WE CONNECT INNOVATION TO LIFE

EVERY CONNECTION COUNTS

Quick Reference Guide

Connectors and Antennas for Mobile Devices

Using its extensive experience, TE Connectivity (TE) 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, 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.

TE OFFERS CONNECTIVITY SOLUTIONS FOR ALL OF YOUR MOBILE DEVICES DESIGN NEEDS.

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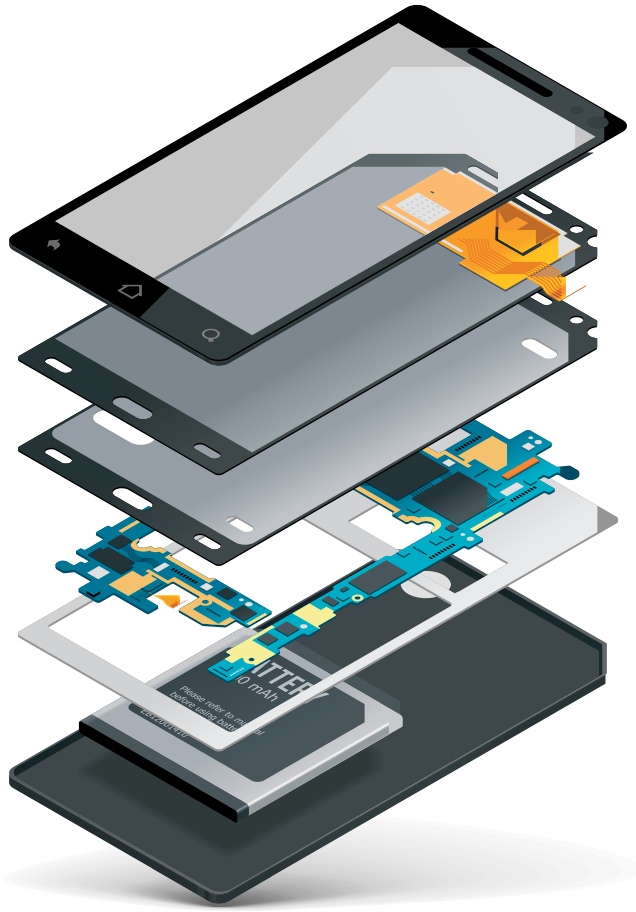


D: Development, I: Introduction, C: Concept, MP: Mass production, SH: Shanghai (PRC), QD: Qingdao (PRC), GD: Guangdong (PRC), JP: Japan, SW: Switzerland, KR: Korea, CN: China. All dimensions in [mm].

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.	• Standardized design features; • Rapid prototyping for most parts in 72 hours	All BLS products are custom made. Common sizes range from, but are not limited to, 5mmx5mmx1mm to 70mmx70mmx5mm Contact TE for specific size requirement.	MP QD

For customer inquiry please contact: bls.support@te.com
For more information: www.te.com/products/bls

Solder Pads and Spacers

Picture	Type	Plating	Dimensions	P/N	Description	Status
	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
	C	1	2	0.4 - 0.8	2199248-4	Scalable Spring Finger	MP QD
	C	1.3	2	0.5 - 1.1	2199248-5	Scalable Spring Finger	MP QD
	C	1.6	2	0.8 - 1.4	2199248-6	Scalable Spring Finger	MP QD
	C	2	1.5	1.1 - 1.8	2199249-3	Scalable Spring Finger	MP QD
	C	2.3	1.5	1.4 - 2.1	2199249-4	Scalable Spring Finger	MP QD
	C	2.9	1.5	2.0 - 2.7	3-2199250-2	Scalable Spring Finger	MP QD
	C	3.2	1.5	2.3 - 3.0	3-2199250-3	Scalable Spring Finger	MP QD
	C	3.6	1.5	2.6 - 3.3	3-2199250-4	Scalable Spring Finger	MP QD
	C	3.8	1.5	2.9 - 3.6	3-2199250-5	Scalable Spring Finger	MP QD

For more information: http://www.te.com/products/spring-fingers

INTERNAL CONNECTORS

Board to Board Connectors

Picture	Plug/ Rec	Pos	Pitch	Stacking Height	Width	P/N	Description	Status
	Plug	10, 24, 30	0.4	0.98	2.03	*-2201196-*	0.4mm BtB H=0.98mm Plug	MP QD
	Rec	10, 24, 30	0.4	0.98	2.98	*-2201197-*	0.4mm BtB H=0.98mm Rec	MP QD
	Plug	10, 24, 30, 40, 50	0.4	0.6 - 0.8	2	*-2260336-*	0.4mm BtB H=0.7mm Plug	MP SH
	Rec	10, 24, 30, 40, 50	0.35	0.6 - 0.8	2.5	*-2822367-*	0.4mm BtB H=0.6-0.8mm Rec	MP SH
	Plug	10, 20, 24, 30, 40, 50, 60	0.35	0.6 - 1.0	2	*-2822461-*	0.4mm BtB H=0.6-1.0mm Plug	Prototype
	Rec	10, 20, 24, 30, 40, 50, 60	0.35	0.6 - 1.0	2.5	*-2822458-*	0.4mm BtB H=0.6mm Rec	Prototype
	Cover Shell	10, 20, 30, 40	0.4	0.9 (#)	4.8 (3.6)	*-2822383-*	0.4mm Board to Flex Cover Shell	Prototype
	Rec	10, 20, 30, 40	0.4	0.9 (#)	3.2	*-2822378-*	0.4mm Board to Flex Rec	Prototype

(#) Total stacking height includes FPC and cover shell part. (0.9mm stacking height is equivalent to 0.5mm 2-piece BTB)

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	Length x width	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
	Dual 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	5.0 x 3.18 x 1.4	2199075-2	4p Compressive BtB H=1.65mm	MP GD
	Dual row	1.6	6	1.65	5.0 x 4.78 x 1.4	1932771-1	6p Compressive BtB H=1.65mm	MP GD
	Dual row	1.6	10	1.65	5.0 x 7.98 x 1.4	2199035-2	10p Compressive BtB H=1.65mm	MP GD
	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	1.4	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
	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	3FF	1.24	13.3 x 14.1	2108431-4	Micro SIM 1.24 8pos	MP
	Push - Pull	3FF	1.18	13.3 x 14.1	2199737-5	Micro SIM 1.18 8pos	MP
	Push - Pull	2FF	1.5	17.6 x 16.1	1932766-1	SIM 1.5mm height	MP GD
	Push - Pull	2FF	1.95	16.3 x 14.8	1932768-1	SIM 1.95mm height	MP SH

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	Series	Functionality				Mount Type	Receptacle P/N	Plug P/N	Description	Status
		USB2.0	USB3.0	USB3.1	USB PD					
	HSMIO (High Speed Multi IO) 5+4	V	V	V	V	STD on	1-2199296-1	2-2199225-3	USB3.1 speed, USB PD 3A, backwards compatible with USB2.0 plug	D
						1mm offset	TBA			D
						0.86mm RVS	1-2199238-1			D
	HSMIO (High Speed Multi IO) 5+4+4 POWER	V	V	V	V	STD on	TBA	TBA	USB3.1 speed, USB PD 3A+2A of power over additional 4 contacts (100 Watt), backwards compatible with USB2.0 plug	D
						1mm offset	TBA			D
						0.86mm RVS	TBA			D
	HSMIO (High Speed Multi IO) 5+4+4 VIDEO	V	V	V	V	STD on	2199296-1	2-2199225-2 2-2199225-1	USB3.1 speed, USB PD 3A, MHL/MyDP, backwards compatible with USB2.0 plug	MP QD
						1mm offset	TBA			D
						0.86mm RVS	2199238-1			MP QD
	Multi IO 11p (5+6)	V	-	-	-	STD on	2108155-7	2108176-* 2108457-* 2108390-*	USB2.0 and 6 additional contacts (i.e. MHL). Backwards compatible with USB2.0 plug	MP QD
						RVS offset	2108171-7			
						STD offset	2108161-7			
	Multi IO 21p (10+11)	V	V	-	-	STD on	2108654-2	2108621-*	USB2.0, USB3.0 and additional contacts (power, MHL). Backwards compatible to uUSB2.0, uUSB3.0 and 11p plugs	MP QD
						RVS on	2108634-2			

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	1551629-2	Splash Proof Micro USB receptacle type AB	MP GD
	A	TOP	SMT	STD	IP54	8.2 x 5.0 x 3.8	2173157-2 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
	B	TOP	SMT	STD	IP68 1.5m 30 min	8.97 x 6.5 x 3.04	2108877-1	Waterproof Micro USB receptacle type B, MIM (Metal Injection Molded) shell	MP QD

Micro USB Connectors

Picture	Type	Mount type	Solder Leg	Standard Reversed	Flange	Dimensions	P/N	Description	Status
	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 6.5 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

Platform A/V Jack

Picture	Type	Positions	Customizable Housing	Dimension	Switch	P/N	Description	Status
	SMD Top	5P	V	13.4 x 8.1 x 3.9	Y	TBA	Top mount AV jack 3.5mm dia	D
	SMD Mid Mount	5P	V	13.4 x 8.1 x 4	Y	TBA	Mid mount AV jack 3.5mm dia	D
	FPC Mount	5P	V	14 x 6.3 x 3.6	Y	2246100-1	Smallest AV jack, FPC mount	D
	FPC Mount	5P	V	13.4 x 8.1 x 3.9	Y	2173752-1	FPC mount AV jack	MP GD
	FPC Mount	6P	V	14.45 x 6.3 x 4	Y	2286916-1	FPC mount AV jack tip switch	D
	FPC Mount	5P	V	20.26 x 7.4 x 5.37	Y	2286194-1	FPC mount AV jack screw hole, angled	MP GD
	Compressive Wings	5P	V	13.9 x 7.2 x 3.7	Y	TBA	AV jack compressive with side wings	D
	Compressive Top	5P	V	13.4 x 7.2 x 5	Y	TBA	AV jack compressive from top	D

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

Cable Assemblies

TE provides both standard and customized cable assemblies for your mobile and wearable devices requirements.

- Connector of choice on both cable ends
- Customizable cable build up and wide variety of colors
- Fixing on wearable side can be done in several ways (magnetic, mechanical locking or friction based)

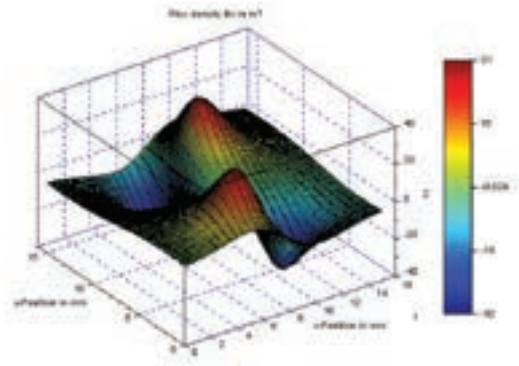
For advanced mobile and wearable devices, the interface for connecting power and data can be done in different ways. Your device can be placed in a docking station or connected by a cable assembly to your PC. In both cases, TE can provide customized cable assembly solutions.

Key Features

- Cosmetics molding and industrial design
- Platform approach to allow short design cycles, fast market introduction and low tooling investments
- Magnetic fixing option enables easy disconnection of the assembly from the device without damaging the device
- Simulation of magnetic holding force and radiation patterns of the magnets (Maxwell 3D)
- Wearable interconnect can be made waterproof to withstand outdoor activities

Applications

- Smartphones
- Smart watches
- Sport watches



Simulation of Magnetic Holding Force and Radiation Pattern

Both simulation and measuring equipment are available to test and predict holding force in case of a magnet-based connector system. Once the model of your design is finalized, we can perform these simulations. Also, the radiation pattern of magnetic fields can be measured and simulated to determine if your design is following the guidelines.

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=1.9mm	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 LOW	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

SOCKETS

Camera Sockets

Picture	Positions	P/N	Dimensions	Description	Status
	24P	2108142-1	9.25 x 9.25 x 3.9	• Stainless steel shell for ESD/EMI shielding effectiveness. • Standard product for customer platforming design and pixel extension of higher resolution camera modules.	MP KR

ANTENNA PRODUCTS

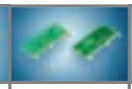
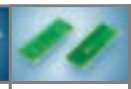
Customized Antenna Products

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.	• Design flexibility for complex 3D geometries • Ability to integrate multiple functions into one component • Tightest tolerance for pattern registration to carrier • Fewest manufacturing steps and processes • Higher yields
	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.	• Including same advantages as the 2-Shot technology • Ability to produce thin (0.15 mm) traces • Flexibility for pattern changes during production
	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.	• No special resins • No plating required • Flexibility for pattern changes during production • Simple/fastest/lowest cost tooling • Environment Friendly
	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.	• Lowest cost • Integrated contacts to ground plane • High volume capable production die • Additional assembly stations may be added for volume upswings
	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.	• Low cost tooling investment • Flexibility for pattern changes during production • Shortest lead time for tool build
	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.	• Space saving combination of acoustic chamber and antenna • RF test after speaker integration to SAM

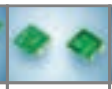
For more information: http://www.antenna.te.com

Standard Antenna Products

Cellular and GPS

Cellular and GPS										
	Pictures										
	Dimensions	X	38.10	38.10	37.59	35.56	49.90	38.1	110.00	74.00	6.00
		Y	15.24	15.24	11.94	17.65	20.27	15.20	14.00	10.56	
		Z/Height	1.57	1.57	1.57	1.57	1.58	1.57	1.31	1.57	6.05
	Peak Gain		+2 dBi	0 dBi, +3 dBi	+1 dBi	+2 dBi	+3 dBi	0 dBi, +1 dBi	+3.9 dBi	+3.5 dBi	0 dBi
	VSWR		< 2.5:1	< 3.0:1	< 3.0:1	< 3.0:1	< 3.0:1	< 2.5:1	< 3.0:1	< 3.0:1	< 3.0:1
	Mounting		Tab	Tab	SMT	Tab	Tab	Tab	PCB w/ U.FL Adhesive	Tab	SMT Puck
	Packaging		Bulk	Bulk	T&R	Bulk	Bulk	Bulk	Bulk	Bulk	T&R
	Bands		Single Band	Dual Band	Quad Band	Quad Band	5-Band	Dual Band	LTE all band	LTE all band	Single Band
	Special Features								GND plane independent		works on GND
Frequency Band (MHz)	Usage	Region	1513169-1	1513247-1	1513259-1	1513273-1	1513317-1	1513434-1	2118308-1*	2118310-1	1513634-1
698 - 960	LTE	Global							X	X	
824 - 894	GSM/CDMA 850/LTE	Americas	X	X	X	X	X		X	X	
880 - 960	GSM 900 /LTE	EU			X	X	X	X	X	X	
868 - 870	ISM/ ZigBee	EU	X						X	X	
1565 - 1585	GPS	Global									X
1710 - 1880	GSM 1800 /LTE	EU			X	X	X	X	X	X	
1850 - 1990	GSM/ CDMA 1900	Americas		X	X	X	X		X	X	
1920 - 2170	UMTS/LTE	Global					X		X	X	
2300 - 2700	LTE	Global							X	X	

ISM / WLAN / WiFi / ZigBee

ISM / WLAN / WiFi / ZigBee / UWB												
	Pictures												
	Dimensions	X	38.10	14.96	16.09	16.09	11.00	35.95	15.00	40.00	29.00	36.85	36.85
		Y	6.60	12.70			4.25	6.05	10.00	8.00	12.00	30.60	29.60
		Z/Height	1.57	0.79	6.05	6.05	4.00	4.28	1.00	1.00	10.00	0.30	0.30
	Peak Gain		+1 dBi	+2 dBi	+4 dBi	+2 dBi	+4.9 dBi	+4.3 dBi	+2.4 dBi	+3.7 dBi	+3 dBi	+4 dBi	+2 dBi
	VSWR		< 2.5:1	< 2.0:1	< 2.5:1	< 2.5:1	< 2.5:1	< 2.5:1	< 2.5:1	< 2.0:1	< 3.0:1	< 3.0:1	< 3.0:1
	Mounting		SMT	Tab	SMT Puck	SMT Puck	SMT	SMT	PCB w/ U.FL Adhesive	PCB w/ U.FL Adhesive	Universal Antenna Module	Flex w/ U.FL Adhesive	Flex w/ U.FL Adhesive
	Packaging		T&R	Bulk	T&R	T&R	T&R or Tray	T&R or Tray	Bulk	Bulk	Tray	Bulk	Bulk
	Bands		Single Band	Single Band	Dual Band	Single Band	Single Band	Dual Band	Single Band	Dual Band	Dual Band	Single Band	Dual Band
	Special Features				works on GND, omni-directional	works on GND, omni-directional	works on GND	works on GND	tape mount	tape mount	panel mount	tape mount	tape mount
Frequency Band (MHz)	Usage	Region	1513156-1	1513353-1	1513164-1	1513504-1	2118316-1	2118315-1	2118326-1*	2118309-1*	1513472-5*	2118059-1*	2118060-1*
902 - 928	ISM/ ZigBee	US	X										
2400 - 2483.5	Bluetooth /WLAN /ZigBee /Wi-Fi	Global		X	X	X		X		X	X	X	X
4900 - 5875	WLAN /Wi-Fi	Global					X	X	X	X			
5150 - 5875	WLAN /Wi-Fi	Global by Channel			X						X		X

*Alternate connector (MHF4) interfaces available. If you have any specific need, please contact your local TE sales representative.
For more information: http://www.antenna.te.com

FOR MORE INFORMATION

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For other country numbers, go to te.com/supportcenter

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1-1773455-7 Band 12/2014