

## Quick Reference Guide Connectors and Antennas for Mobile Devices

Using its extensive experience, TE Connectivity supplies products for today's and tomorrow's mobile equipment applications, including smartphones, tablets, mobile media players, digital cameras, GPS, payment terminals, sports equipment and other portable electronics.

We also provide analyses and simulation services to allow OEM's to predict system performance, resulting in faster design cycles and lower costs.

Our early involvement programs allow us to design next generation products to support equipment requiring more speed, higher density and lower cost.

Our wide product portfolio for mobile equipment ranges from a variety of connectors to antennas, circuit protection, cable assemblies and others.


In addition to our products, TE offers a set of technologies, especially developed to offer low applied cost products to our customers. In an effort to understand your individual needs, our dedicated Mobile Equipment engineers are prepared to work closely with you and provide you with a great experience.

The teams are dedicated to your success and located in several regions of the world. Our facilities are fully equipped with all necessary services such as quick turn sample shops, simulation equipment, test laboratories and others.

Our product offering is broad as reflected in this document.


## SHIELDING AND GROUNDING PRODUCTS

### Board Level Shielding (BLS)



Picture	Description	Key Features	Design Dimensions	Status
	EMI (Electromagnetic Interference) shields are stamped one and two-piece metal cages that help provide isolation of board level components, minimize crosstalk and reduce EMI susceptibility without impacting system speed.	<ul style="list-style-type: none"> <li>Standardized design features;</li> <li>Rapid Prototyping within 72 hours</li> </ul>	<ul style="list-style-type: none"> <li>Minimum size: 5min(L) x 5min(W) x 1min(H);</li> <li>Maximum size: 70max(L) x 70max(W) x 5max(H);</li> <li>Contact TE for other size requirements</li> </ul>	MP QD

For customer inquiry please contact: [bls.support@te.com](mailto:bls.support@te.com)  
 For more information: [www.te.com/products/bls](http://www.te.com/products/bls)

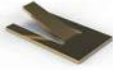


### Spring Probe Connectors (Pogo Pins)

Picture	Type	Pos	Body height	Pitch	Effective height	P/N	Description	Status
	SMT	1	5.66	-	2.33	1551718-1	PogoPin 1,9mm width double working	MP SW
	SMT	2	3.4	3.5	2.9	2173227-2	Dual Floating Pogo Pin Assy	MP SW
	SMT	2	2.9	2.0	3.00	2173140-1	Dual Pogo Pin Assembly Floating	MP SW

### Solder Pads and Spacers

Picture	Type	Plating	Dimensions	P/N	Description	Status
	Solder Pad	Au	2.0 x 1.55 x 0.1	1982534-3	Solder pad, loose piece	MP SH
	Solder Pad	Au	2.0 x 1.4 x 0.1	1932685-3	Pick and Place Pad	MP SH
	Spacer	Au	2.0 x 0.50	1551962-3	Spacer plated and packaged	MP SW
	Spacer	Au	2.0 x 0.80	1551719-3	Spacer plated and packaged	MP SW

## Spring Finger





Picture	Type	Uncompressed height	Width	Effective height	P/N	Description	Status
	Y	0.8	2.0	0.4 - 0.7	1447009-5	Spring finger 0820	MP JP
	Pre-loaded	1.8	1.15	0.95 - 1.45	1551572-5	SF 1812 Common Footprint	MP QD
	Pre-loaded	2.15	1.15	1.3 - 2.0	1551573-5	SF 2212 Common Footprint	MP QD
	Pre-loaded	2.6	1.15	1.7 - 2.4	1551574-5	SF 2612 Common Footprint	MP QD
	Pre-loaded	3.0	1.3	2.1 - 2.8	1551575-5	SF 3012 Common Footprint	MP QD
	Pre-loaded	3.4	1.4	2.3 - 3.1	1551576-5	SF 3412 Common Footprint	MP QD
	Pre-Loaded	1.1	1.0	0.65-0.875	2108693-4	SF 1110 Common Footprint	MP QD
	Pre-Loaded	1.4	1.0	0.8-1.1	2108610-5	SF 1410 Common Footprint	MP QD
	Pre-Loaded	1.7	1.0	1.1-1.4	2108611-5	SF 1710 Common Footprint	MP QD
	Pre-Loaded	2.1	1.0	1.4-1.75	2108612-5	SF 2110 Common Footprint	MP QD
	Pre-Loaded	2.4	1.0	1.6-2.0	2108613-5	SF 2410 Common Footprint	MP QD
	Pre-Loaded	2.7	1.0	1.9-2.3	2108614-5	SF 2710 Common Footprint	MP QD
	Pre-Loaded	3	1.0	2.2-2.6	2108609-5	SF 3010 Common Footprint	MP QD
	Pre-loaded	1.2	1.05	0.7 - 1.0	2134078-1	Shield Finger 1210	MP QD
	Pre-loaded	1.24	1.0	0.65 - 1.1	1551631-5	SF 1210 Common Footprint	MP QD
	Pre-loaded	1.3	1.0	0.9 - 1.4	1554825-1	Shield Finger 1310	MP JP
	Pre-loaded	1.4	1.0	1.0 - 1.4	1-1447360-1	Shield Finger 1410	MP JP
	Pre-loaded	1.5	1.1	0.9 - 1.4	1565158-1	Shield Finger 1511	MP JP
	Pre-loaded	1.6	0.8	1.1 - 1.5	1565322-1	Shield Finger 1608	MP JP
	Pre-loaded	1.8	1.0	1.0 - 1.7	1857724-4	Shield Finger 1810	MP QD
	Pre-loaded	1.8	1.0	1.0 - 1.7	1551281-4	Shield Finger 1810 RF LEFT	MP QD
	Pre-loaded	1.8	1.0	1.0 - 1.7	1551401-4	Shield Finger 1810 RF RIGHT	MP QD
	Pre-loaded	1.99	2.0	1.1 - 1.9	2040761-1	Shield Finger 2020	MP QD
	Pre-loaded	2.0	1.1	1.1 - 2.1	1554901-1	Shield Finger 2011	MP JP
	Pre-loaded	2.4	1.1	1.4 - 2.3	1746854-1	Shield Finger 2411	MP JP
	Pre-loaded	3.0	1.4	1.95 - 2.9	1827625-1	Shield Finger 3014	MP JP
	Pre-loaded	3.0	1.4	1.95 - 2.9	1903646-1	Shield Finger 3014 LOW FORCE	MP JP

## INTERNAL CONNECTORS



## Board to Board Connectors

Picture	Plug /Rec	Pos	Pitch	Height	Width	P/N	Description	Status
	Plug	10, 20, 24, 30, 40, 50, 60	0.4	0.98	2.98	*-2201196-*	0.4mm BtB H=0.98mm Plug	MP QD
	Rec	10, 20, 24, 30, 40, 50, 60	0.4	0.98	2.98	*-2201197-*	0.4mm BtB H=0.98mm Rec	MP QD
	Plug	10, 20, 24, 30, 40, 50, 60	0.4	0.6	3.0	*-2108514-*	0.4mm BtB H=0.6mm Plug	MP SH
	Rec	10, 20, 24, 30, 40, 50, 60	0.4	0.6	3.0	*-2108510-*	0.4mm BtB H=0.6mm Rec	MP SH
	Plug	10, 20, 24, 30, 40, 50, 60	0.4	0.6-0.8	2.2-2.5	*-2260336-*	0.4mm BtB H=0.7mm Plug	MP SH
	Rec	10, 20, 24, 30, 40, 50, 60	0.4	0.6-0.8	2.2-2.5	*-2260338-*	0.4mm BtB H=0.6-0.8mm Rec	MP SH
	Plug	10, 20, 24, 30, 40, 42, 50, 60	0.35	0.6 - 1.0	1.85	*2260253-*	0.35mm BtB H=0.6mm Plug	Prototype
	Rec	10, 20, 24, 30, 40, 42, 50, 60	0.35	0.6 - 1.0	1.85	*-2260249-*	0.35mm BtB H=0.6 - 1.0mm Rec	Prototype








## FPC Connectors

Picture	Pitch	Flip	Contact	Positions	Height x width	P/N	Description	Status
	0.3	Back	Lower	27, 29, 31, 39, 41, 45	1.2 x 2.9	*-2013496-*	0.3 FPC Lower contact BF	MP JP
	0.3	Back	Upper	25, 27, 33, 37, 39, 41, 43	0.9 x 3.8	*-2013928-*	0.3 FPC Upper contact BF	MP JP
	0.3	Front	Lower	39, 51, 71	1.0 x 3.5	*-2041390-*	0.3 FPC Lower Contact FF	MP SH
	0.25	Back	Lower	37, 41	1.3 x 3.2	*-2040832-*	0.25 FPC Lower contact BF	MP JP





## Wire to Board Connectors

Picture	Pitch	Pos	Wire size	Height	LengthxWidth	P/N	Description	Status
	0.8	2	AWG 32	1.4	4.4 x 2.85	1981813-1 (Rec) 1981812-1 (Plug)	Micro SLP connector pair. Cable connector should be requested as a cable assembly at TE Connectivity	MP GD
	1.2	2-6	AWG 28	1.4	(4.2-9.0)x 4.3	1909783-*(Housing) 1909782-*(Header) 1909784-1(Contact)	Top entry low profile WTB connector	MP CN

## One Piece Board to Board Connectors




Picture	Type	Pitch	Pos	Working height	Dimensions	P/N	Description	Status
	Dual row	0.7	10	0.9	11.25 x 6.25 x 0.85	1551246-2	10p Compressive BtB H=0.9mm	MP SH
	Dual row	1.25	10	1.2	5.0 x 6.5 x 0.9	2199055-2	10p Compressive BtB H=1.2mm	MP GD
	Dual row	1.6	4	1.4	4.8 x 5.0 x 1.2	2199172-1	4p Compressive BtB H=1.4mm	MP GD
	Davual row	1.6	6	1.4	4.8 x 5.0 x 1.2	2199170-1	6p Compressive BtB H=1.4mm	MP GD
	Dual row	1.6	4	1.65	5.0x3.18 x1.4	2199075-2	4p Compressive BtB H=1.65mm	MP GD
	Dual row	1.6	6	1.65	5.0 x 4.78 x1.4	1932771-1	6P Compressive BtB H=1.65mm	MP GD
	Dual row	1.6	10	1.65	5.0 x 7.98 x1.4	2199035-2	10P Compressive BtB H=1.65mm	MP GD

## One Piece Board to Board Connectors

Picture	Type	Pitch	Pos	Working height	Dimensions	P/N	Description	Status
	Dual row	2.0	6	3.15	5.0 x 5.38 x 2.9	2199064-2	6p Compressive BtB H=3.15mm	MP GD
	Single row	1.1	8	0.8	11.8 x 3.7 x 0.5	1551759-2	8p Compressive BtB H=0.8mm	MP SH
	Single row	1.5	10	0.9	6.80 x 17.15 x 0.3	1705536-2	10p Compressive BtB H=0.9mm	MP SH
	Single row	2.0	2	0.7	5.6 x 5.2 x 0.4	2246092-2	2p Compressive BtB H=0.7mm	MP SH
	Single row	2.0	8	0.7	17.20 x 5.20 x 0.4	1551120-5	8p Compressive BtB H=0.7mm	MP SH

## MEMORY CARD CONNECTORS

### Micro SD Card Readers

Picture	Switch?	Push - Push?	Dimensions	P/N	Description	Status
	Y	Y	13.95 x 16.2 x 1.65	2201778-1	Micro SD Connector	MP QD
	Y	N	11.3 x 7.15 x 1.45	1932739-1	Micro SD connector, block type with detection switch	MP GD
	Y	N	17.75 x 14.0 x 2.5	2199003-2	Micro SD / Micro SIM Combi	MP GD

## SIM CONNECTORS



## SIM Connectors

Picture	Type	Card Size	Height range	Length x width	P/N	Description	Status
	Push-Push	2FF	1.87	23.7 x 18.9	1981959-1	Push Push SIM connector	MP SH
	Push-Push	2FF	1.4	26 x 17	2174918-1	Super low profile SIM	MP GD
	Push-Push	3FF	1.27	15.98 x 15.1	2174803-2(DIP) 2229333-2 (SMT)	Micro SIM Push Push reader	MP SH
	Tray	2FF	1.4	25.85 x 16.7	2134033-1	Double Contact Metal Tray	MP JP
	Tray	2FF	1.4	2.85 x 16.7	2134034-1	Double Contact Body Assy	MP JP
	Push-Pull	2FF	2.05	26.3 x 14.7	2069248-1	Side entry SIM connector LEFT	MP SH
	Push-Pull	2FF	2.05	26.3 x 14.7	1932669-2	Side entry SIM connector RIGHT	MP SH
	Push-Pull	2FF	1.8 - 2.0	15.5 x 10	*-2042647-* *-2042920-*	Scalable Shielded SIM	MP SH
	Push-Pull	2FF	1.8 - 2.0	15.5 x 10	*-1551663-*	Narrow shield version	MP SH
	Push-Pull	2FF	1.95	16.3 x 14.8	1932768-1	SIM 1.95mm height	MP SH
	Push-Pull	3FF	1.24	13.3 x 14.1	2108431-4	Micro SIM 1.24 8pos	MP
	Push-Pull	3FF	1.24	13.3 x 14.1	2108431-3	Micro SIM 1.24 6pos	MP
	Push-Pull	2FF	1.5	17.6 x 16.1	1932766-1	SIM 1.5mm height	MP GD
	Push-Pull	2FF	1.43	17.5 x 16.3	1981898-1	Super low profile SIM	MP SH
	Push-Pull	2FF	1.4	15.5 x 14.25	1551956-1	SIM 1.4mm height	MP GD
	Block	1FF - 4FF	2.0 - 2.5	10 x 7.6	*-1705300-*	5-Directional SIM connector	MP QD
	Block	1FF - 4FF	2.0 - 2.5	10 x 7.6	*-2199287-*	5-D SIM economic version	MP QD


2FF: 2nd form factor or mini UICC, 3FF: 3rd form factor or micro SIM, 4FF: 4th form factor SIM

## I/O CONNECTORS AND CABLE ASSEMBLIES



### Multi I/O Connectors

Picture	Type	Mount type	Dimensions	P/N	Description	Status
	High Speed Multi IO	SMD receptacle Available in several mounting styles i.e. reversed, midmount std mount etc	7.52 x 7.75 x 2.48	21991833-1	Hybrid I/O 5+4+4 Receptacle Featuring USB3.1 speed, USB PD 3A, MHL/MyDP, backwards compatible with USB2.0 plug	D
	High Speed Multi IO	Plug	6.83 x 28.95 x 4.28	1-2199225-1	Hybrid I/O 5+4+4 plug Featuring USB3.1 speed, USB PD 3A, MHL/MyDP, backwards compatible with USB2.0 plug	D





### Multi I/O Cable

Picture	Type	Length (mm)	P/N	Description	Status
	USB3.0 Hybrid	1200	TBD	Multi I/O to USB A PD	D
	USB3.0 Hybrid	300	TBD	Multi I/O to USB A PD	D

### IP Rated I/O Connectors







Picture	Type	Mount type	Solder Leg	Standard Reversed	IP Rating	Dimensions	P/N	Description	Status
	AB	TOP	SMT	STD	IP54	8.2 x 5.0 x 3.8	1551629-1	Splash Proof Micro USB receptacle type AB	MP GD
	A	TOP	SMT	STD	IP54	8.2 x 5.0 x 3.8	2173157-1 2246077-1	Splash Proof Micro USB receptacle type B	MP GD
	AV jack	TOP	SMT	STD	IP54	13.6 x 8.3 x 4.25	2173377-6	3.5mm Audio Jack splashproof	MP GD

## Micro USB Connectors


Picture	Type	Mount type	Solder leg	Standard Reversed	Flange	Dimensions	P/N	Description	Status
	A	Plug	N/A	N/A	N/A	N/A	1939053-1 1939053-2 1939053-3	Micro USB plug A, cable Ø2.8 Micro USB plug A, cable Ø3.3 Micro USB plug A, cable Ø4.3	MP QD
	B	Plug	N/A	N/A	N/A	N/A	1939054-1 1939054-2 1939054-3	Micro USB plug B, cable Ø2.8 Micro USB plug B, cable Ø3.3 Micro USB plug B, cable Ø4.3	MP QD
	AB	TOP	SMT	STD	Y	7.5 x 5.00 x 2.51	1981584-1	Micro USB standard Rec AB	MP QD
	AB	TOP	2 DIP	STD	N	7.5 x 5.00 x 2.51	2134536-2	Micro USB flangeless	MP QD
	B	TOP	SMT	STD	Y	7.5 x 5.00 x 2.51	1981568-1	Micro USB standard Rec B	MP QD
	B	TOP	2 DIP	STD	Y	7.5 x 5.00 x 2.51	2069746-1	Micro USB 2 dip short	MP QD
	B	TOP	2 DIP	STD	Y	7.5 x 5.00 x 2.51	2013499-1	Micro USB 2 dip	MP QD
	B	TOP	4 DIP	STD	Y	7.5 x 5.00 x 2.51	2040002-1	Micro USB 4 dip	MP QD
	B	TOP	SMT	STD	N	7.5 x 5.00 x 2.51	2174507-2	Micro USB flangeless	MP QD
	B	TOP	2 DIP	RVS	N	7.52 x 5.15 x 2.48	1932788-2	Micro USB reversed flangeless	MP QD
	B	MID h=1.5	4 DIP	STD	Y	7.52 x 6.5 x 2.48	2040343-2	Micro USB mid mount	MP QD
	B	MID h=1.6	4 DIP	RVS	Y	7.52 x 6.5 x 2.48	1554266-1	Micro USB RVS Mid Mnt	MP QD
	B	MID h=1.6	4 DIP	RVS	N	7.5 x 6.5 x 2.45	2134441-2	Micro USB RVS Mid Mnt Flangeless	MP QD



## Circular I/O Connectors



Picture	Type	Application	Barrel diameter	Dimensions	P/N	Description	Status
	DC jack	Compressive	2.0	6.8 x 5.2 x 3.5	1551548-1	2.0mm DC jack compressive	MP GD
	DC jack	Compressive	2.0	6.8 x 5.2 x 3.5	TBA	2.0mm DC jack compressive, chamfered	MP GD
	A/V jack	Compressive	3.5	13.4 x 8.3 x 4.25	1551768-1	3.5mm Audio jack compressive	MP GD
	A/V jack	Compressive	3.5	12.7 x 8.3 x 4.25	2173014-1	3.5mm Audio jack compressive, isolated switch	MP GD
	A/V jack	SMD	3.5	13.4 x 8.1 x 3.9	2173752-2	3.5mm Audio jack SMD type tip switch	MP GD
	A/V jack	SMD mid mount	3.5	13.1 x 7.3 x 4.25	2199050-3 2199050-4 2199088-2 2199161-2	Mid mount 0.9mm offset Mid mount 0.7mm offset Mid mount 1.2mm offset (short) Mid mount 2.1mm offset	MP GD

## HDMI Connectors



Picture	Type	Mount type	Dimensions	P/N	Description	Status
	HDMI type D	Rec	6.9 x 8.8 x 2.9	2129363-1	HDMI connector SIL contacts midmount	D

## BATTERY CONNECTORS

## One Piece Battery Connectors


Picture	Solder Type	Contact Height	Positions	Pitch	Dimensions	P/N	Description	Status
	SMT	0.8	3	2.5	9.6 x 4.8 x 1.9	2229056-1	3p SMT Low Profile Battery Connector H=1.9 mm	MP GD
	Mid-Mount	0.4	4	2.5	13.7 x 5.4 x 3.0	2199206-1	4p Mid-Mount Low Profile Battery Connector H=1.4mm	MP GD

## Two Piece Battery Connectors

Picture	Mating Direction	Product Type	Positions	Pitch	Dimensions	P/N	Description	Status
	Right Angle	Plug (Phone Side)	4	3.0	13.4 x 5.1 x 3.0	2134167-1	Floating Battery Interconnection System (FBIS), Plug 4p LOW	MP SH
	Right Angle	Plug (Phone side)	4	3.0	13.4 x 5.1 x 3.7	1932859-1	Floating Battery Interconnection System (FBIS), Plug 4p HIGH	MP SH
	Vertical	Plug (Phone Side)	4	3.0	13.4 x 5.1 x 3.0	1554953-1	Floating Battery Interconnection System (FBIS), Plug 4p Vertical	MP SH
	Standoff	Plug (Phone Side)	4	3.0	14.2 x 6.1 x 3.4	2134758-1	Floating Battery Interconnection System (FBIS), Plug 4p Standoff	MP SH
	SMT	Rec (Battery side)	4	3.0	15.4 x 3.7 x 2.06	2108074-2	Floating battery interconnection system receptacle (battery side)	MP SH




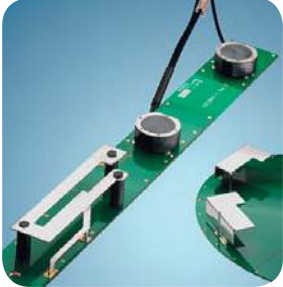


## RF CONNECTORS

### Switching Coax

Picture	Self Alignment	Impedance	Dimensions	P/N	Description	Status
	0.5	50Ω	2.0 x 2.0 x 0.9	1551372-1	Pico switching coax to use with test probe 619361-1/ 619383-1	MP QD

## ANTENNA PRODUCTS

### Antenna Products

Picture	Manufacturing Technology	Description	Advantages
	Two Shot Molding	Two Shot molding is a mature and well understood process that remains viable for cost effective and repeatable production of antennas. The basic process has only two steps, injection molding of two distinct thermoplastic polymers and the electroless plating process, resulting in a selectively plated component.	<ul style="list-style-type: none"> <li>• Design flexibility for complex 3D geometries</li> <li>• Ability to integrate multiple functions into one component</li> <li>• Tightest tolerance for pattern registration to carrier</li> <li>• Fewest manufacturing steps and processes</li> <li>• Higher yields</li> </ul>
	Laser Direct Structuring	LDS is a three step process. First, the antenna carrier is molded in a standard single shot mold using an LDS compatible resin. Second, the desired antenna pattern is structured onto the carrier by a 3D laser system. Finally, the carrier with pattern is plated using industry standard methods where the plating adheres to the plastic only where it has been touched by the laser, thus creating a conductive pattern.	<ul style="list-style-type: none"> <li>• Including same advantages as the 2-Shot technology</li> <li>• Ability to produce thin (0.15 mm) traces</li> <li>• Flexibility for pattern changes during production</li> </ul>
	Printed	Printing is an emerging manufacturing process being used to produce antennas. The antenna carrier is molded of standard resin materials. The antenna pattern is structured onto the carrier by applying a conductive non-plate particulate in a controlled manner with a 3D print system.	<ul style="list-style-type: none"> <li>• No special resins</li> <li>• No plating required</li> <li>• Flexibility for pattern changes during production</li> <li>• Simple/fastest/lowest cost tooling</li> <li>• Environment Friendly</li> </ul>
	Stamped Metal Antennas	TE has developed a line of low profile, high performance Stamped Metal embedded antenna solutions for single-, dual-, tri- and quad band applications. Stamped Metal antennas offer OEM's a low cost and highly repeatable manufacturing solution with a number of standard or customized antenna designs.	<ul style="list-style-type: none"> <li>• Lowest cost</li> <li>• Integrated contacts to ground plane</li> <li>• High volume capable production die</li> <li>• Additional assembly stations may be added for volume upswings</li> </ul>
	Flexible Printed Circuit (FPC) and Printed Circuit Board (PCB) Antennas	Flexible Printed Circuits and Printed Circuit Boards are ideal for multi band antennas, allowing virtually any wireless product to operate at different frequencies without multiple antennas. TE Connectivity offers a broad range of low profile, high performance FPC and PCB embedded antennas. Similar to our Stamped Metal antennas, FPC and PCB antennas offer OEM's a low cost and highly repeatable manufacturing solution in a number of standard or customized antenna designs.	<ul style="list-style-type: none"> <li>• Low cost tooling investment</li> <li>• Flexibility for pattern changes during production</li> <li>• Shortest lead time for tool build</li> </ul>
	Speaker Acoustic Modules	TE has in-house capability for designing, assembling and testing Speaker Acoustic Modules (SAMs). The antenna and acoustic chamber are designed together as one assembly. The acoustic chamber often becomes the carrier for the antenna (MID, FPC, stamped metal). SAMs are 100% RF and acoustic tested in the production line prior to packaging.	<ul style="list-style-type: none"> <li>• Space saving combination of acoustic chamber and antenna</li> <li>• RF test after speaker integration to SAM</li> </ul>

For more information: <http://www.antenna.te.com>

D: Development, I: Introduction, C: Concept, MP: Mass production, SH: Shanghai (PRC), QD: Qingdao (PRC), GD: Guangdong (PRC), JP: Japan, SW: Switzerland, KR: Korea, CN: China. All dimensions in [mm].

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