T-Plus

SELECTION GUIDE · 2026 EDITION

RF Probe Selection Guide

Probe heads, calibration substrates, probe cards, test fixtures and stations from T-PLUS — from DC to 325 GHz.

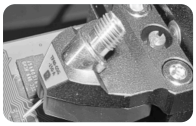


DC 26.5 40 50 67 110 145 250 325 GHz

DSF System
Authorized T-PLUS distributor in Korea

The T-PLUS line-up

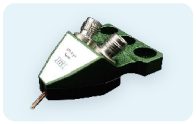
T-PLUS (Chiba, Japan; R&D center in Tsukuba) designs and builds RF probes, calibration kits, fixtures and stations, with roots as an RF probe maker since 1991. Every product family in one view — find the one that fits, then turn to its page.



Single RF probe p.5

TP26 – TP110 · TP145 · TP250 (new)

DC–250 GHz · One RF signal (GS, SG, GSG) for everyday on-wafer S-parameters.



Dual / differential probe p.6

TPD26 – TPD110 · TPD145 · TPD250 (new)

DC–250 GHz · Two RF signals in one head (GSSG, GSGSG) for coupled lines.



Waveguide probe p.7

TP75 – TP325 · WR15 … WR3

50–325 GHz · GSG probes fed by waveguide, one band per probe.



Adjustable dual probe p.8

TPD40 Adjustable

DC–40 GHz · Two tips on one body; micrometer sets their spacing up to 4 mm.



Edge-type probe p.8

TPxx-GSxx-EL / -ER

TP series · Tip at the body edge for tight spaces; L + R pair as a split differential probe.



Custom RF cantilever p.9

Built to order

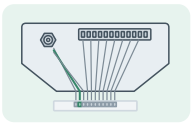
DC–67 GHz · Non-uniform pitch, up to 10 RF ports, high-power option.



Special-environment probe p.10

High power · non-magnetic · cryogenic

Option · Special-order versions for harsh test conditions.



DC + RF probe p.9

MCRF40 · MCRF50 · MCRF67

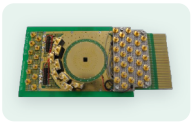
DC–67 GHz · RF tips plus about 25 DC needles on one head.



DC wedge probe p.11

MC14 · MC26 · MC34

DC · A row of DC needles — up to 34 standard.



RF probe card p.11

PC10 · PC40 · PC67

DC–67 GHz · Fixed RF + DC needle layout for auto probers.



Calibration substrate p.12

TCS1–TCS4 · TCSM1 · TCS1-075150-DS

SOLT · TRL · Probe-tip standards, incl. TCSM1 for probes above 110 GHz and a double-sided substrate.



RF test socket & fixture p.14

Custom · OIF designs

DC–67 GHz · Final test of chips, QFN packages and optical Tx / Rx modules, calibrated at the contact tip.

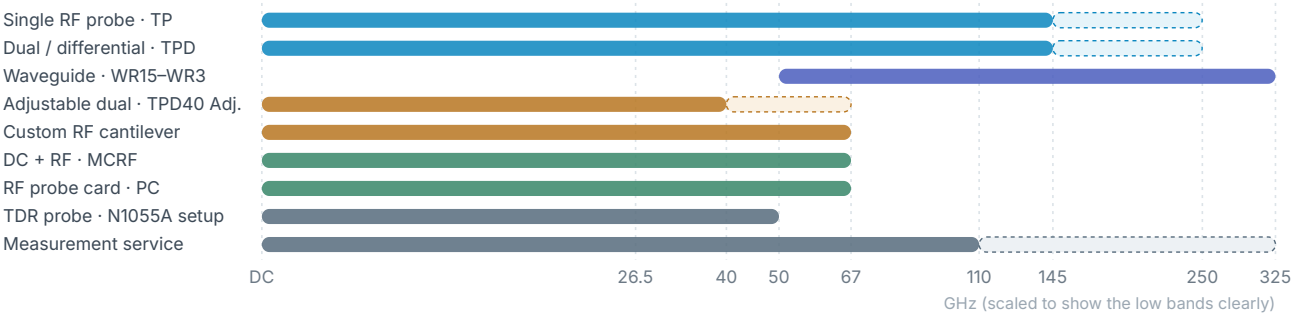


Stations & positioner p.14

LT-150 · semi-auto PCB · N1055A TDR

Manual · semi-auto · Manual and semi-auto stations for wafers, single- or double-sided PCBs and optical packages.

FREQUENCY COVERAGE



Dashed: newly added or on request — TP / TPD250 (new), adjustable design to 67 GHz, S-parameter service to about 325 GHz with partner MoDeCH. TP / TPD170 are in development.

Choosing a probe

Read the model number first, then pick your series from the table.

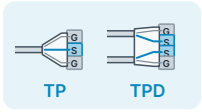
READING A MODEL NUMBER

TP67A-GSG-150 = 67 GHz single probe, angle connector, GSG, 150 µm pitch

TP 67 A - GSG - 150

1 2 3 4 5

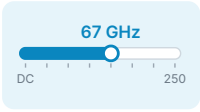
1 Series



TP — one RF signal
TPD — two RF signals

p.5–6

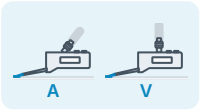
2 Top frequency



26 to 250 GHz. It also sets the connector: 67 → 1.85 mm.

p.2

3 Connector



A angle or V vertical, by how the cable leaves the probe.

p.4

4 Configuration



TP: GS · SG · GSG
TPD: GSSG · GSGSG

p.4

5 Pitch (µm)



50–1000 µm in 25 µm steps; TP110: 50–200 µm.

p.4

1 2 select from the table below

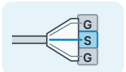
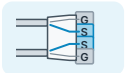
3 4 5 see Probe structure, p.4



Add an ISS p.12–13
Same configuration and pitch as the probe.

Same rule for other models
MCRF67 · PC67 → 67 GHz **MC34** → 34 needles

1 Series × 2 Top frequency — take the row for what you probe and the column for the highest frequency you need

WHAT YOU PROBE	26.5 GHz 3.5 mm	40 GHz 2.92 mm	50 GHz 2.4 mm	67 GHz 1.85 mm	110 GHz 1.0 mm	145 · 250 GHz 250: 0.5 mm	50–325 GHz waveguide
 **One RF signal** GS · SG · GSG	TP26	TP40	TP50	TP67	TP110 GSG only	TP145 TP250	WR15 … WR3 GSG
 **Two RF signals** GSSG · GSGSG	TPD26	TPD40	TPD50	TPD67	TPD110 GSGSG · GSSG	TPD145 TPD250	—
 **Two sites, spacing varies** GSG-GSG · GS-SG · S-S	—	TPD40 Adj.	up to 67 GHz — ask DSF		—	—	—
 **RF + DC pads together** bias · control · supply	—	MCRF40	MCRF50	MCRF67	—	—	—
 **Many or uneven RF pads** up to 10 RF ports	Custom RF cantilever probe · DC to 67 GHz				—	—	—
 **DC pads only** a row of DC pads	MC14 · MC26 · MC34 DC wedge — up to 34 needles						

Connectors are those of TP / TPD (MCRF50: 1.85 mm). TP / TPD145 and the new TP / TPD250: configuration, pitch and data on request.

SPECIAL SITUATIONS

Probe body hits a nearby structure
Edge-type probe p.8

High power, magnetic field or cryogenic
Special-environment probe p.10

Above 110 GHz or with frequency extenders
Waveguide probe p.7

Repeated testing on an auto prober
RF probe card p.11

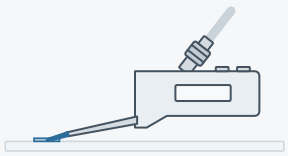
Packaged IC, module or E/O module
RF test socket p.14

Time-domain (TDR) measurement
N1055A TDR positioner p.14

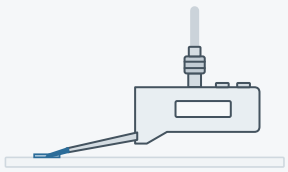
Probe structure

Parts 3 4 5 of the model number (p.3) in detail, plus the two tip technologies.

3 Connector style



A — angle: the cable leaves at an angle

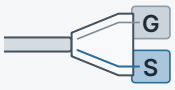


V — vertical: the cable rises straight up

TP67A · TP67V

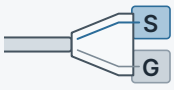
Every TP and TPD series comes in both styles. Choose by how the cable runs on your station.

4 Configuration



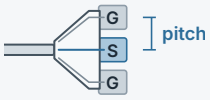
GS

One signal, one ground. The smallest footprint.



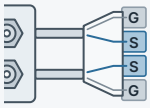
SG

Mirror of GS — ground on the other side.



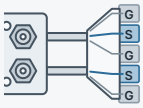
GSG

Signal between two grounds. The standard for single-ended RF.



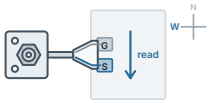
GSSG

Two signals side by side, for coupled or differential lines.

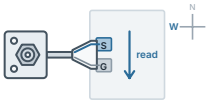


GSGSG

Two signals with a ground between them for isolation.



GS probe



SG probe

Read the name with the probe on the West side

Place the probe to the left (West) of the DUT and read its tips from top to bottom — the same convention as Cascade (FormFactor) probes. A GS + SG pair ordered as a set needs no extra care; when you order a single GS or SG probe, state GS or SG explicitly.

5 Pitch



The center-to-center distance between neighboring tips. It must match the pad pitch on your device.

50–1000 µm	50–200 µm	50–150 µm
TP & TPD, 26–67 GHz	TP110	TPD110 (recommended)

Pitch comes in 25 µm steps (50 µm steps above 500 µm on TP26, TP50, TPD26, TPD50). Keep GS / SG pitch at 250 µm or less.

Tip technology



MEMS air coplanar tip

Nickel-alloy tips on an air coplanar line. Used on TP and TPD probes, air coplanar adjustable probes and the air coplanar RF side of MCRF.



Cantilever needles

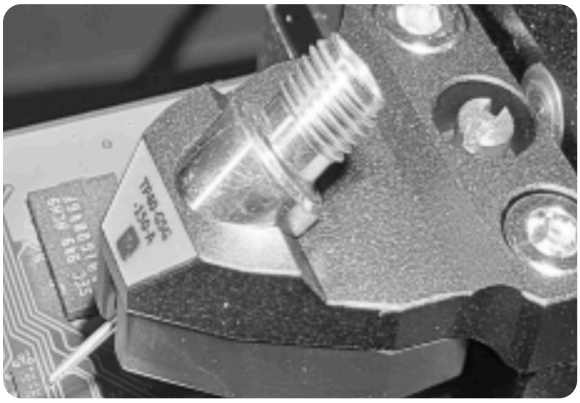
Tungsten or BeCu needles, placed freely. Used on custom RF cantilever probes, DC needles, DC wedges and cantilever probe cards.

20 g	30 µm	1 M	≤ 10 µm	Tip service
contact force at 2 mil overtravel	scrub mark width	contacts (auto probe, 1 mil OD)	XY position & planarity error	paid tip replacement, limited times

COAXIAL PROBE HEADS

Single RF probes TP series

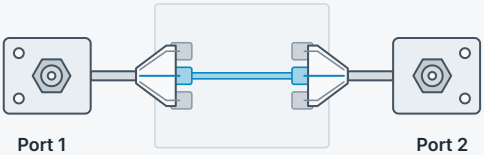
Air coplanar probes for one RF signal line — the everyday choice for on-wafer S-parameters, from DC to 110 GHz and on to 145 and 250 GHz.



TP probe landing on a test board

Use it for

- Transistors, passives and transmission lines with GS, SG or GSG pads
- One- and two-port S-parameters — one probe per VNA port
- Broadband sweeps from DC to 110 GHz with a coaxial connection



Two TP probes, one per port, on a GSG test structure

SPECIFICATIONS

SERIES	FREQUENCY	CONNECTOR	INSERTION LOSS typ.	RETURN LOSS typ.	CONFIGURATION	PITCH (step, µm)
TP26	DC – 26.5 GHz	3.5 mm (f)	−0.4 dB	−20 dB	GS · SG · GSG	50–1000 µm (25 / 50)
TP40	DC – 40 GHz	2.92 mm (f)	−0.6 dB	−20 dB	GS · SG · GSG	50–1000 µm (25)
TP50	DC – 50 GHz	2.4 mm (f)	−0.6 dB	−20 dB	GS · SG · GSG	50–1000 µm (25 / 50)
TP67	DC – 67 GHz	1.85 mm (f)	−0.8 dB	−18 dB	GS · SG · GSG	50–1000 µm (25)
TP110	DC – 110 GHz	1.0 mm (f)	−1.2 dB	−18 dB	GSG	50–200 µm (25)

Typical loss at GSG, 150 µm pitch. Pitch step: (25) = 25 µm steps; (25 / 50) = 25 µm steps up to 500 µm, 50 µm steps above. Recommended maximum GS / SG pitch: 250 µm. Every series comes as A (angle) or V (vertical) connector, e.g. TP67A / TP67V.

ABOVE 110 GHZ

TP145
DC – 145 GHz
STANDARD

TP250
DC – 250 GHz · 0.5 mm
NEW

TP170
DC – 170 GHz
IN DEVELOPMENT

Data sheets on request. Calibrate on TCSM1 substrates (p.13).

COMMON TO ALL TP PROBES

50 Ω	100 V · 1 A	5 W	Ni alloy	1 M	2 weeks
characteristic impedance	DC rating	max. RF power at 10 GHz	MEMS tip; aluminum body	contacts in auto probe mode	typical lead time

Pairs with
GS/SG (TCS2) or GSG (TCS1) substrate at your pitch — p.12

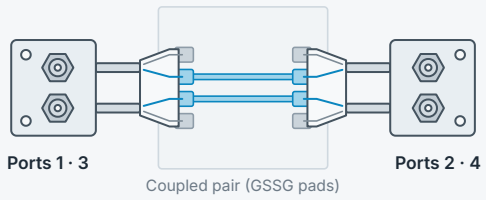
Need two signals?
Dual / differential TPD probes — p.6

Pads next to an obstruction?
Edge-type probes — p.8

COAXIAL PROBE HEADS

Dual / differential RF probes TPD series

Two RF signals in one probe head — for differential pairs, coupled lines and four-port measurements from DC to 110 GHz, with 145 GHz and new 250 GHz versions.

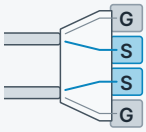


Two TPD probes give four ports on a coupled pair

Use it for

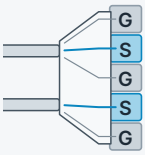
- Differential lines, coupled structures and balanced devices
- Four-port S-parameters with two dual probes
- Two single-ended signals that sit side by side on the die





GSSG

The two signals sit next to each other. Matches coupled or differential lines with outer grounds; the compact choice.



GSGSG

A ground tip separates the signals. The TPD26–TPD67 figures below are specified in this configuration.

SPECIFICATIONS

SERIES	FREQUENCY	CONNECTOR ×2	INSERTION LOSS typ.	RETURN LOSS typ.	CROSSTALK typ.	CONFIGURATION	PITCH (step, µm)
TPD26	DC – 26.5 GHz	3.5 mm (f)	−0.8 dB	−18 dB	−40 dB	GSSG · GSGSG	50–1000 µm (25 / 50)
TPD40	DC – 40 GHz	2.92 mm (f)	−0.8 dB	−18 dB	−35 dB	GSSG · GSGSG	50–1000 µm (25)
TPD50	DC – 50 GHz	2.4 mm (f)	−1.5 dB	−15 dB	−35 dB	GSSG · GSGSG	50–1000 µm (25 / 50)
TPD67	DC – 67 GHz	1.85 mm (f)	−1.5 dB	−15 dB	−35 dB	GSSG · GSGSG	50–1000 µm (25)
TPD110	DC – 110 GHz	1.0 mm (f)	−1.5 dB	−15 dB	−20 to −30 dB	GSGSG	50–150 µm rec.
TPD110	DC – 110 GHz	1.0 mm (f)	−2.5 dB	−10 dB	−20 to −30 dB	GSSG	50–150 µm rec.

Typical values at GSGSG, 150 µm pitch (TPD110 GSSG version: at GSSG, 150 µm). TPD110 can be ordered above 150 µm, with reduced performance. Pitch step as on p.5. Every series comes as A (angle) or V (vertical) connector. Common ratings as TP probes: 50 Ω, 100 V · 1 A DC, 5 W RF at 10 GHz, 1 M contacts.

ABOVE 110 GHZ

TPD145
DC – 145 GHz
STANDARD

TPD250
DC – 250 GHz · 0.5 mm
NEW

TPD170
DC – 170 GHz
IN DEVELOPMENT

Quad 110 GHz
DC – 110 GHz
ANNOUNCED

Data sheets on request.

Pairs with

GSSG (TCS4) or GSGSG (TCS3) substrate with loop-back and cross-thru standards — p.12.

Spacing changes between structures?

The adjustable dual probe sets the tip spacing with a micrometer — p.8.

WAVEGUIDE PROBE HEADS

Waveguide probes TP75 – TP325 · WR15 – WR3

GSG probes with a rectangular-waveguide input, for mmWave and sub-THz bands from 50 to 325 GHz — one band per probe.



Short-waveguide type (TPWR-Short) — the flange mounts to the frequency extender

Use it for

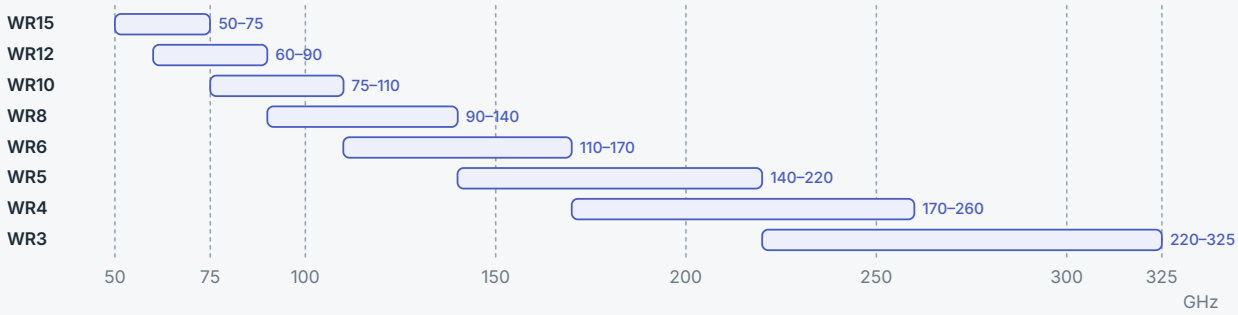
- On-wafer S-parameters with VNA frequency-extender modules
- mmWave and sub-THz devices: 5G/6G front ends, radar, THz research

Coaxial or waveguide?

Up to 110 GHz, a coaxial TP110 sweeps continuously from DC. Choose a waveguide probe when your test set uses frequency extenders, or above 110 GHz.

OPTIONS Short waveguide | Tall (long) waveguide | Bias tee

BANDS



SPECIFICATIONS

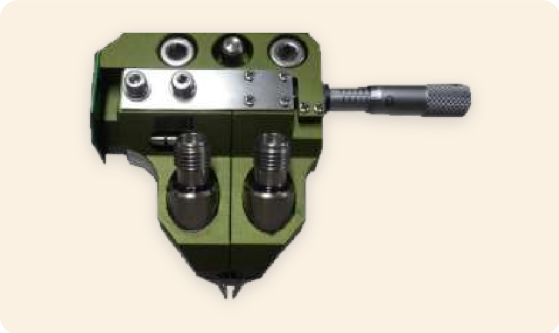
MODEL	BAND	FREQUENCY	INSERTION LOSS typ.	RETURN LOSS typ.	CONFIGURATION	PITCH (25 µm steps)
TP75	WR15	50 – 75 GHz	−2.5 dB	−5 dB	GSG	50–250 µm
TP90	WR12	60 – 90 GHz	−1.5 dB	−10 dB	GSG	50–250 µm
TP110*	WR10	75 – 110 GHz	−1.5 dB	−15 dB	GSG	50–250 µm
TP140	WR8	90 – 140 GHz	−2.5 dB	−10 dB	GSG	50–150 µm
TP170*	WR6	110 – 170 GHz	−2 dB	−13 dB	GSG	50–150 µm
TP220	WR5	140 – 220 GHz	TBD	TBD	GSG	50–150 µm
—	WR4	170 – 260 GHz	TBD	TBD	GSG	50–150 µm
TP325	WR3	220 – 325 GHz	−5 dB	−13 dB	GSG	50–150 µm

Typical at GSG, 150 µm pitch; TBD = not yet specified. * Waveguide TP110 (WR10) and TP170 (WR6) are different probes from the coaxial TP110 / TP170 (p.5). Typical lead time 2–3 weeks; data sheets on request. The LT-150 station comes in a frequency-extender mount version (p.14).

SPECIAL LAYOUTS

Adjustable dual probe

Two probe heads on one body, with a micrometer that sets the distance between them. One probe covers structures with different signal spacings.



The micrometer on the right sets the spacing between the two heads

Use it for

- Two RF sites whose spacing changes from structure to structure
- GS + SG, GSG + GSG or S + S pairs
- Saving probe changes when stepping through test structures

Good to know

- Spacing adjusts up to 4,000 µm along X only; patented micrometer structure
- Both heads use the same air coplanar pitch and configuration — or both are custom cantilever; the two cannot be mixed
- Low loss up to 67 GHz in the adjustable design

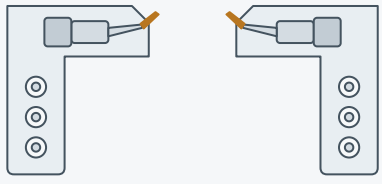
MODEL	FREQUENCY	CONNECTOR	INSERTION LOSS typ.	RETURN LOSS typ.	CONFIGURATION	PITCH	ADJUST
TPD40 Adjustable	DC – 40 GHz	2.92 mm (f)	−1.0 dB	−15 dB	GSG-GSG · GS-SG	50–1000 µm	4 mm, X

Typical at GSG-GSG, 150 µm pitch. Pitch in 25 µm steps; recommended maximum GS / SG pitch 250 µm.

SPECIAL

Edge-type probe TPxx-GSxx-EL / -ER

The tip sits at the corner of the body, so the body stays clear of structures beside the pads. Left and right versions combine into a separated differential probe.



Right type (-ER) Left type (-EL)



Two single probes used as a differential pair

Use it for

- Pads close to a package wall, a die edge or another probe
- Probing directions a standard body cannot reach
- A differential pair built from two single probes

GS configuration; calibrates on the standard GS / SG substrate (TCS2). Frequency and connector follow the TP series it is built on.

SPECIAL LAYOUTS

Custom RF cantilever probe

Made to your pad layout: non-uniform pitch, unusual configurations, tips at different heights, up to 10 RF ports and high-power versions — DC to 67 GHz.



Multi-port custom cantilever probe

Use it for

- Pad layouts a standard air coplanar probe cannot match
- Multi-port RF devices — up to 10 RF ports on one head
- High RF power, and extra overdrive with durable needles

To quote, send DSF

- Pad layout drawing with pad size and pitch
- Signal / ground assignment and highest frequency
- Your station and positioner

Typical lead time 2–3 weeks, no initial-cost requirement; a matching custom calibration kit is available. Each probe can be tuned for best RF performance or for long-run durability. High-power, non-magnetic and cryogenic versions: p.10.

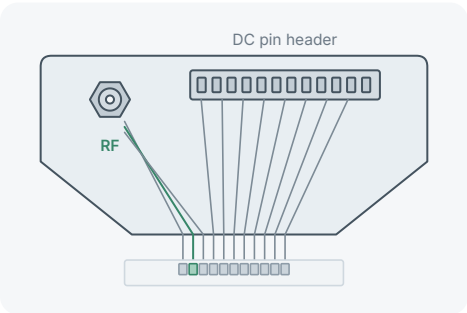
REFERENCE DESIGN	FREQUENCY	CONNECTOR	INSERTION LOSS typ.	RETURN LOSS typ.	RF POWER	PITCH	NEEDLES
RF cantilever head	DC – 67 GHz	1.85 mm (f)	≤ 1.2 dB	≥ 13 dB	10 W at 10 GHz	50–1000 µm	W · BeCu

Typical at GSG, 150 µm pitch (T-PLUS 2026 data). Configurations: GS, SG, GSG, GSSG, GSGSG or special request; RF only, DC + RF or DC only.

DC & MULTI-PIN

DC + RF probe MCRF series

RF tips and a row of DC needles on one head — supply bias, control and power while you measure RF, up to 67 GHz.



Use it for

- RF ICs that need bias or control pins during the RF test
- Amplifiers, mixers and front-end blocks on wafer
- Saving a separate DC probe and positioner

RF side: air coplanar (uniform pitch) or custom cantilever, not mixed. DC needles: W or BeCu cantilever, about 25 depending on pitch. DC connection: 2.54 mm pin header, or coax with BNC / SMA. Decoupling capacitor option: 100 pF and 0.1 µF.

MODEL	FREQUENCY	RF CONNECTOR	INSERTION LOSS typ.	DC NEEDLES	MIN. PITCH
MCRF40	DC – 40 GHz	2.92 mm (f)	−1.5 dB	about 25	50 µm
MCRF50	DC – 50 GHz	1.85 mm (f)	−1.5 dB	about 25	50 µm
MCRF67	DC – 67 GHz	1.85 mm (f)	−1.5 dB	about 25	50 µm

Typical at GSGSG, 150 µm pitch. Non-uniform layouts are built as custom DC + RF probes up to 67 GHz.

SPECIAL

SPECIAL ORDER

Special-environment probes

High-power, non-magnetic and cryogenic versions of T-PLUS probes for DC, RF or DC + RF — made to special order up to 67 GHz and available as an option on most probes.



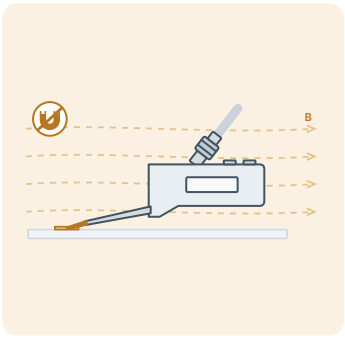
High-power probe

Stable contact at higher RF power

Heat-resistant materials, a heat-dissipating structure and a robust contact limit heating and contact-resistance drift, so electrical characteristics stay stable through long, high-load tests. Engineering support helps set safe operating conditions.

USE IT FOR

- High-power devices
- Long, high-load tests
- Device or package layouts with mixed RF + DC



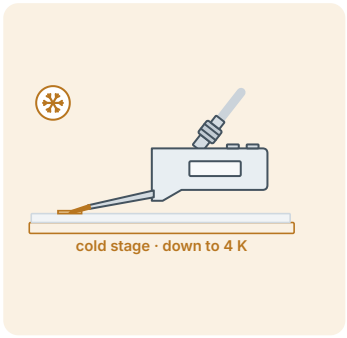
Non-magnetic probe

No magnetic material in the probe

Built from non-magnetic materials, so external magnetic fields do not affect the measurement and magnetization and signal noise stay minimal. DC, RF or DC + RF, with SMA, 2.92 mm or 1.85 mm interfaces.

USE IT FOR

- Quantum devices
- MRI-related measurements
- Weak-signal evaluation inside a magnetic field



Cryogenic probe

Stable down to 4 K

A structure that controls thermal contraction keeps alignment and reduces drift, giving stable, repeatable contact through thermal cycling. DC, RF or DC + RF.

USE IT FOR

- Probing in cryogenic probe stations
- Devices characterized at 4 K
- Tests that cycle between room and cryogenic temperature

Good to know

- Selected as an option on most T-PLUS probes, standard or custom
- Built on the customized-probe range: DC to 67 GHz
- Custom pitch, port count and RF + DC integration, as for the custom RF cantilever probe (p.9)
- Typical lead time 3–4 weeks

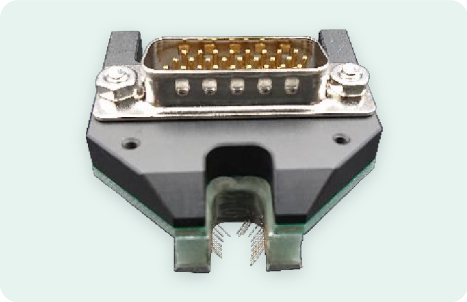
To order, tell DSF

- The probe you need: type, frequency, configuration and pitch
- The environment: applied power, magnetic field or temperature
- Your station — e.g. a cryogenic or magnet system — and the pad layout

DC & MULTI-PIN

DC wedge probe MC series

A wedge of cantilever needles that lands on a whole row of DC pads at once — for bias, supply and control lines.



DC probe — D-sub connection shown

Use it for

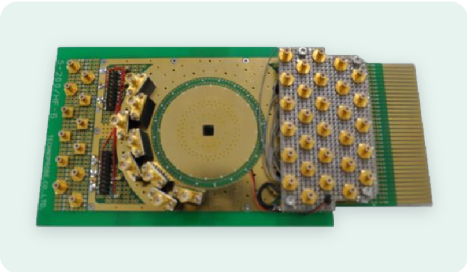
- Powering and controlling a die while RF probes measure it
- Many DC pads in a row, contacted with one positioner
- Pairing with TP / TPD probes on the other sides of the die

Up to 34 needles as standard; more on request. Decoupling capacitor option: 100 pF and 0.1 µF. Contact resistance 0.05 Ω on Au.

MODEL	NEEDLES	MIN. PITCH	NEEDLE	DC RATING	CONNECTION
MC14	1 – 14	50 µm	W · BeCu	100 V · 1 A	pin header · coax · BNC / SMA
MC26	14 – 26	50 µm	W · BeCu	100 V · 1 A	pin header · coax · BNC / SMA
MC34	26 – 34	50 µm	W · BeCu	100 V · 1 A	pin header · coax · BNC / SMA

RF probe card PC series

A fixed layout of RF and DC needles on one card, made for automatic probers — repeated, production-style RF testing up to 67 GHz.



Use it for

- Wafer-level RF test on an auto prober
- The same pad layout tested die after die
- Many RF and DC contacts at once — up to 16 RF and 120 DC pins

Air coplanar (uniform pitch and configuration) or cantilever, not mixed. Cantilever cards typically last over 2 million contacts in auto probe mode. De-embedding files available; no initial-cost requirement, short lead time.

MODEL	FREQUENCY	CONNECTOR	INSERTION LOSS typ.	RETURN LOSS typ.	CROSSTALK typ.
PC10	DC – 10 GHz	SMA (f)	−1.0 dB	−15 dB	−35 dB
PC40	DC – 40 GHz	2.92 mm (f)	−1.0 dB	−15 dB	−35 dB
PC67	DC – 67 GHz	1.85 mm (f)	−1.5 dB	−10 dB	−35 dB

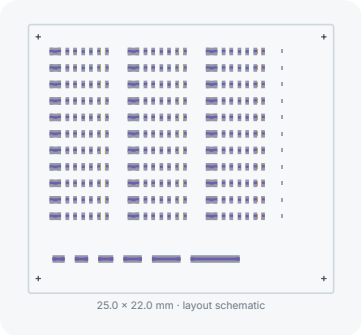
Typical at GSGSG, 150 µm pitch. Configurations GS, GSG, GSSG, GSGSG or custom; pitch 50–1000 µm in 25 µm steps. Pin counts are design limits — confirm your layout with DSF.

CALIBRATION

Impedance Standard Substrate (ISS)

Calibration substrates

Precision standards for calibrating your VNA at the probe tips with SOLT or TRL — so the measurement starts where the probe touches the device.



Schematic — the layout differs by part number

Features

- Resistance controlled to ±0.3 %
- SOLT and TRL calibration; T-PLUS standard probes also work with multiline TRL
- Differential cal pads for easy probing
- Loop back, cross thru 1 and cross thru 2 on one substrate
- Custom designs on request

GS / SG · GSG · GSGSG
50–1000 µm

GSSG
from 50 µm

STANDARDS — SINGLE-ENDED



Short
S tied to G



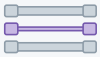
Open
pads unloaded



Load
50 Ω to ground



Thru
short line



Line
longer line

ADDED FOR DUAL PROBES



Loop back



Cross thru 1



Cross thru 2

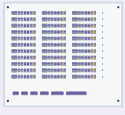
CALIBRATION SEQUENCE

SOLT 2-port — Short → Open → Load on each port → Thru between ports

TRL 2-port — Thru → Reflect same on both ports → Line one per band

For TRL, each line covers the band where its phase differs from the thru by roughly 20° to 160°; longer lines serve lower frequencies.

THREE ISS FAMILIES

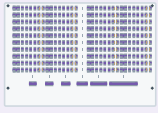


STANDARD

TCS1 – TCS4

GSG · GS / SG · GSGSG · GSSG, from 50 µm. Loop back and cross thru standards for dual probes.

p.13

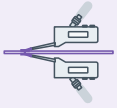


ABOVE 110 GHZ

TCSM1 series

GSG at 50, 75, 100, 125 and 150 µm pitch; 0.25 mm thick, with six TRL lines.

p.13



DOUBLE-SIDED

TCS1-075150-DS

GSG, 75–150 µm. Standards on both faces; the thru runs through the substrate.

p.13

CALIBRATION

Choosing an ISS

Pick the ISS by configuration and pitch. Each part number covers the pitches shown with it.

STANDARD ISS — CONFIGURATION AND PITCH (µm) → PART NUMBER

GSG TCS1 series	70–75 TCS1-070150	100–125 TCS1-100150	150–225 TCS1-150250	250–475 TCS1-250500	500–725 TCS1-500750	750–1250 TCS1-7501250	
GS / SG TCS2 series	50–75 TCS2-050075	100–125 TCS2-100150	150–225 TCS2-150250	250–475 TCS2-250500	500–725 TCS2-500750	750–1250 TCS2-7501250	
GSGSG TCS3 series	50, 75 TCS3-50/75	100 TCS3-100-2	125 TCS3-125-2	150–175 TCS3-150200	200–225 TCS3-200250	250–275 TCS3-250300	300–375 TCS3-300400
	400–475 TCS3-400500	500–575 TCS3-500600	600–775 TCS3-600800	800–1000 TCS3-8001000			
GSSG TCS4 series	50, 75 TCS4-50/75	100, 150 TCS4-100/150	125, 175 TCS4-125/175	200, 250 TCS4-200/250	225, 275 TCS4-225/275	300–375 TCS4-300400	400–475 TCS4-400500
	500–575 TCS4-500600	600–775 TCS4-600800	800–1000 TCS4-8001000				

MEMS TIP PITCHES MADE

GSG · GS / SG	50–75 µm (5 µm steps) · 100–1250 µm (25 µm steps)
GSGSG · GSSG	50–75 µm (5) · 100–300 µm (25) · 300–1000 µm (50 µm steps)

Pitches not listed (incl. GSG below 70 µm) and pitches above 1000 µm: ask DSF.



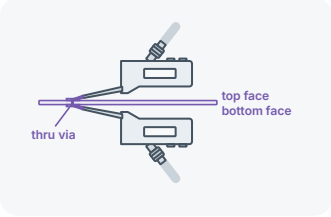
TCSM1-100 / -150 layout, after the T-PLUS map

ABOVE 110 GHZ — TCSM1 SERIES

For probes above 110 GHz

GSG, 22.0 × 15.0 mm, 0.25 mm thick. 40 sets of thru, open, short and load (TCSM1-50/75: 16 sets per pitch) for SOLT, TRL and TRM, six TRL lines and overtravel setting marks.

SUBSTRATE	PITCH	PAD SIZE	THRU	TRL LINES
TCSM1-50/75	50 · 75 µm	65 × 30 · 70 × 30 µm	1.09 ps	10 – 100 GHz bands
TCSM1-100	100 µm	70 × 50 µm	1.12 ps	10 – 100 GHz bands
TCSM1-125	125 µm	ask DSF	—	—
TCSM1-150	150 µm	73 × 78 µm	0.9 ps	10 – 110 GHz bands



DOUBLE-SIDED PROBING

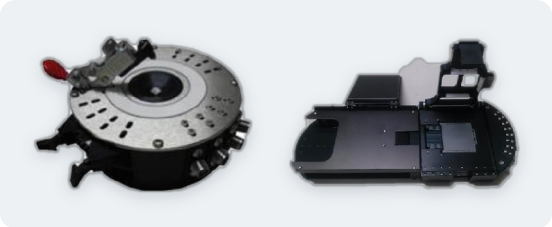
TCS1-075150-DS

- GSG, 75–150 µm pitch, 50 × 50 µm pads
- 20.0 × 20.0 mm, 0.1 mm thick
- Open, short and load on both faces, 10 sets each, for SOLT
- Thru (0.52 mm, 3.44 ps) runs through the substrate, linking a top-face probe to a bottom-face probe
- For boards and packages probed from both sides — e.g. double-sided PCB stations (p.14)

SYSTEMS & SERVICES

Sockets, stations & services

Beyond probe heads, T-PLUS builds the sockets, fixtures, stations and positioners around them — and measures, designs and assembles for you.



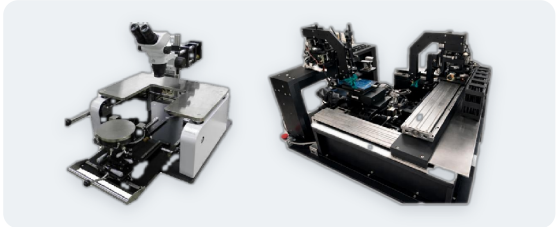
QFN test socket · optical Tx / Rx socket

RF test socket & fixture

For final test of bare chips, packaged ICs such as QFN, modules, optical Tx / Rx (E/O, O/E) modules and substrates.

- Calibration at the contact-tip plane — fewer fixture-induced errors
- Up to 67 GHz; a 110 GHz version is in development
- Non-stub, impedance-matched RF contact; custom and OIF-standard designs, pitch up to 1 mm
- Custom calibration kit and de-embedding files

Example TF-100CR — 100G DP-QPSK coherent receiver fixture to OIF-DPC-RX-01.0, DC–32 GHz, 4 differential channels.



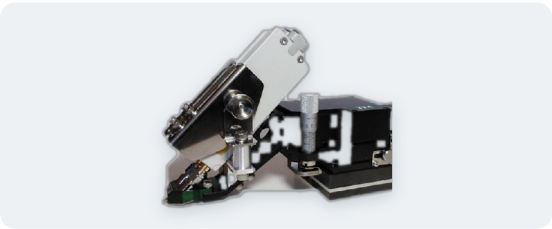
Manual station (4 / 6-inch wafer) · semi-auto PCB station

Probe stations — manual & semi-auto

Wafers (manual) · PCBs, single- or double-sided (manual & semi-auto) · optical packages, Tx / Rx (manual & semi-auto).

- LT-150: 4- and 6-inch wafers and PCBs, Φ150 mm vacuum chuck, coarse X / Y ±80 mm
- Fine travel X / Y 11 mm, Z 10 mm, θ 10°; MP positioners X / Y ±7.5 mm, Z 10 mm
- Olympus SZ61 microscope up to ×45; 600 × 600 × 320 mm, 60 kg
- For double-sided PCB probing, calibrate with the TCS1-075150-DS ISS (p.13)

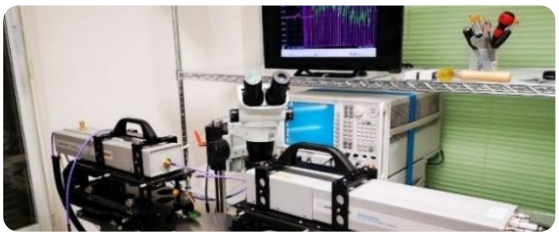
Options chuck roll-out >200 mm · ☐30 mm sub-chucks · custom chucks · frequency-extender mount. Typical lead time 2–4 months.



N1055A TDR + probe positioner

Carries a Keysight N1055A remote head right at the probe, for time-domain measurement on wafer or board.

- TDR probe DC–40 GHz (2.92 mm) or DC–50 GHz (1.85 mm), dedicated body
- GS, GSG, GSSG, GSGSG; pitch 50–1000 µm; GSSG at 100 Ω
- Positioner X / Y ±10 mm, rotation ±3°, 90° swing to fit the probe
- Calibration substrate (50 Ω) and de-embedding files (50 / 100 Ω)



Measurement, design & assembly

Engineering services from T-PLUS, partly with its measurement-alliance partner MoDeCH.

- Measurement: RF DC–110 GHz; S-parameters to about 325 GHz with MoDeCH; high-speed digital and time domain to about 50 GHz; 1/f noise, noise figure, noise parameters
- Design: high-frequency antennas up to 325 GHz, high-frequency components, EM simulation
- Assembly: high-frequency components, PCB assembly including RF parts

Model index

Every T-PLUS family in this guide, with the page that describes it.

FAMILY	MODELS	FREQUENCY	CONTACTS	PITCH	PAGE
Single RF probe	TP26 – TP110 · TP145 · TP250	DC–250 GHz	GS · SG · GSG	50–1000 µm	5
Dual / differential probe	TPD26 – TPD110 · TPD145 · TPD250	DC–250 GHz	GSSG · GSGSG	50–1000 µm	6
Waveguide probe	TP75 – TP325 (WR15 – WR3)	50–325 GHz	GSG	50–250 µm	7
Adjustable dual probe	TPD40 Adjustable	DC–40 GHz	GSG-GSG · GS-SG	50–1000 µm	8
Edge-type probe	TPxx-GSxx-EL / -ER	as TP series	GS	as TP series	8
Custom RF cantilever	built to order	DC–67 GHz	any, up to 10 RF	50–1000 µm	9
DC + RF probe	MCRF40 · MCRF50 · MCRF67	DC–67 GHz	RF + ~25 DC	from 50 µm	9
Special-environment probe	high power · non-magnetic · cryo	DC–67 GHz	option on most probes	custom	10
DC wedge probe	MC14 · MC26 · MC34	DC	up to 34 needles	from 50 µm	11
RF probe card	PC10 · PC40 · PC67	DC–67 GHz	≤16 RF · ≤120 DC	50–1000 µm	11
Calibration substrate	TCS1–4 · TCSM1 · TCS1-075150-DS	SOLT · TRL	GS/SG · GSG · GSSG · GSGSG	50–1250 µm	12–13
RF test socket & fixture	custom · OIF	DC–67 GHz	chips · QFN · optical	up to 1 mm	14
Probe station	LT-150 · semi-auto	—	wafer · PCB · optical	—	14
TDR positioner	N1055A + probe positioner	DC–50 GHz	GS · GSG · GSSG · GSGSG	50–1000 µm	14

TYPICAL LEAD TIME

- **2 weeks** — standard RF probes
- **2–3 weeks** — waveguide · DC probes · probe cards · custom cantilever
- **3–4 weeks** — specialty probes
- **2–4 months** — probe stations

SALES AND TECHNICAL SUPPORT IN KOREA

DSF System

Authorized T-PLUS distributor · RF, microwave and mmWave probing
16 Deogyeong-daero 1556beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do 16690, Korea

help@testsolution.co.kr

T-Plus

T Plus Co., Ltd. · Chiba, Japan
tplus-co.com

Specifications are typical values from T-PLUS published data (tplus-co.com, November 2026) and T-PLUS data supplied to DSF, and may change without notice. Confirm the final configuration with DSF before ordering. Edition 2026.11.