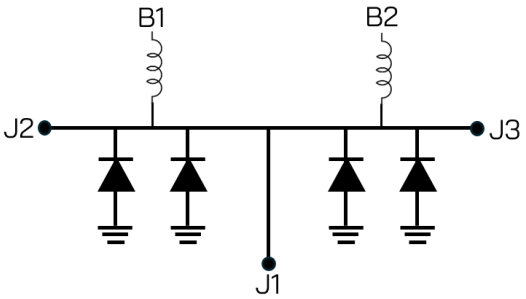
Broadband Low-Loss SPDT Switches

552x Series is a family of voltage controlled Single Pole Double Through Switches with waveguide-based package.

This family can cover the range of frequency bands **from 50 to beyond 330 GHz.** All switch designs within this series are based on Schottky Diode technology. The bias control port of the switch is a wire to board DC connector. These switches provide an insertion loss lower than 2 dB in ON-mode and insulation higher than 30 dB in OFF-mode with very fast ON/OFF switching modulation speed faster than 20 ns. For switching factor larger than 40 dB, please ask ACST for availability of these versions. The blocks are manufactured in gold-platted brass featuring the high precision waveguide flange UG 387/U-M.

Technical Diagram



B1 – OFF
B2 – ON

S31 = S13
S21 = S12
S11 = S33
S11 ≠ S22

Application Areas

- **> Test path selection**
- **> Rx/Tx Calibration**
- **> Redundant Signal-Path selection**
- **> Antenna/Beam selection**
- **> Sensor Multiplexing**
- **> Frequency Band Switching**

Technical Specifications

PRODUCT	552D-P1
Frequency Band (UG-387)	**WR-5.1**
Frequency Min [GHz]	**150**
Frequency Max [GHz]	**200**
On-mode Insertion loss (S31)[1] [dB]	**1.5**
Max. On-mode Return Loss (S11) [dB]	**25**
Off-mode Isolation (S21) [dB]	**33**
Max. Off-mode Return Loss (S22) [dB]	**>4**
On-Mode Bias B2 Port[2] [V]	**+10**
Off-Mode Bias B1 Port [V]	**-1.9**
Off-Mode Max. Current [mA]	**-20**
Bias Port Frequency [GHz]	**DC - 0.01**
Maximum Total RF Power[3] [dBm]	**+13**

[1] The table is defined based on the diode diagram with B1 in OFF-mode and B2 in ON-mode. The symmetric performance can be considered when inverting them.
[2] The B1 and B2 bias ports must be set in ON/OFF or OFF/ON mode. Simultaneous OFF mode to be avoided.
[3] Higher insertion loss can be expected when using high RF power.

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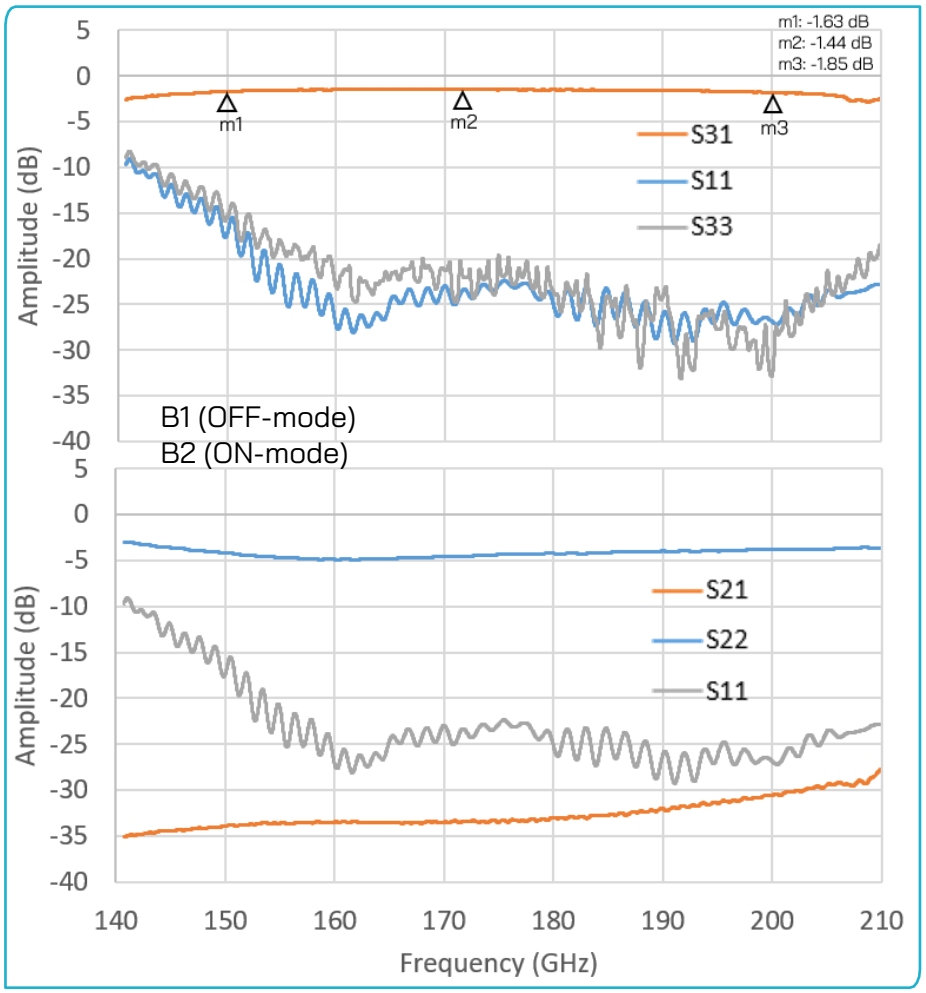
Typical Performance (552D-P1 example)



Notes

> All plotted data represent typical values. The actual data may vary from unit to unit.

> All tests are carried out at a room temperature of 24 °C.

Caution

> Absolute maximum ratings should not be used under normal operating conditions. Exceeding maximum ratings may lead to permanent failure.

> Any foreign body inserted into the waveguide will cause a loss of performance and may damage the device.

Absolute Maximum Ratings

	Maximum
Total RF Input Power (dBm)	+13
Switching OFF-Mode Current (mA)	-20
Operational Temperature and Humidity (at the case)	5 °C to 45 °C // 0% to 80%
Storage Temperature and Humidity	5 °C to 65 °C // 0% to 80%

ESD

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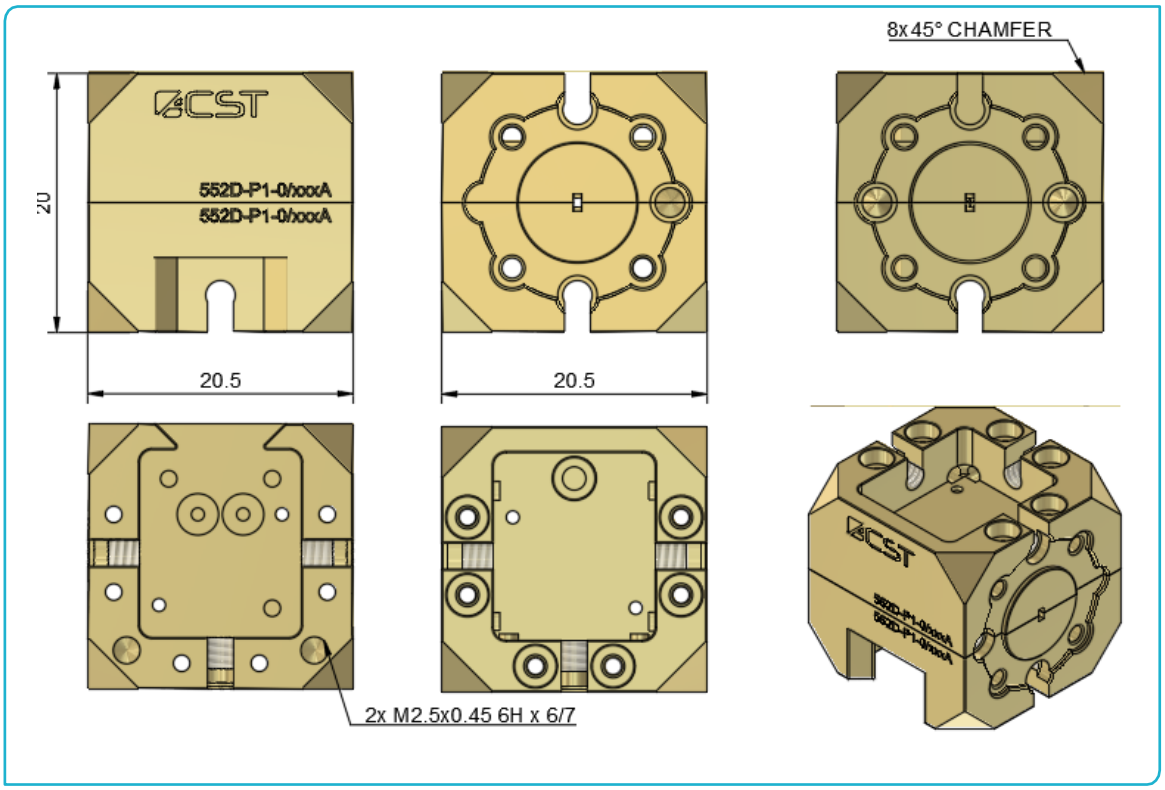
Broadband Low-Loss SPDT Switches

Order information

- Please indicate product name and type.
- Please indicate expected input power requirements

Outlines Dimensions



Mechanical Description

	Maximum
Size (without dowel pin)	20.5 mm x 20.5 mm x 20 mm
Output Waveguide Orientation	E-Plane

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