

USB Type-C™.

24 reasons to connect with us.



GND TX1+ TX1- +V CC1 D+ D- SBU1 +V RX2- RX2+ GND



GND RX1+ RX1- +V SBU2 D- D+ CC2 +V TX2- TX2+ GND

© altim / alSas

#USBTYPED

*WE speed up
the future*

USB Type-C™

Würth Elektronik offers the complete product range from connectors, components for filtering of EMI noise, ESD surge protection as well as AC/DC to DC/DC power conversion for USB 3.1. The specially designed products are featured in the Würth Elektronik USB Type-C™ EMC Dongle to easily and quickly validate the EMC and Surge compliance of your application. Our products are referenced in the USB Type-C™ reference designs of leading IC manufacturers.

For further information, please visit: www.we-online.com/typc

App Note ANP007 – Effective USB 3.1 filtering and protection:

www.we-online.com/anp007

- USB licensed and TID listed Type-C™ Connectors WR-COM
- 60 W and 100 W Vbus filter
- High efficiency molded power inductors WE-MAPI for Vbus filter
- Low parasitic capacitance WE-TVS diode
- High speed, low noise data transmission filter with WE-CNSW HF
- Pulse stable SMT Chip Bead Ferrites WE-MPSB for hot-pluggin

USB Type-C™ Connector



WR-COM

Shielded Power Inductor



WE-MAPI

TVS Diode



WE-TVS

Common Mode Choke



WE-CNSW HF

Ceramic Capacitor



WCAP-CSGP

Ferrite Bead

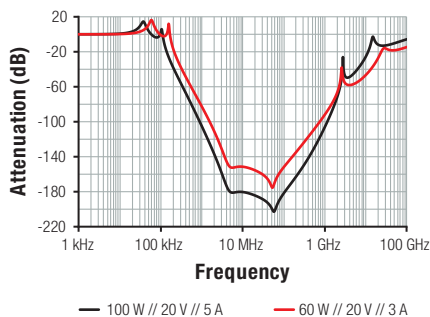


WE-MPSB

USB Type-C™ is a trademark of USB Implementers Forum.

Power Line Filter and Protection

Power Line Noise Attenuation at Full Load

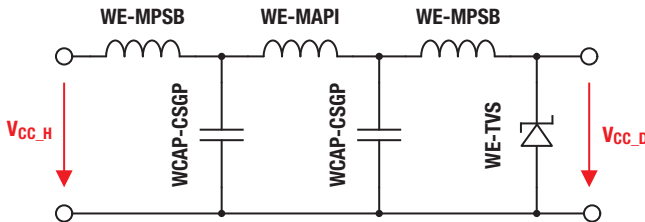


- Attenuation up to 200 dB
- Ready to implement
- Designs for **60 W** and **100 W**

| | Dongle | Design Bag |
|-------|----------|------------|
| 100 W | 82931100 | 82931101 |
| 60 W | 82931060 | 82931061 |

Example π -Filter and TVS Diode Topology

- π -filter with added chip bead surge protection
- Ensures clean power supply
- Protects against high frequency noise and current spikes



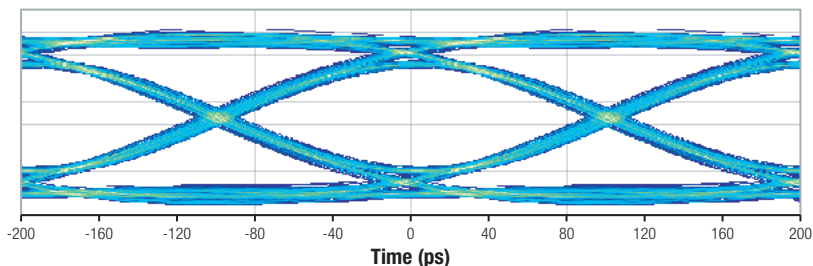
Products for Different Specifications

| | | WE-MPSB | WE-MAPI | WCAP-CSGP | WE-TVS |
|------------------------------------|---------------------|---|---|---|--|
| | |  |  |  |  |
| USB Power Delivery 2.0 (Profile 5) | 100 W 20 V @ 5 A | 742 792 261 01 | 744 383 560 12 | 885 012 107 018 | 824 045 810 |
| USB Power Delivery 2.0 (Profile 4) | 60 W 20 V @ 3 A | 742 792 211 11 | 744 383 360 12 | | |

Data Line Filter and Protection



Data Signal Integrity



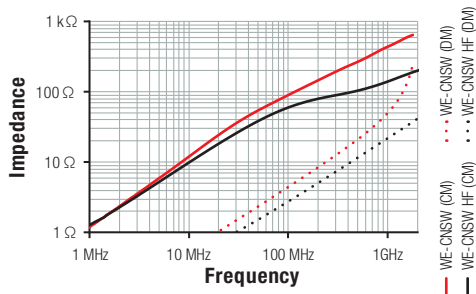
Eye diagram of the dongle with activated USB equalizer (@ 10 GBit/s)

Data Line Filter

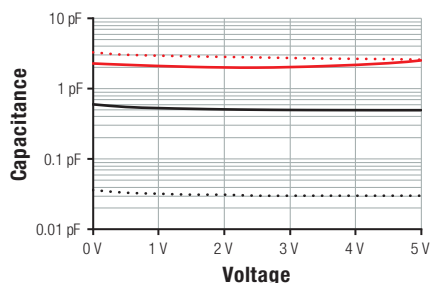
WE-CNSW for SuperSpeed and WE-CNSW HF SuperSpeed+

- Current compensated data line filter
- High common mode noise suppression at high frequencies
- Small influence on high speed signals through winding symmetry

WE-CNSW filters your data lines!



Data Line Protection



- WE-TVS Standard (I/O) ··· WE-TVS Standard (GND)
- WE-TVS Super Speed (I/O) ··· WE-TVS Super Speed (GND)

WE-TVS for SuperSpeed and SuperSpeed+

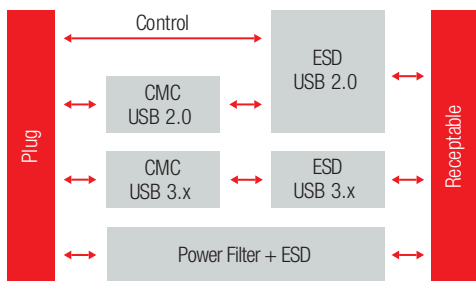
- Fast turn-on
- Low clamping voltage
- High ESD withstand voltage
- Uni- or bi-directional protection
- Small package



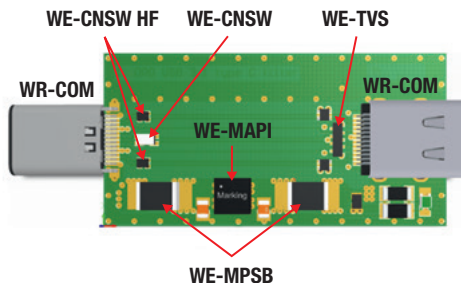
WE-TVS protects your data lines!

Dongle and Connectors

USB Type-C™ Dongle



Block diagram of the USB Type-C™ EMC dongle



Visit www.we-online.com/typec to preorder the EMC dongle.

USB Type-C™ Connectors



WR-COM USB 3.1 Type-C™

- 10,000 mating cycles
- Rated to 5 A
- 100 V withstanding voltage
- TID listed
- Other USB connectors available

Find out more on www.we-online.com/wr-com

USB Type-C™ Power Delivery Development Kit

- Plug & Play power supply up to 100 W
- Complete solution consisting of the following boards:
 - 40 W source
 - 100 W source
 - Up to 100 W load
- 5 A cable and power supply included
- Up to 20 V power profiles already pre-set
- Order Code: 744730



Find out more on www.we-online.com/typec_developmentkit

