

# Connection system based on USB Type-C

## Your Advantages

### Package

- › Significantly smaller dimensions compared to a standard USB charging module with integrated electronics
- › *up to 60 % package savings in dashboard*

### Temperature

- › In spite of high charging power only marginal heating in dashboard
- › *up to 90 % less waste heat at customer interface*

### Additional features possible

- › such as lighting, temperature monitoring, real time detection  $V_{drop}$



## Use Case I – USB Charging



### Data transmission

- › USB 2.0 High-Speed (480 Mbps)

### $V_{bus}$

- › Power delivery specification (5 V – 20 V / max. 5 A)

### Transmission length

- › 80 mV ground drop at 5 A with one meter cable (comparable to HSD application with 1.5 A per one meter cable)

### Zusätzliche Funktionen

- › e.g. lighting, temperature monitoring, real time detection  $V_{drop}$ , etc.

## Use Case II – USB Data



### Data transmission

- › USB 2.0 High-Speed (480 Mbps)
- › USB 3.2 SuperSpeed (Gen1 / 5 Gbps)

### Transmission length

- › max. 7 meters (depends on chipset)

### Additional functions

- › power supply, USB alternate modes

## Requirements & Applications

- › USB Power Delivery (100 W)
- › SuperSpeed (5 Gbps)
- › Additional features possible e.g. USB alternate modes
- › Data transmission > 10 Gbps

## Use Case III – Data Transmission



### Possible variant

- › **Data transmission**  
parallel via 4 differential pairs
- › **Transmission length**  
3 meters (depends on transmission protocol)
- › **Additional functions**  
power supply (max. 1 A), 2 additional unshielded control lines

### Possible variant

- › **Customer-specific applications**

# MD in a Nutshell



The C.A.S.E. megatrend describes the four essential future topics for the automotive industry: Connected, Autonomous, Shared & Service and Electric. Data plays a central role and drives the future of the automotive industry. Data is generated, transferred, merged and evaluated. We are experts in the transmission of the rapidly increasing data volumes and have developed the latest technological solutions for this future topic.

# 25

years experience  
in the automotive industry



# 100 %

automotive



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over 350 car models from  
more than 60 OEMs



Volume supplier – over  
160 million products in more than  
20,000 variants annually



Global production- &  
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Europe and APAC



Stable  
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