

ECMF™ series portfolio overview

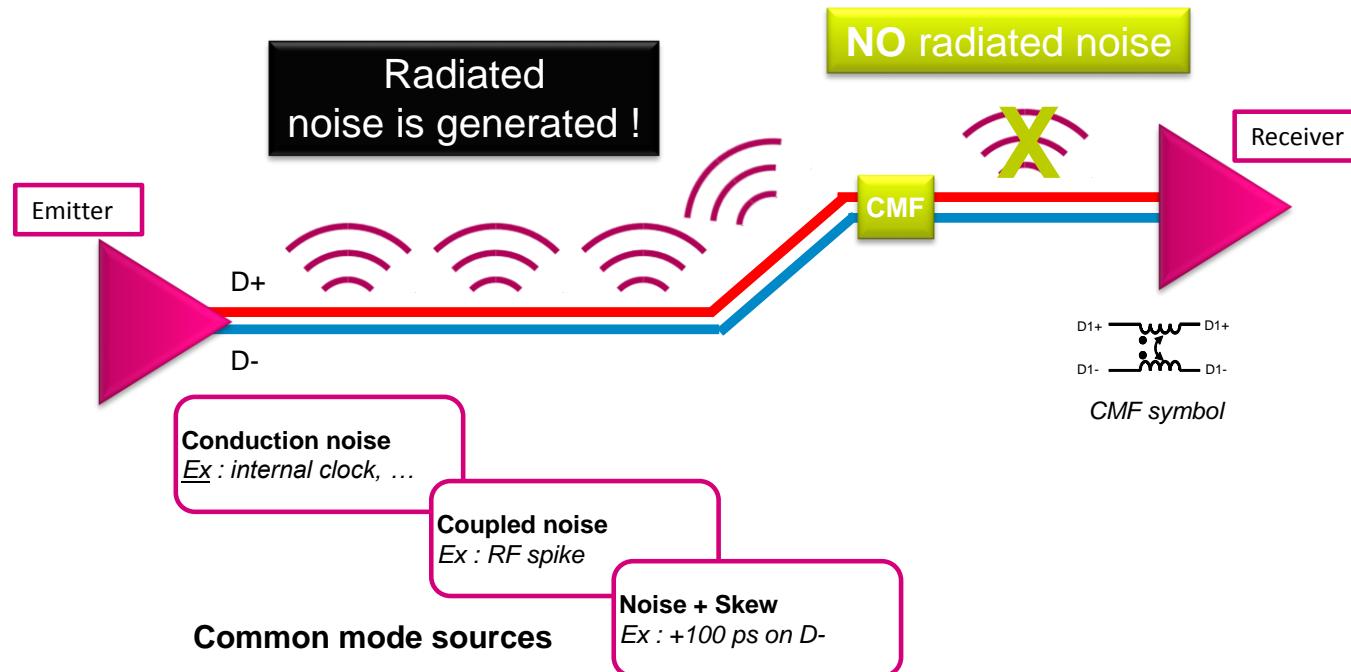
Common-mode filters embedding ESD protection

Purpose of common-mode filtering

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- When subjected to common-mode noise, high-speed differential lines generate unwanted radiated noise.
- Common-mode filters prevent differential lines from radiating and interfering with other RF signals nearby.

Differential transmission

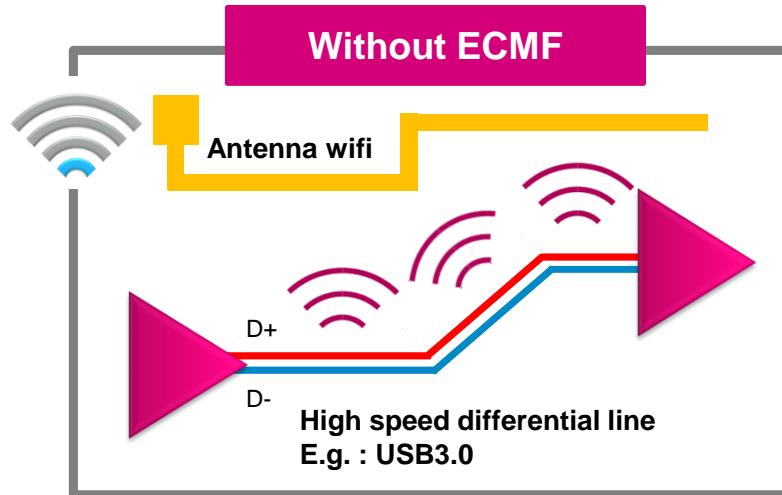


Troubleshooting antenna desense

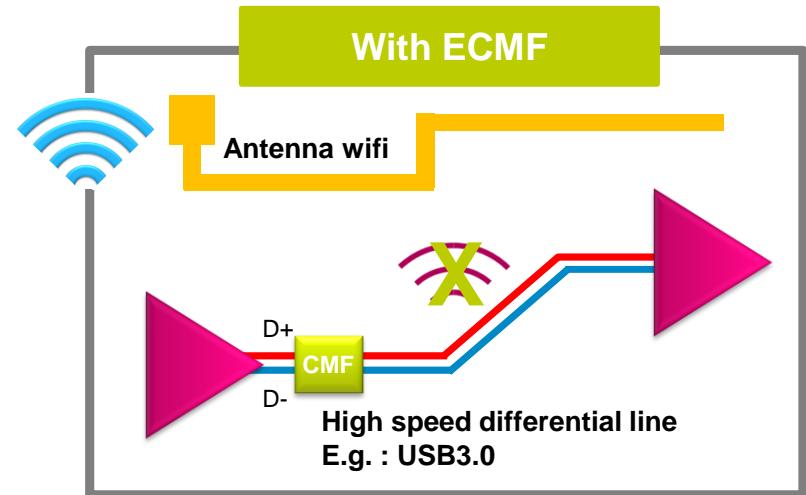
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- The sensitivity of reception antennas is degraded by radiated noise from high-speed data lines when there is:
 - Proximity between the 2 elements
 - Radiated common-mode noise at the antennas reception frequency spectrum
- By eliminating radiated common-mode noise, ECMF™ preserves the antenna sensitivity.

Example with Wi-Fi antenna / USB 3.0 port:



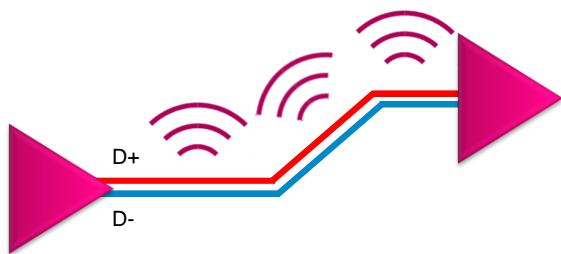
Degraded sensitivity
Loss of connection



Sensitivity preserved

When you have to implement high-speed lines in your RF system, you need to think CMF

High-speed lines



- MIPI
- SATA
- HDMI
- DisplayPort
- USB 2.0
- USB 3.1



Avoid desense

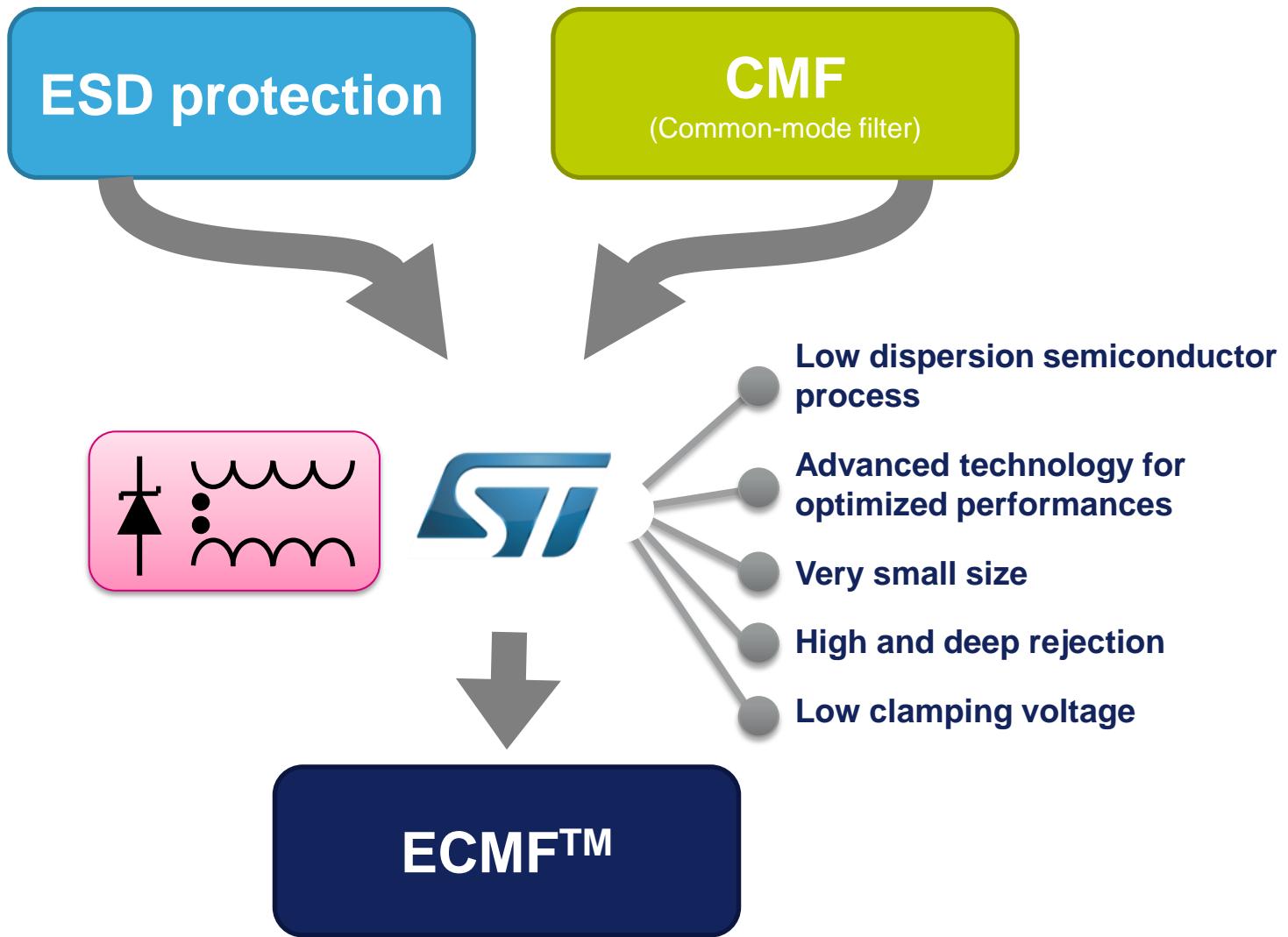


- Wi-Fi
- Bluetooth
- GPS
- WCDMA
- LTE
- Sub-GHz
- ZigBee

Antenna

... With integrated ESD protection

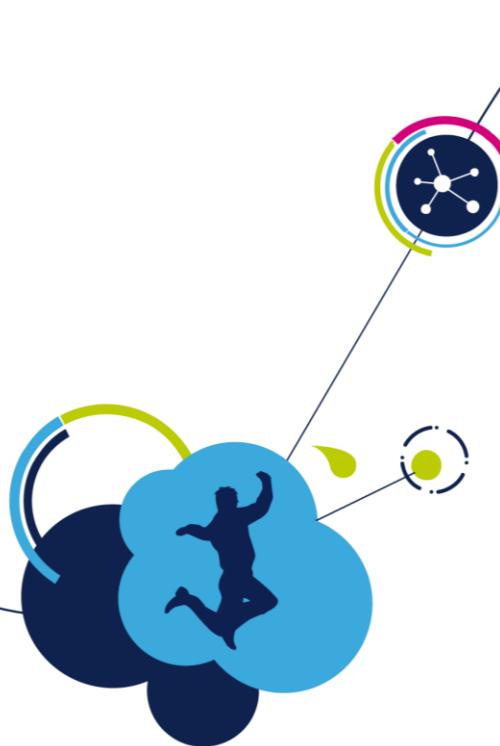
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Selection guide – ECMF™

| DIFFERENTIAL BANDWIDTH complies with the following standards | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| Speed Class 1 | | | | | | | | | |
| <ul style="list-style-type: none"> • MIPI D-PHY (DSI & CSI) • USB 2.0, MHL 2.0 • HDMI 1.4 • DisplayPort™ • SATA | | | | | | | | | |
| Speed Class 2 | | | | | | | | | |
| <ul style="list-style-type: none"> • Speed Class 1 interfaces • MIPI M-PHY (DSI & CSI) • USB 3.0 • USB 3.1 • HDMI 2.0 | | | | | | | | | |

| Part number | Number of lanes | | | Peak rejection frequency (> -20 dB) (GHz) | | | | Z_{CC21} @ 100 MHz (Ω) | Speed class | | Package type | Package size X × Y (mm) |
|----------------|-----------------|---|---|---|---|---|---------|--------------------------|-------------|-------|--------------|-------------------------|
| | | | | 1 | 2 | 3 | 0.7-0.9 | | I | II | | |
| ECMF02-2BF3 | ● | | | ● | ● | | | 14 | ● | | Flip-Chip | 0.83 x 1.23 |
| ECMF02-4CMX8 | ● | | | ● | ● | | | 16 | ● | | μQFN-8L | 1.20 x 2.50 |
| ECMF02-2HSMX6 | ● | | | ● | ● | ● | ● | 50 | | ● | μQFN-6L | 1.50 x 1.70 |
| ECMF02-2AMX6 | ● | | | ● | ● | | | 16 | ● | | μQFN-6L | 1.50 x 1.70 |
| ECMF02-3HSM6 | ● | | | ● | | | | 30 | | ● (*) | μQFN-6L | 1.35 x 1.60 |
| ECMF04-4HSM10 | | ● | | ● | | | | 30 | | ● (*) | μQFN-10L | 1.35 x 2.60 |
| ECMF04-4HSWM10 | | ● | | | ● | ● | | 30 | | ● | μQFN-10L | 1.35 x 2.60 |
| ECMF04-4AMX12 | | ● | | ● | ● | | | 16 | ● | | μQFN-12L | 1.50 x 3.30 |
| ECMF06-6HSM16 | | | ● | ● | | | | 30 | | ● (*) | μQFN-16L | 1.35 x 4.10 |
| ECMF06-6AM16 | | | ● | ● | ● | ● | ● | 15 | ● | | μQFN-16L | 1.35 x 3.30 |



Thank you