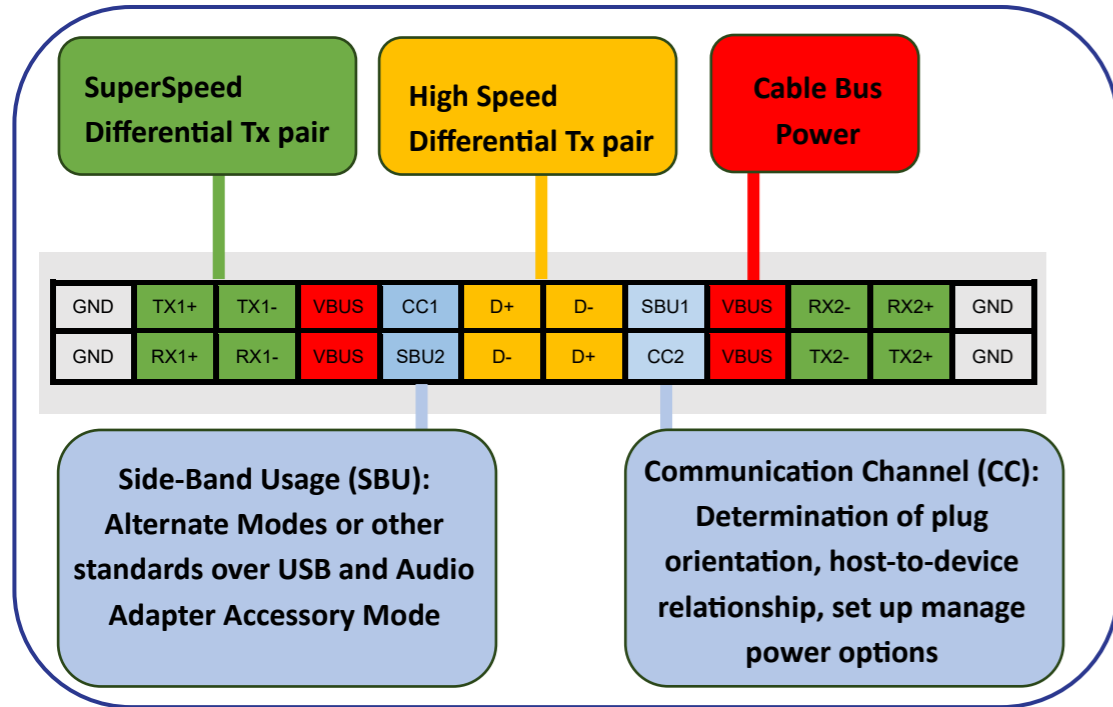
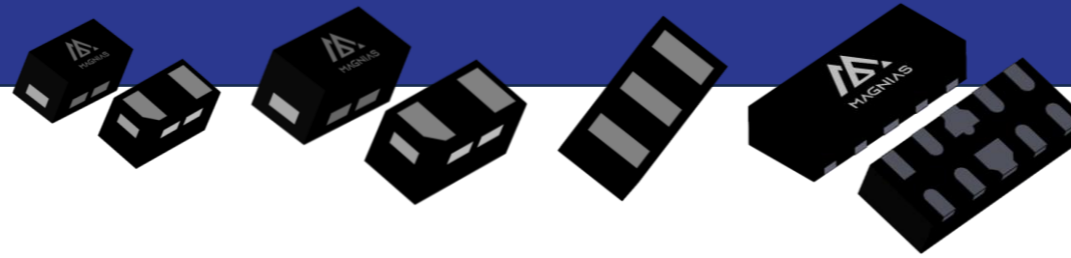




USB ESD Protection in HUB/Docking



Small Outline Solutions Supporting up to USB 4.0 (40Gbps) Type-C

Magnias' ESD Features:

- **Ultra-Low Capacitance**, for highest signal integrity down to 0.15 pF
- **Low clamping voltage**, Ensuring Advanced Protection down to 0.1 Ω (R_{DYN})
- **Enhanced Durability**, against ESD up to 30 kV & Surge up to 50 A at 8/20 μ s
- **Qualified protection against:**
 - IEC 61000-4-2, Electrostatic discharge immunity test
 - IEC 61000-4-4, Immunity test based on electrical fast transient (EFT) / burst transients
 - IEC 61000-4-5, Disruptive surges can appear on power and data lines
- **Various Packaging**, from discrete solution to multiple line solution

USB Type-C Connector Layout

Recommended ESD Protection

PIN	Product Name	Application	Package	V_{RWM}^{MAX} (V)	V_{BR}^{MIN} (V)	V_{CLAMP} (V)	C_J^{TYP} (pF)	ESD ^C (kV)	$I_{pp}^{8/20,2\Omega}$ (A)	Status
Tx, Rx, D+/D-	PZ0102A-F2	USB 4.0	DFN0603-2L (0.6 x 0.3 x 0.3)	1	1.35	5.5	0.2	±15	6.5	Active
	PZ0302Y-F2	USB 3.2		3.3	5	5.8	0.2	±20	9	
	PZ0502Y-F2			5	5.5	6	0.2	±20	9	
CC, SBU	PS0510C-F2	All USB		5	6.2	7.3	10	±19	7	
VBUS	PS0591Y-F2	USB PD	DFN1610-2L (1.6 x 1.0 x 0.5)	5	6	9.5	1	±30	11	
	PT0588J-F6			5	6	10	800	±30	110	
	PT1284Y-F6			12	13	15	380	±30	45	
	PT2082J-F6			22	23	24	210	±30	50	

USB PD (Power Delivery):

