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► GPS SAW

GPS

GLONASS

GALILEO

BEIDOU

P/N	Frequency (MHz)	Insertion Loss (dB)	Band Width (MHz)	Size (mm)	Note
TA1804A	1582.469	1.1	46.834	1.1X0.9	*AEC-Q200
TA1954A(GPS+GLONASS+COMPASS)	1582.47	1.2	46.84	1.1X0.9	*AEC-Q200
TA1954D(GPS+GLONASS+COMPASS)	1582.47	1.2	46.84	1.1X0.9	
TA2250A(GPS+GLONASS+COMPASS)	1585.655	1	40.47	1.1X0.9	
TA2291A(GPS+GLONASS)	1585.655	1	40.47	1.1X0.9	
TA2154A(GPS+GLONASS)	1588.655	1	34.47	1.1X0.9	
TA2309A (L2)	1223	2.4	52	1.1X0.9	
TA2471A (L5)	1176.45	1.8	25	1.1X0.9	
TA1425A (GPS band)	1574.42	0.8	2	1.4x1.1	
TA0757B(GPS band)	1575.42	0.9	2	1.4x1.1	
TA1343A(GPS+GLONASS+GALILEO+BEIDOU)	1583	1.2	46.79	1.4x1.1	
TA1343B(GPS+GLONASS+GALILEO+BEIDOU)	1583	1.2	46.79	1.4x1.1	*AEC-Q200
TA1661A(GPS+GLONASS+GALILEO+BEIDOU)	1583	1.8	46.79	1.4x1.1	*AEC-Q200
TA2396A(GPS+GLONASS+COMPASS)	1582.47	1	46.84	1.4x1.1	
TA1267A (GPS+GLONASS)	1588.655	1.25	34.47	1.4x1.1	
TA1267E (GPS+GLONASS)	1588.655	1.25	34.47	1.4x1.1	*AEC-Q200
TA2298A (L2)	1225	2.2	60	1.4x1.1	
TA2156A (L5)	1176.45	3.6	20	1.4x1.1	
TA1901A	1587.5	2	57	2.0X1.6	*AEC-Q200
TA1745A	1583	1.8	46.79	2.0X1.6	*AEC-Q200
TA1658A(GNSS)	1582.4	1.7	46.61	3.0X3.0	*AEC-Q200
TA1925A (GPS+GLONASS L2)	1234.4	3.3	45	3.0X3.0	*AEC-Q200
TA0440A(Car Antenna)	1575.42	2.9	2	3.0X3.0	*AEC-Q200
TA1785A	1583	1.8	46.79	3.0X3.0	*AEC-Q200
TA0676A	1592.5	2.6	43	3.0X3.0	*AEC-Q200
TA1442A (BEIDOU)	2492	1.55	5	3.0X3.0	*AEC-Q200
TA1924A (GPS L5+GLONASS E5)	1191.8	3.5	55	3.8X3.8	*AEC-Q200

► GPS Front End Module

GPS

GLONASS

GALILEO

BEIDOU

P/N	Frequency (MHz)	Band Width (MHz)	Size (mm)	Note
TN0081A (GPS+GLONASS)	1575~1606	18.5	2.5x2.5x0.535	*AEC-Q100
TN0089A (GPS+GLONASS+GALILEO+BEIDOU)	1575	15.5	1.5x1.1x0.39	*AEC-Q100
	1597-1606 1559-1591			
TN0125A (L2)	1215~1239.6	16	1.5x1.1x0.39	
TN0126A (L5)	1164~1189	17	1.5x1.1x0.39	

► GPS Xtal

GPS

GLONASS

GALILEO

BEIDOU

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ3120A	32.768KHz	9	±20	1.6x1.0	
TZ3108A	32.768KHz	12.5	±20	1.6x1.0	
TZ2939B	26	8	±10	1.6x1.2	
TZ2065A	32.768KHz	12.5	±20	2.0x1.2	

► GPS Xtal

GPS

GLONASS

GALILEO

BEIDOU

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2486C	26	8	±10	2.0x1.6	
TZ2058E	26	7	±15	2.0x1.6	
TZ3230A	26	19	±10	2.0x1.6	
TZ2654B	24	20	±10	2.5x2.0	
TZ1510C	32.768KHz	9	±20	3.2x1.5	*AEC-Q200
TZ1006AC	32.768KHz	12.5	±20	3.2x1.5	
TZ2754C	32.768KHz	12.5	±20	3.2x1.5	*AEC-Q200
TZ1628A	26	19	±7	3.2x2.5	
TZ1628C	26	19	±7	3.2x2.5	*Grade

► GPS TCXO/XO

GPS

GLONASS

GALILEO

BEIDOU

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TX0628C	19.2	3.3	±0.5~±7.5	2.0x1.6	*Wide temp range to +105°C
TX0408C	26	2.85	±0.5	2.0x1.6	
TX0544B	38.4	1.8	±0.5	2.0x1.6	
TX0678B	48	1.8~3.3	±0.5~±7.5	2.0x1.6	*Wide temp range to +105°C
TX0744A	49.58	1.7~3.3	±0.5	2.0x1.6	
TX0687A	40	3.0~3.3	±1.0	2.5x2.0	
TX0309C	16.368	2.8	±0.5	2.5x2.0	
TX0360A	16.367667	2.85	±0.5	2.5x2.0	
TX0358A	16.368	1.8	±0.5	2.5x2.0	
TX0590B	16.369	1.7~3.3	±2	2.5x2.0	
TX0578C	26	1.8	±0.5	2.5x2.0	
TX0395B	26	2.8	±0.5	2.5x2.0	
TX0486A	26	2.8	±0.5	2.5x2.0	
TX0617B	26	2.8	±0.5	2.5x2.0	
TX0275A	16.368	2.85	±0.5	3.2x2.5	
TX0203A	26	2.775	±0.5	3.2x2.5	

► WIFI 2.4 GHZ filter

WIFI

Bluetooth

P/N	Frequency (MHz)	Band Width (MHz)	Insertion Loss (dB)	Size (mm)	Note
TA2104A	2441.75	83.5	2.2	1.1x0.9	SAW
TA2104B	2441.75	83.5	1.7	1.1x0.9	*TC SAW
TA2105A	2442	79	2.5	1.1x0.9	*WiFi/LTE co-existence BAW
TA2270A	2437	69	2.5	1.1x0.9	*WiFi/LTE co-existence
TA1218A	2436	72	3	1.4x1.1	
TA1834A	2441.75	83.5	3	1.4x1.1	
TA1468A	2441.8	83.5	1.6	1.4x1.1	
TA1869A	2442	79	1.9	1.4x1.1	*WiFi/LTE co-existence BAW
TA1869B	2442	79	1.9	1.4x1.1	*WiFi/LTE co-existence, AEC-Q200 BAW
TA1629A	2450	100	1.6	1.4x1.1	
TA2269A	2441.75	83.5	2.2	1.4x1.1	
TA2269B	2441.75	83.5	1.5	1.4x1.1	*TC SAW
TA0222A	2442	55	1.9	3.0x3.0	*AEC-Q200

► WIFI 2.4 GHZ filter

WIFI

Bluetooth

P/N	Frequency (MHz)	Band Width (MHz)	Insertion Loss (dB)	Size (mm)	Note
TA0223A	2441.8	83.5	2.1	3.0x3.0	*AEC-Q200

► WIFI LTCC filter

WIFI

Bluetooth

Zigbee

Thread

P/N	Frequency (MHz)	Band Width (MHz)	Insertion Loss (dB)	Size (mm)	Note
TL0017A	2.4/5.5G	100/700	0.6 Max @2400~2500 1.5 Max @5150~5850	1.1X0.9	*Diplexer
TL0010A	2450	100	2.5max	1.6X0.8	
TL0009A	2450	100	1.7max	2.0X1.25	
TL0011A	5410	1050	2.0max	2.0X1.25	
TL0019A	5788	125	2.4max	2.5X2.0	

► WIFI Dielectric filter

WIFI

P/N	Frequency (MHz)	Band Width (MHz)	Insertion Loss (dB)	Attenuation (dB)	Size (mm)	Note
TR0008A	5240	200	2.1 Max	19dB@5480-5860M	3.25x2.58	*AEC-Q200
TR0012A	5670	380	2.1 Max	19dB@5150-5340M	3.25x2.58	*AEC-Q200
TR0009A	5245	190	2.0 Max	30dB@5480-5850M	8.05x4.05	*AEC-Q200
TR0011A	5665	370	2.0 Max	35dB@5150-5340M	8.05x3.45	*AEC-Q200
TR0010A	5250	160	2.5Max	40dB@5490-55935M	8.05x4.05	*AEC-Q200
TR0013A	5710	445	2.5Max	40dB@5170-5330M	8.05x3.45	*AEC-Q200
TR0007B	5235	180	2.5Max@5150-5320 3.5Max@5360	50dB@5490-5850M	8.6x4.05	*AEC-Q200
TR0014B	5697	360	2.5 Max	50dB@5150-5330M	8.6x3.45	*AEC-Q200

► WIFI Xtal

WIFI

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2886D	40	12	±5	1.6x1.2	
TZ3127B	26	8	±7	1.6x1.2	
TZ1845D	26	9	±10	1.6x1.2	
TZ3484B	32	6	±10	1.6x1.2	
TZ3023A	24	7	±10	1.6x1.2	
TZ3126A	26	7	±5	1.6x1.2	
TZ3133A	27.12	10	±10	1.6x1.2	
TZ1987A	37.4	16	±10	1.6x1.2	
TZ2936A	48	9	±15	1.6x1.2	
TZ1325D	26	8	±10	2.0x1.6	
TZ2947A	26	10.5	±7	2.0x1.6	
TZ2901B	37.4	8	±10	2.0x1.6	
TZ2205E	38.4	10	±10	2.0X1.6	*Wide temp range to +105°C
TZ2323C	48	7	±7	2.0x1.6	
TZ3071B	80	8	1±8	2.0x1.6	
TZ3088A	96	11	±10	2.0x1.6	
TZ9190A	80	8	±10	2.0x1.6	
TZ2529C	50	12	±10	3.2x2.5	
TZ3227B	25	20	±10	3.2x2.5	

► WIFI Xtal

WIFI

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2980A	24	15	±10	2.5x2.0	
TZ2300A	26	11.5	±7	2.5x2.0	
TZ3048B	26	9	±50	2.5x2.0	
TZ0661E	26	9	±10	2.5x2.0	
TZ0909E	38.4	10	±10	2.5x2.0	*Wide temp range to +105°C
TZ2801A	40	15	±10	2.5x2.0	
TZ1478A	40	10.5	±10	2.5x2.0	
TZ0977B	40	15	±10	2.5x2.0	
TZ2650E	40	12	±5	2.5x2.0	
TZ2968C	40	11.5	±7	2.5x2.0	*Wide temp range to +105°C
TZ0502D	20	18	±10	3.2x2.5	
TZ2102A	26	13.5	±10	3.2x2.5	
TZ2810A	37.4	16	±10	3.2x2.5	
TZ1421A	40	15	±10	3.2x2.5	
TZ0475B	40	15	±10	3.2x2.5	
TZ2855A	40	10.5	±7	3.2x2.5	
TZ3075A	40	12	±10	3.2x2.5	
TZ2746A	40	11.5	±7	3.2x2.5	
TZ1596E	40	10.5	±10	3.2x2.5	*Automotive Grade
TZ2145C	52	12	±5	3.2x2.5	

► WIFI TCXO/XO

WIFI

P/N	Frequency (MHz)	Voltage (V)	Tolerance (ppm)	Size (mm)	Note
TW0523A	24	1.8	±25	2.0x1.6	
TX0546C	26	2.8	±2	2.0x1.6	
TW0547A	12.288	1.8	±50	2.0x1.6	
TX0474B	24	2.66~3.46	±1.5	2.0x1.6	
TX0720E	26	2.8	±2	2.5x2.0	
TX0671E	26	2.8	±0.5	2.5x2.0	
TW0374C	27	3.3	±30	2.5x2.0	
TW0296D	26	1.8	±10	2.5x2.0	*Low phase noise
TX0617D	26	2.3	±0.5	2.5x2.0	
TA0517A	37.4	1.8	±50	2.5x2.0	
TW0511A	80	3.3	±20	2.5x2.0	
TX0439C	24	1.68~3.0	±2	3.2x2.5	
TX0341E	26	2	±2	3.2x2.5	
TX0359B	40	2.5	±8	3.2x2.5	*CMOS
TW0473C	40	2.5	±10	3.2x2.5	*Low phase noise
TW0521A	25	3.3	±50	7.0x5.0	*EMI reduction/Spread Spectrum

► Combo chip Xtal

WIFI/BT Combo

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2813B	32	8	±10	1.6x1.2	
TZ1987A	37.4	16	±10	1.6x1.2	

► Combo chip Xtal

WIFI/BT Combo

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2593C	26	16	±8	2.0x1.6	
TZ2206B	37.4	10	±10	2.0x1.6	
TZ1188A	38.4	8.3	±10	2.0x1.6	
TZ2323A	48	7	±10	2.0x1.6	
TZ3139A	48	10	±10	2.0x1.6	
TZ1988B	37.4	16	±5	2.0x1.6	
TZ3261B	24	8	±10	2.0x1.6	
TZ1778B	19.2	7	±10	2.5x2.0	
TZ2300C	26	11.5	±10	2.5x2.0	
TZ2099A	37.4	10	±10	2.5x2.0	
TZ2322A	48	7	±10	2.5x2.0	
TZ1387A	26	11.2	±10	3.2x2.5	
TZ1462E	38.4	10	±10	3.2x2.5	

► Combo chip TCXO/XO

WIFI/BT Combo

P/N	Frequency (MHz)	Voltage (V)	Tolerance (ppm)	Size (mm)	Note
TX0659C	37.4	1.8~3.6	±2	2.0x1.6	
TX0691A	37.4	3.3	±0.5~±7.5	2.0x1.6	*AEC-Q200 *Wide temp range to +105°C
TX0678E	48	3.0~3.6	±2.5	2.0x1.6	*AEC-Q200
TX0691B	37.4	3.0~3.6	±2.5	2.0x1.6	*AEC-Q200
TW0324C	48	1.8	±10	2.5x2.0	
TX0359B	40	2.5	±8	3.2x2.5	*CMOS

► Bluetooth Xtal

Bluetooth BLE

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ3484B	32	6	±10	1.6x1.2	
TZ2084C	40	8	±5	1.6x1.2	
TZ3266A	38.4	10	±10	1.6x1.2	
TZ3206A	40	9	±10	1.6x1.2	
TZ3044A	24	10	±10	1.6x1.2	
TZ1845A	26	9	±10	1.6x1.2	
TZ3266A	38.4	10	±10	1.6x1.2	
TZ3206A	40	9	±10	1.6x1.2	
TZ3375C	32	6	±10	2.0x1.6	
TZ3471A	16	9	±10	2.0x1.6	
TZ2995B	40	8	±5	2.0x1.6	
TZ3021A	16	6	±10	2.0x1.6	
TZ2486A	16	8	±10	2.0x1.6	*Low profile
TZ1618C	26	9	±10	2.0x1.6	
TZ0661B	26	9	±10	2.0x1.6	
TZ1325D	26	8	±10	2.0x1.6	
TZ1670D	16	8	±10	2.5x2.0	
TZ2779C	26	10	±10	2.5x2.0	
TZ2701A	32	12	±10	2.5x2.0	
TZ2099E	37.4	10	±10	2.5x2.0	*AEC-Q200

► Bluetooth Xtal

Bluetooth BLE

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ1185A	16	7.1	±10	3.2x2.5	
TZ1022B	26	7	±10	3.2x2.5	
TZ1402A	26	10	±10	3.2x2.5	

► Smart Meter SAW

IoT Smart Metering Alarm & Security Medical

P/N	Frequency (MHz)	Insertion Loss (dB)	Band Width (MHz)	Size (mm)	Note
TA2294A	915	1.9	26	1.1x0.9	
TA2093A	869	3	2	1.4x1.1	
TA2381A	869	2.5	6	1.4x1.1	
TA1946A	869	2.5	2	1.4x1.1	
TA1423A	915	1.9	26	1.4x1.1	
TA1766A	925.2	2.5	5.8	1.4x1.1	
TA1294A	915	2.5	26	1.4x1.1	
TA1610A	915	2.3	26	1.4x1.1	
TA1918A	911.5	2	27	1.4x1.1	
TA2380A	911.5	2.1	27	1.4x1.1	
TA1102A	915	2	26	2.0x1.6	*AEC-Q200
TA0657A	315	1.5	0.6	3.0x3.0	*AEC-Q200
TA1564A	315	2.1	0.36	3.0x3.0	*TPMS
TA0944A	433.92	1.6	1.6	3.0x3.0	*AEC-Q200
TA1565A	433.92	2.4	0.3	3.0x3.0	*TPMS
TA0801A	866.5	2.3	7	3.0x3.0	*AEC-Q200
TA0659A	868.3	2.9	1.5	3.0x3.0	*AEC-Q200
TA1404A	869	2.3	2	3.0x3.0	*AEC-Q200
TA1457A	869.6	2.4	1	3.0x3.0	*AEC-Q200
TA0281A	915	2.2	26	3.0x3.0	*AEC-Q200
TA1720A	925.2	2.5	5.8	3.0x3.0	*AEC-Q200
TA0581B	2345	2.8	90	3.0x3.0	
TA0223A	2441.8	2.1	83.5	3.0x3.0	*AEC-Q200
TA0222A	2442	1.9	55	3.0x3.0	*AEC-Q200
TA1900A	868.3	3	55	3.0x3.0	
TA0547A	867.5	1.8	1.5	3.0x3.0	
TA1561A	915	1.9	26	3.0x3.0	
TA0437A	169	2	6	5.0x5.0	*AEC-Q200

► IOT Xtal

IoT Smart Metering Alarm & Security Medical

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2208B	38.4	10	±10	1.6x1.2	
TZ3124B	32	12	±10	1.6x1.2	
TZ3108A	32.768KHz	12.5	±20	1.6x1.0	
TZ2935A	24	15	±9	1.6x1.2	
TZ3023A	24	7	±10	1.6x1.2	
TZ3072A	25.228125	6	±10	1.6x1.2	
TZ3126A	26	7	±5	1.6x1.2	
TZ3127A	26	8	±7	1.6x1.2	
TZ3003A	37.4	7	±20	1.6x1.2	
TZ3206A	40	9	±10	1.6x1.2	

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2936A	48	15	±9	1.6x1.2	
TZ2486D	16	8	±10	2.0x1.6	
TZ3016C	32	10	±10	2.0x1.6	
TZ1269D	40	9	±5	2.0x1.6	
TZ3243A	24.305	7	±10	2.0x1.6	
TZ2065A	32.768KHz	12.5	±20	2.0x1.2	
TZ3020A	20	7	±20	2.0x1.6	
TZ2490A	25.228125	10	±6	2.0x1.6	
TZ2155B	32	10	±10	2.0x1.6	
TZ2205D	38.4	10	±10	2.0x1.6	
TZ2205E	38.4	10	±10	2.0x1.6	*Wide temp range to +125°C
TZ1269C	40	9	±10	2.0x1.6	
TZ1452D	40	15	±10	2.0x1.6	
TZ2762D	40	12	±30	2.0x1.6	
TM0016A	26	7	±10	2.5x2.0	*Thermal Sensor Xtal
TZ1670B	16	8	±10	2.5x2.0	*Wide temp range to +125°C
TZ2981E	16	9	±10	2.5x2.0	
TZ2998A	20	7	±20	2.5x2.0	
TZ2277B	24.305	7	±10	2.5x2.0	
TZ0631C	26	10	±10	2.5x2.0	
TZ0661E	26	10	±10	2.5x2.0	
TZ2944A	26	10.5	±7	2.5x2.0	
TZ1430A	30	10	±10	2.5x2.0	
TZ1430D	30	30	±10	2.5x2.0	*Wide temp range to +125°C
TZ0909D	38.4	10	±10	2.5x2.0	
TZ0909E	38.4	10	±10	2.5x2.0	*Wide temp range to +125°C
TZ0733D	40	9	±10	2.5x2.0	
TZ2650A	40	12	±10	2.5x2.0	
TZ3101A	40	9.6	±7	2.5x2.0	
TZ3141A	40	12	±5	2.5x2.0	
TZ1006A	32.768KHz	12.5	±20	3.2x1.5	
TZ1410A	12.288	9	±20	3.2x2.5	
TZ1917B	12.8	10	±20	3.2x2.5	
TZ2293A	12.8	10	±10	3.2x2.5	
TZ0384C	16	18	±20	3.2x2.5	
TZ1054D	16	8	±10	3.2x2.5	
TZ1275A	16	9	±20	3.2x2.5	
TZ1203B	24	10	±10	3.2x2.5	
TZ2189C	24.305	7	±10	3.2x2.5	
TZ2892B	25	13	±7	3.2x2.5	
TZ0381E	26	9	±10	3.2x2.5	
TZ1387A	26	11.2	±10	3.2x2.5	
TZ0757B	30	10	±10	3.2x2.5	
TZ1615B	32	10	±8	3.2x2.5	
TZ1880D	32	10	±10	3.2x2.5	
TZ0308D	40	9	±10	3.2x2.5	
TZ0475B	40	15	±10	3.2x2.5	
TZ1421A	40	15	±10	3.2x2.5	
TZ2746A	40	11.5	±7	3.2x2.5	

► IOT Xtal

IoT

Smart
MeteringAlarm &
Security

Medical

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ2771D	40	12	±10	3.2x2.5	
TZ0614D	10	10	±10	5.0x3.2	
TZ2061A	11.998618	15	±14	5.0x3.2	
TZ2059A	13.573256	15	±16	5.0x3.2	
TZ2594A	13.56	15	±16	HC49-SMD	
TZ1983A	32	10	±10	HC49-SMD	
TZ2095A	11.998618	15	±14	HC49-SMD	
TZ2516A	11.998618	15	±14	HC49-SMD	
TZ2234A	16	20	±18	HC49-US	
TZ2791A	25	13	±7	HC49-US	
TZ1958A	32	10	±10	HC49-US	

► IOT TCXO/XO

IoT

Smart
MeteringAlarm &
Security

Medical

P/N	Frequency (MHz)	Voltage (V)	Tolerance (ppm)	Size (mm)	Note
TX0659A	40	1.8	±0.5	2.0x1.6	
TX0546E	26	2.8	±2	2.0x1.6	
TX0684C	32	3.3	±1.0	2.0x1.6	
TX0659A	40	1.8	±0.5	2.0x1.6	
TX0534C	32	1.8	±2	2.5x2.0	
TW0459B	32.768KHz	1.8	±25	2.5x2.0	
TW0459E	32.768KHz	3.3	±20	2.5x2.0	
TX0740A	31.2	3	±5	2.5x2.0	
TX0694B	30.92	3.3	±1.0	2.5x2.0	
TX0605A	12	3.3	±1.5	3.2x2.5	*CMOS
TX0604A	39	3.3	±1.5	3.2x2.5	*CMOS
TX0341E	26	2.85	±2	3.2x2.5	
TX0338E	30	2.85	±2	3.2x2.5	
TX0665B	36	3.3	±2.5	3.2x2.5	*CMOS *Wide temp range to +105°C
TX0618A	32.768KHz	1.8/2.5/3.0/3.3	±1.5	3.2x2.5	
TX0357A	32.768KHz	3.3	±25	3.2x2.5	
TX0501D	31.25	3.3	±2.5	3.2x2.5	
TX0554E	26	1.8	±0.5	3.2x2.5	
TX0601A	32.768kHz	1.8/2.5/3.0/3.3	±1.5	7.0x5.0	

► IOT MCF

IoT

Smart
MeteringAlarm &
Security

Medical

P/N	Frequency (MHz)	No. of Poles	Insertion Loss (dB)	Rippl	Pass Bands	Stop Bands	Permal Impedance		
							Ω	pF	cc : pF
TY0160A	21.4	2	3	1	3±3.75	18±15	870	6	
TY0195A	21.4	2	2	1	3±7.5	18±25	1500	2.5	
TY0148A	21.4	3	3	1	3±7.5	23±25	1500	2.5	
TY0190A	21.4	3	3	1	3±10	15±25	850	2	
TY0255A	21.4	4	3	1	3±10	40±25	1800	0.35	5
TY0136A	21.7	2	3	1	3±3.75	20±20	850	6	
TY0150A	21.7	2	1.5	1	3±7.5	15±25	1500	1	
TY0153A	30.72	2	2	1	3±4	40±60	650	4.5	
TY0133A	45	3	3	1	3±7.5	15±25	651	3.5	

► IOT MCF

IoT Smart Metering Alarm & Security Medical

P/N	Frequency (MHz)	No. of Poles	Insertion Loss (dB)	Rippl	Pass Bands	Stop Bands	Permal Impedance		
							Ω	pF	cc : pF
TY0187A	45	3	3	1	3±15	20±60	1200	3.51	
TY0257A	45	4	3	1	3±7.5	30±25	600	2.3	7.5
TY0191F	45.2	4	3	1	3±6	25±22	650	3	9
TY0168A	73.35	3	2	1	3±6.5	8±12.5	1800	-1.6	
TY0147A	76.8	2	3	1	3±4	35±60	1500	-1.4	
TY0184A	109.65	3	2.5	0.7	3±6.5	5.5±12.5	950	-1.4	
TY0261A	149.9725	4	6	1	3±8.68	15±30	550	-0.3	0.7
TY0260A	21.4	4	3	1	3±7.5	40±25	1800	0.35	5
TY0257C	45	4	3	1	3±7.5	30±25	800	1.7	8

► NFC Xtal

NFC

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ3171A	27.12	8	±10	1.1x1.2	
TZ2852A	27.12	12	±10	1.6x1.2	
TZ3137A	27.12	8	±10	1.6x1.2	
TZ1897B	27.12	10	±10	2.0x1.6	
TZ2959A	27.12	10	±30	2.0x1.6	
TZ2959A	27.12	10	±30	2.0x1.6	*Metal cap structure
TZ3329A	27.12	12	±30	2.0x1.6	
TZ1261C	27.12	10	±10	2.5x2.0	
TZ0633A	27.12	10	±10	3.2x2.5	

► SSD Xtal

SSD

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TZ3236A	25	6	±10	1.6x1.2	
TZ3206B	40	9	±30	1.6x1.2	
TZ2724D	25	6	±10	2.0x1.6	*Metal cap structure
TZ2370B	30	6	±10	2.0x1.6	*Metal cap structure
TZ2930B	40	6	±45	2.0x1.6	*Metal cap structure
TZ2930C	40	6	±10	2.0x1.6	
TZ3335B	50	8	±10	2.5x2.0	

► Wide Temp Xtal

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Operating Temp (°C)	Application
TZ2205E	38.4	10	±10	2.0x1.6	-40°C+125°C	Lighting Control
TZ2966C	20	8	±15	2.0x1.6	-40°C+125°C	DC Converter
TZ3398C	38.4	10	±10	2.0x1.6	-40°C+125°C	Low Power IOT
TZ3312C	25	16	±10	2.0x1.6	-40°C+125°C	Ethernet PHY
TZ3035A	24	10	±10	2.5x2.0	-40°C+125°C	BT
TZ0909E	38.4	10	±10	2.5x2.0	-40°C+125°C	Lighting Control
TZ1054D	16	8	±10	3.2x2.5	-40°C+125°C	Zigbee
TZ0447D	16.384	20	±10	3.2x2.5	-40°C+125°C	2.4G
TZ2941A	18.08	8	±10	3.2x2.5	-40°C+125°C	TPMS

► Wide Temp Xtal

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Operating Temp (°C)	Application
TZ1203B	24	10	±10	3.2x2.5	-40°C+125°C	IoT
TZ3034A	24.576	20	±10	3.2x2.5	-40°C+125°C	2.4G
TZ2798A	25	15	±10	3.2x2.5	-40°C+125°C	LNB
TZ0659C	26	8	±10	3.2x2.5	-40°C+125°C	TPMS
TZ2591C	32	12	±10	3.2x2.5	-40°C+125°C	Zigbee & WiFi
TZ2756A	40	10	±10	3.2x2.5	-40°C+125°C	Security
TZ2711A	50	15	±10	3.2x2.5	-40°C+125°C	LNB
TZ3483A	25	8	±20	3.2x2.5	-40°C+125°C	Ethernet PHY

► LTE SAW

3G

LTE

Repeater

Femtocell

Base Station

	P/N	Frequency (MHz)	Insertion Loss (dB)	Band Width (MHz)	Size (mm)
Duplexer	TF0120A(Band 1)	1950/2140	1.8	60	1.8x1.4
	TF0121A(Band 2)	1880/1960	1.9	59.04	1.8x1.4
	TF0135A(Band 3)	1747.5/1842.5	2.1	74.7	1.8x1.4
	TF0122A(Band 4)	1732.5/2132.5	1.5	45	1.8x1.4
	TF0123A(Band 5)	836.5/881.5	1.4	25	1.8x1.4
	TF0124A(Band 7)	2535/2655	2.2	70	1.8x1.4
	TF0125A(Band 8)	897.5/942.4	2	30.2	1.8x1.4
	TF0133A(Band 12)	707.5/737.5	1.65	17	1.8x1.4
	TF0169A(Band 13)	751/782	1.9	51	1.8x1.4
	TF0168A(Band 20)	806/847	1.8	29.5	1.8x1.4
	TF0136A(Band 25)	1882.5/1962.5	1.9	65	1.8x1.4
	TF0137A(Band 26)	831.5/876.5	1.3	34.52	1.8x1.4
	TF0155A(Band 28A)	718/773	1.7	30	1.8x1.4
	TF0159A(Band 28B)	733/788	1.7	30	1.8x1.4
	TF0167A(Band 66)	1745/2155	2	69.04	1.8x1.4
	TF0126A(Band 1) Bal	1950/2140	1.7	60	1.8x1.4
	TF0127A(Band 2) Bal	1880/1960	2	59.04	1.8x1.4
	TF0128A(Band 4) Bal	1732.5/2132.5	1.6	45	1.8x1.4
	TF0129A(Band 5) Bal	836.5/881.5	1.4	25	1.8x1.4
	TF0130A(Band 8) Bal	897.5/942.4	1.5	30.2	1.8x1.4
Single Filter	TA1845D(Band 1 Rx)	2140	1.9	60	1.1x0.9
	TA1815A(Band 1 Tx)	1950	1.8	60	1.1x0.9
	TA1870D(Band 2 Rx)	1960	2.3	60	1.1x0.9
	TA1871A(Band 2 Tx)	1880	1.7	60	1.1x0.9
	TA1843C(Band 3 Rx)	1842.5	2	75	1.1x0.9
	TA1885A(Band 3 Tx)	1747.5	2.1	75	1.1x0.9
	TA1845D(Band 4 Rx)	2140	1.9	60	1.1x0.9
	TA1872A(Band 4 Tx)	1732.5	1.7	45	1.1x0.9
	TA1811D(Band 5 Rx)	881.5	1.3	25	1.1x0.9
	TA1692A(Band 5 Tx)	836.5	1.9	25	1.1x0.9
	TA1847D(Band 7 Rx)	2655	2.3	70	1.1x0.9
	TA1886A(Band 7 Tx)	2535	1.7	70	1.1x0.9
	TA1839D(Band 8 Rx)	942.5	2	35	1.1x0.9
	TA1814A(Band 8 Tx)	897.5	2.3	35	1.1x0.9
	TA2037A(Band 12 Rx)	737.5	1.6	17	1.1x0.9
	TA2062A(Band 13 Rx)	751	1.9	10	1.1x0.9
	TA1813A(Band 13 Tx)	782	1.5	10	1.1x0.9

► LTE SAW

3G

LTE

Repeater

Femtocell

Base
Station

	P/N	Frequency (MHz)	Insertion Loss (dB)	Band Width (MHz)	Size (mm)
Single Filter	TA2037A(Band 17 Rx)	737.5	1.6	17	1.1x0.9
	TA1811D(Band 19 Rx)	881.5	1.3	25	1.1x0.9
	TA1692A(Band 19 Tx)	836.5	1.9	25	1.1x0.9
	TA2041A(Band 20 Rx)	806	2.7	30	1.1x0.9
	TA2042A(Band 20 Tx)	847	2	30	1.1x0.9
	TA2016A(Band 26 Rx)	876.5	2.1	3.6	1.1x0.9
	TA1897A(Band 28A Rx)	773	2.1	30	1.1x0.9
	TA1898A(Band 28B Rx)	788	2	30	1.1x0.9
	TA1968A(Band 38 Rx)	2595	1.6	50	1.1x0.9
	TA1965A(Band 38 TRx)	2595	1.6	50	1.1x0.9
	TA2018A(Band 39 Rx)	1900	1.4	40	1.1x0.9
	TA2018A(Band 39 TRx)	1900	1.4	40	1.1x0.9
	TA1969A(Band 40 Rx)	2350	1.9	100	1.1x0.9
	TA1966A(Band 40 TRx)	2350	1.9	100	1.1x0.9
	TA1991A(Band 41 Rx)	2605	1.7	100	1.1x0.9
	TA1967A(Band 41 TRx)	2602.5	1.8	105	1.1x0.9
	TA2473A(Band 66 Rx)	2155	1.9	69.04	1.1x0.9

► Mobile Xtal/TSX

3G

LTE

Repeater

Femtocell

Base
Station

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TM0006B	19.2	7	±10	2.0x1.6	*Thermal Sensor Xtal
TM0009A	26	7	±10	2.0x1.6	*Thermal Sensor Xtal
TM0010F	38.4	10	±10	2.0x1.6	*Thermal Sensor Xtal
TM0014A	38.4	8	±10	2.0x1.6	*Thermal Sensor Xtal
TZ3330A	26	6.8	±10	2.0x1.6	*NB-IOT
TM0003C	19.2	7	±10	2.5x2.0	*Thermal Sensor Xtal
TZ1432A	26	8	±10	2.5x2.0	
TZ0928A	26	8.4	±10	2.5x2.0	
TM0005A	52	16	±10	2.5x2.0	*Thermal Sensor Xtal
TM0011A	26	7	±10	2.5x2.0	*Thermal Sensor Xtal
TM0012A	26	9	±10	2.5x2.0	*Thermal Sensor Xtal
TZ1689A	26	7.3	±10	3.2x2.5	
TZ0495C	26	8	30±10	3.2x2.5	
TZ1387A	26	11.2	±10	3.2x2.5	

► Mobile Xtal/TSX

3G

LTE

Repeater

Femtocell

Base
Station

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Size (mm)	Note
TX0371B (UMTS)	26	2.8	±2	2.5x2.0	
TX0445B (UMTS)	26	2.85	±2	2.5x2.0	
TX0617D	26	2.8	±1	2.5x2.0	
TX0617B	26	2.8	±0.5	2.5x2.0	
TX0362A	19.2	3.3	±1.5	3.2x2.5	
TX0315B (UMTS)	26	2.8	±2	3.2x2.5	
TX0305A (Femtocell)	26	3.3	±2	3.2x2.5	
TX0472 (Femtocell)	19.2	3.3	±2	5.0x3.2	
TX0462 (Stratum III)	10	3.3	±1	7.0x5.0	
TW0617D	156.25	2.5	±50	7.0x5.0	*LVPECL
TW0508A	312.5	2.5	±50	7.0x5.0	*LVPECL

▶ TPMS Xtal *operating temperature -40°C~125°C, AEC-Q200 compliance

TPMS

P/N	Frequency (MHz)	Load Capacitance (pF)	Tolerance (ppm)	Stability (ppm)	Size (mm)
TZ2691D	26	8	±10	±50	2.0x1.6
TZ3122C	26	8	±10	±50	2.0x1.6
TZ2966C	20	8	±15	±50	2.0x1.6
TZ1935C	26	10	±10	±50	2.0x1.6
TZ0825E	32	8	±20	±50	2.5x2.0
TZ2666B	19.6875	12	±10	±60	3.2x2.5
TZ2384B	21.948717	10	±10	±50	3.2x2.5
TZ0659C	26	8	±10	±60	3.2x2.5
TZ0659E	26	8	±10	±50	3.2x2.5
TZ1624C	8	10	±10	±50	5.0x3.2
TZ2382A	18.08	12	±30	±80	5.0x3.2

▶ OCXO

Instrument

Infrastructure

Base Station

Product Category	Size	Vcc	Freq Range	Output	TC Stab
TFE75	PTH L x W: 50.8*50.8mm Height: 38.88mm / 20mm	5V / 9V / 12V	5MHz~100MHz	Sine HCMOS/TTL	0.1~50ppb
TFE45	PTH L x W: 36*27mm Height: 19mm / 13mm	3.3V / 5V / 12V	5MHz~100MHz	Sine HCMOS/TTL	2~100ppb
TFE17	PTH L x W: 25.4*25.4 mm Height: 13mm / 10mm	3.3V / 5V / 12V	5MHz~100MHz	Sine HCMOS/TTL	5~100ppb
TFE512	PTH L x W: 20*20 mm Height: 13mm / 10mm	3.3V / 5V / 12V	5MHz~130MHz	Sine HCMOS/TTL	5~200ppb
TFE93	PTH L x W: 20*12.8 mm Height: 10.5mm / 8.5mm	3.3V / 5V	2MHz~70MHz	Sine HCMOS/TTL	30~300ppb
TFE942	SMD L x W: 25.4*22 mm Height: 13mm	3.3V / 5V / 12V	5MHz~40MHz	Sine HCMOS/TTL	5~300ppb
TFE149	SMD L x W: 14.3*9.3 mm Height: 6.5mm	3.3V / 5V	10MHz~40MHz	Clipped Sine HCMOS/TTL	30~300ppb
TFE97	SMD L x W: 9.7*7.5 mm Height: 4.1mm	3.3V / 5V	10MHz~40MHz	Clipped Sine HCMOS/TTL	30~300ppb

▶ HFHE XO/VCXO/TCXO

Fiber

Data Center

Product Category	TST Product Type	Size (mm)	Popular Freq (MHz)	Supply Voltage (V)	Freq. stab. (ppm)	Temp Range	Output
XO	TW-7050-D	7x5x1.45	77.76, 106.25, 125, 155.52, 156.25, 187.5, 212.5, 312.5	3.3,2.5	±25,±50	-20°C~+70°C -40°C~+85°C	PECL / LVDS
	TW-5032-D	5x3.2x1.25	25, 106.25, 125, 156.25, 161.1328, 212.5	3.3,2.5	±25,±50	-20°C~+70°C -40°C~+85°C	PECL / LVDS
	TW-3225-PL	3.2x2.5x0.9	25, 106.25, 125, 156.25, 161.1328, 212.5	3.3,2.5	±25,±50	-20°C~+70°C -40°C~+85°C	PECL / LVDS
VCXO	TXV-7050-D	7.0x5.0x1.75	77.76, 106.25, 122.88, 125, 155.52, 156.25, 200	3.3,2.5	±25,±50	-20°C~+70°C -40°C~+85°C	PECL / LVDS
	TXV-7050-C	7.0x5.0x1.75	10, 20, 25, 27, 32.768, 35.328, 38.88, 61.44, 122.88, 153.6	3.3	±25,±50	-20°C~+70°C -40°C~+85°C	CMOS
	TXV-5032-D	5.0x3.2x1.25	122.88, 153.6, 155.52, 156.25	3.3	±25,±50	-20°C~+70°C -40°C~+85°C	PECL / LVDS
	TXV-5032-C	5.0x3.2x1.25	19.44, 3 8. 4	3.3	±25,±50	-20°C~+70°C -40°C~+85°C	CMOS
TCXO	TX-7050-S1	7.0x5.0x1.9	10, 12.8, 16.384, 19.2, 19.44, 20, 25, 26	5.0,3.3	±0.14,±0.28	-20°C~+70°C -40°C~+85°C	CMOS / Clipped Sine
	TX-7050-CSW	7.0x5.0x1.9	10, 12.8, 16.384, 19.2, 19.44, 20, 25, 26	5.0,3.3	±0.37~±2	-20°C~+70°C -40°C~+85°C -40°C~+105°C	CMOS / Clipped Sine
	TX-7050-S2	7.0x5.0x1.9	8.192, 10, 12.8, 16.384, 19.2, 19.44, 20, 25, 26	5.0,3.3	±0.28	-20°C~+70°C -40°C~+85°C	CMOS / Clipped Sine

► HFHE XO/VCXO/TCXO

Fiber

Data Center

Product Category	TST Product Type	Size (mm)	Popular Freq (MHz)	Supply Voltage (V)	Freq. stab. (ppm)	Temp Range	Output
TCXO	TX-7050-CS	7.0x5.0x1.9	5, 6.4, 8, 8.192, 10, 12.5, 12.8, 16, 16.384, 19.44, 25	5.0,3.3	±0.37~±2	-20°C~+70°C -40°C~+85°C	CMOS / Clipped Sine
	TX-5032-CS	5.0x3.2x1.55	10, 12.8, 13, 19.2, 20, 25, 26, 30.72	5.0,3.3	±0.1,±0.28	-20°C~+70°C -40°C~+85°C	CMOS / Clipped Sine

► LTCC

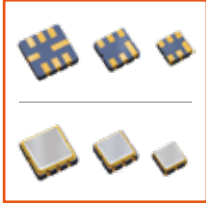
TST P/N	Frequency (MHz)	Pass Band (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Attenuation (dB)	Size (mm)	Application	Note
TL0001A	3550	3300~3800	500	0.9Max	25dB@2600M	1.6x0.8	LTE Band42/43	
TL0002A	3550	3300~3800	500	0.6Max	35dB@6600-7600M 35dB@9900-1400M	1.6x0.8	LTE Band42/43	
TL0003A	2450	2300~2600	300	1.0Max	27dB@4600-5200M 25dB@6900-7800M	1.0x0.5	LTE,IOT	
TL0004A	1845	1710~1980	270	1.0Max	30dB@3420-3960M 25dB @5130-5940M	1.0x0.5	LTE,IOT	
TL0005A	824	699~849	250	1.2Max	21dB@1400-1559M	1.0x0.5	LTE,IOT	Low pass filter
TL0006A	807	699~915	216	1.2Max	21dB@1400-1559M	1.0x0.5	LTE,IOT	Low pass filter
TL0007A	2247.5	1805~2690	885	1.5Max	15dB@600-900M	2.0x1.25	LTE,IOT	Low pass filter
TL0008A	2002.5	1805~2200	395	1.8Max	10dB@2705-3300M	1.4x1.1	LTE,IOT	Low pass filter
TL0009A	2450	2400~2500	100	1.7Max	25dB@1850-1910M 25dB@4800-5000M	1.6x0.8	Bluetooth, Wireless LAN	
TL0015A	829.5	699~960	261	0.7Max	25dB@1427-1920M 25dB@2097-2880M	1.6x0.8	NB-IOT	EPCOS DEA160960 LT-5044C1
TL0016A	1850	1710~1990	280	0.6Max	30dB@3420-3980M	1.6x0.8	NB-IOT	
TL0017A	2.4/5.5G	2400~2500 5150~5850	100/700	0.6Max@2400~2500 1.5Max@5150~5850	25dB@4800-5000M 25dB@2380M	1.6x0.8	2.4G/5G Wi-Fi	EPCOS
TL0010A	2450	2400~2500	100	2.5Max	27dB@880-900M 34dB@4800-5000M	1.6x0.8	2.4G Wi-Fi	EPCOS DEA2450BT
TL0011A	5410	4900~5920	1050	2.0Max	30dB@3500M	2.0x1.25	5G Wi-Fi	

► Dielectric Resonator Filter

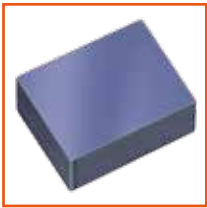
TST P/N	Frequency (MHz)	Pass Band (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Attenuation (dB)	Size (mm)	Application	Note
TR0001A	3625	3550~3700	150	3.0Max	25dB@3340-3450M	26x11.5	LTE Band48	
TR0003A	3500	3400~3600	200	2.5Max	8 dB@3320&3680M	4.5x3.8	LTE Band42	
TR0004A	3500	3400~3600	200	2.0Max	25dB@3320&3680M	15.9x6.2	LTE Band42	
TR0005A	3700	3600~3800	200	2.5Max	8dB@3520&3880M	4.5x3.8	LTE Band43	
TR0006A	3700	3600~3800	200	2.0Max	25dB@3520&3880M	15.9x6.2	LTE Band43	
TR0008A	5240	5140~5340	200	2.1Max	19dB@5480-5860M	3.25x2.58	5G Wi-Fi	MTK solution
TR0012A	5670	5480~5860	380	2.1Max	19dB@5150-5340M	3.25x2.58	5G Wi-Fi	MTK solution
TR0009A	5245	5150~5340	190	2.0Max	30dB@5480-5850M	8.05x4.05	5G Wi-Fi	Broadcomm solution
TR0011A	5665	5480~5850	370	2.0Max	35dB@5150-5340M	8.05x3.45	5G Wi-Fi	Broadcomm solution
TR0010A	5250	5170~5330	160	2.5Max	40dB@5490-5935M	8.05x4.05	5G Wi-Fi	Intel solution
TR0013A	5710	5490~5935	445	2.5Max	40dB@5170-5330M	8.05x3.45	5G Wi-Fi	Intel solution
TR0007B	5235	5150~5330	180	2.5Max@5150-5320 3.5Max@5360	50dB@5490-5850M	8.6x4.05	5G Wi-Fi	Qualcomm solution
TR0014B	5697	5490~5850	360	2.5Max	50dB@5150-5330M	8.6x3.45	5G Wi-Fi	Qualcomm solution
TR0015A	1975	1840~2110	270	1.0Max	35dB@1725&2225M	26x11.5	V-set	
TR0002A	5825	5725~5925	200	2.0Max	35dB@4995M	4.4x3.9	V2X	

Product category

TC-SAW/SAW/BAW



SMD

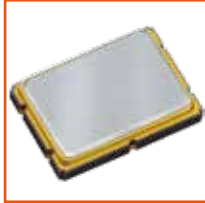


CSP

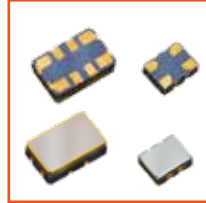


Duplexer

Crystal



SMD



TCXO/XO

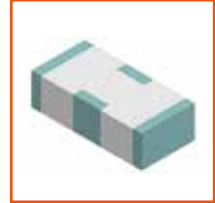


HC49-SMD

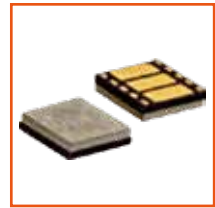


Tuning Fork

Others



LTCC



Module

Antenna



Ceramic Patch



Ceramic Linear



Chip



FPC / PCB

Ceramic Filter



3500Mhz



2.4GHz



5G Tri-Band

Module



NB-IoT



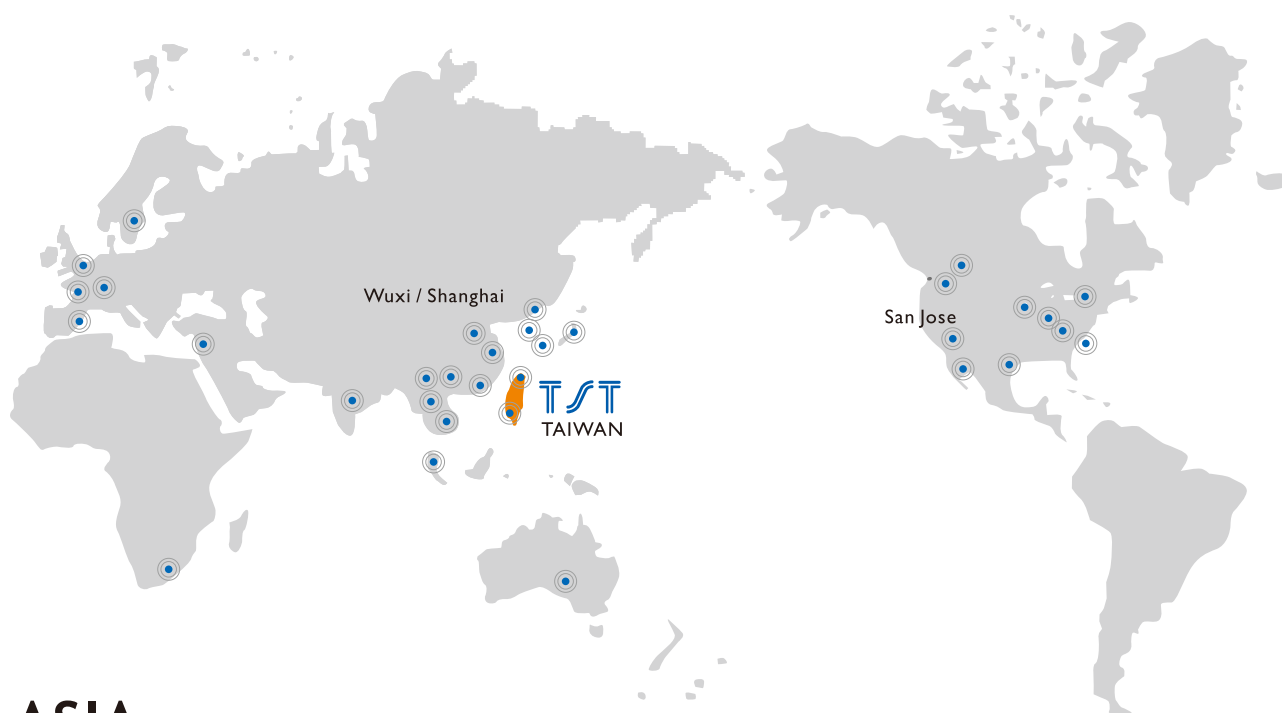
External GPS



Internal GPS

Global Locations

Reach us all over the world



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