 to 3.6V	1.65 to 3.6V	1.6 to V _{DDAS}
Read / Write	Write	Write	Write	Write	Write	Read / Write
Ideal Application	Camera	Small LCD	Small LCD	Camera / Small LCD	Small LCD	Small LCD
Recommended Interface	RGB	μController	RGB	μController / RGB	μController	μController / RGB / SPI
Selectable LVCMOS Edge Rates	No	No	No	Yes	Yes	Yes
Selectable LVCMOS Pulse Width	No	No	No	Yes	Yes	Yes
Output state	Tri-state	Tri-state	Tri-state	Tri-state	Tri-state	Known-state
External timing required	Yes	Yes	Yes	Yes	Yes	No
Additional Features	Multiple frequency range	Multiple frequency range		Multiple frequency range; CTL Standard or High; PLL divide by 2 or 3	Multiple frequency range	RT-180
ESD in kV	15	8	8	14	15	15
Package	BGA, MLP	BGA, MLP	BGA, MLP	BGA, MLP	BGA, MLP	BGA, MLP

*Recommended for new designs.

For roadmap information, please contact us: interface@fairchildsemi.com

FEATURES:

Signal Reduction

→ 24:1 or 12:1 serialization

- ▶ Smaller connectors
- ▶ Smaller/narrow interconnection Flex/coax
- ▶ Better hinge or slider mechanical operation
- ▶ Easy board layout

Reduced EMI

→ Low voltage differential interconnect (patented CTL™)

- ▶ Reduces radiated noise
- ▶ Eliminates shielding, filters, and other components

High Throughput

→ Up to 480 Mbps

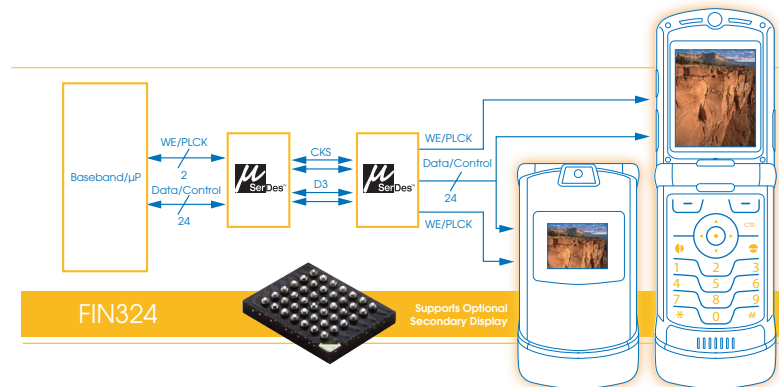
- ▶ Enables next generation display (QVGA/HVGA)

Cost Savings

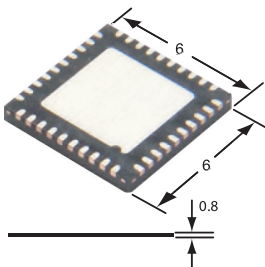
→ Savings over standard parallel implementation

- ▶ Fewer components
- ▶ Simpler connectors and cabling

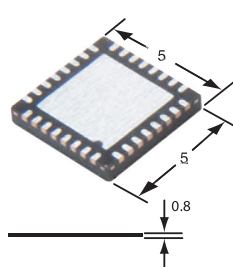
BENEFITS:



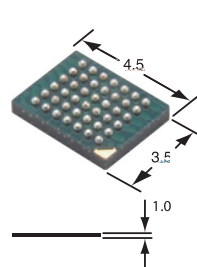
40 MLP w/Center Ground



32 MLP w/Center Ground



42 BGA



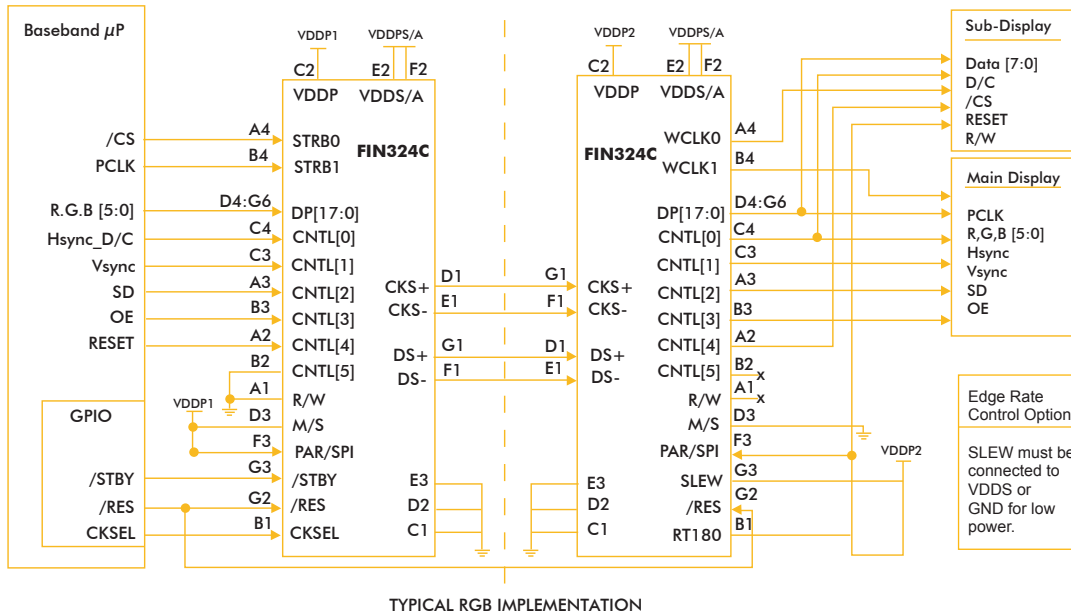
*All dimensions in millimeters
Packages not to scale

μSerDes™ (micro-SerDes) Serialization Solution for Cell Phone & Display Applications



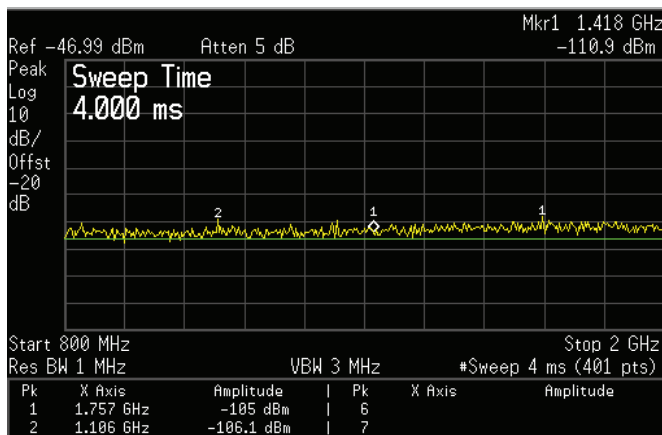
μSerDes™ -uLP (Ultra-Low Power) Series

Power Considerations → Extremely low operational power ↳ Industries lowest current consumption μSerDes: (3.9mA@5.44MHz Pixel Interface Master) ↳ Burst Mode standby (1.1mA Master) ↳ Standby Power ↳ <10 μA	Dual Display Interface Types ↳ Read/Write 68xx μController ↳ Write Intel μController ↳ Pixel (e.g. RGB, YUV) ↳ SPI	Adjustable LvCMOS edge rates CTL (Current Transfer logic) ↳ Lowest EMI interface ↳ Lowest power interface
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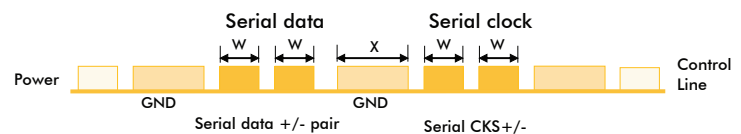
EMI - (Electrical Magnetic Interference)

Industries Lowest EMI emissions ↳ -110 dBm ↳ Test Set-Up: FIN324 Demo Board in standard EMI Chamber
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Flex Design - Layout Recommendations

The serial I/O information is transmitted at a high serial rate. Care must be taken implementing this serial I/O flex cable. The following best practices should be used when developing the flex cabling.
↳ All four differential serial wires same length ↳ No noisy signals over or near differential serial wires ↳ One ground plane or ground wire over differential serial wires ↳ No test points on Differential Serial Wires ↳ Provide a separate RF ground for phones that have a metal housing ↳ Recommend differential serial wires minimum 2 cm distance from antenna ↳ Impedance measured from customer flex ↳ Best : 80~120 ohm ↳ Typical : 70~130 ohm
↳ For more information: (http://www.fairchildsemi.com/an/AN/AN-5061.pdf)



Schematic and flex design review available for first time success, please contact us: interface@fairchildsemi.com
 For additional information, please visit us at www.fairchildsemi.com/userdes