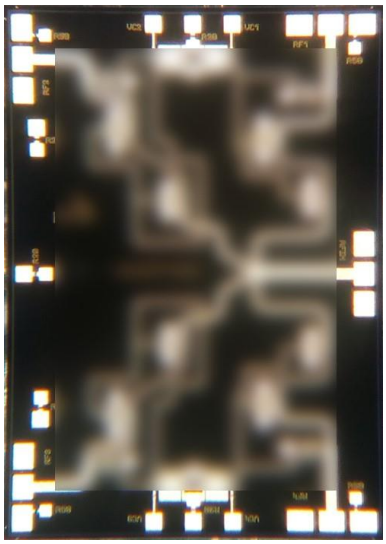
MECKASP4TA

25 - 38 GHz Absorptive SP4T



Main Features

- 0.25µm GaAs pHEMT Technology
- 25 – 38 GHz Frequency Range
- Insertion Loss ≤ 3.5 dB
- Isolation (RFin to NC Outputs) ≥ 40 dB
- Input Return Loss ≤ -10 dB
- Output Return Loss ≤ -12 dB
- Power Consumption ≈ 0 W
- Absorptive
- Control Bias Voltages: Vc = -2 / 0.6 V
- Chip Size: 2.40 x 3.40 x 0.10 mm^3

Product Description

MECKASP4TA is a 0.25µm GaAs pHEMT Ka Band Absorptive SP4T Switch designed and tested by MEC for 25 - 38 GHz Band applications.

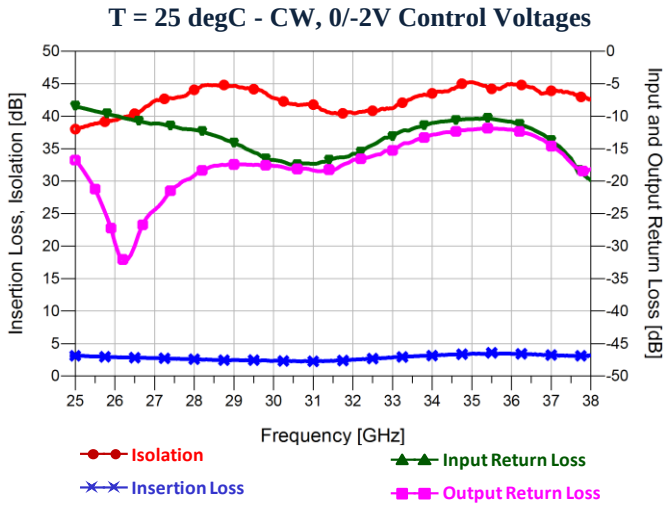
In the frequency range from 25 to 38 GHz MECKASP4TA provides less than 3.5 dB of small signal insertion loss and more than 40 dB of isolation with negligible power consumption.

The Control Bias Voltages are from - 2 V to -1.3 V (HIGH STATE) and from -0.2 V to 0.6V (LOW STATE).

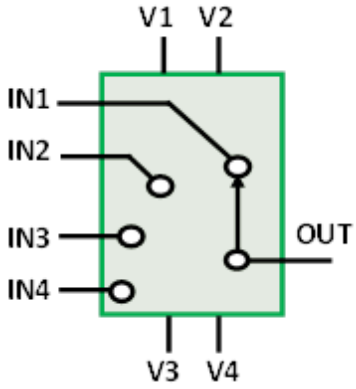
Typical Applications

- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space Hybrids
- Test Instrumentation
- SATCOM & Sensors

Measured Data



Functional Diagram



Control Voltages

STATE	BIAS CONDITION
HIGH	-2 V to -1.3V
LOW	-0.2 V to 0.6V

True Table

Vc1	Vc2	Vc3	Vc4	STATE
HIGH	LOW	LOW	LOW	IN1 "ON" to OUT
LOW	HIGH	LOW	LOW	IN2 "ON" to OUT
LOW	LOW	HIGH	LOW	IN3 "ON" to OUT
LOW	LOW	LOW	HIGH	IN4 "ON" to OUT
LOW	LOW	LOW	LOW	N.C.

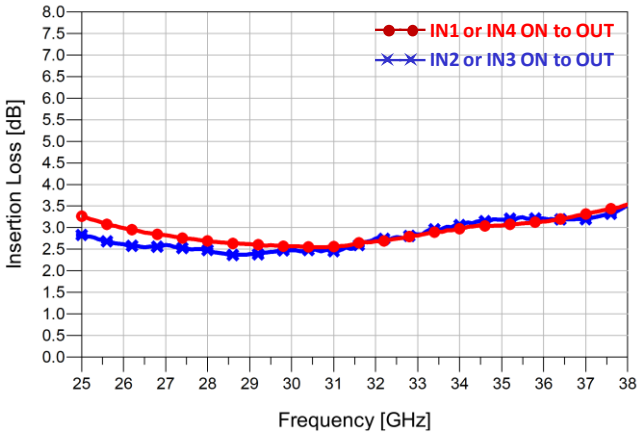
Main Characteristics

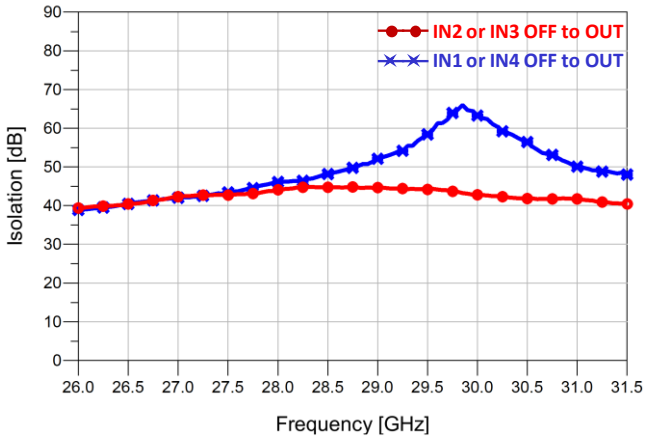
Test Conditions: T_{base_plate} = 25°C - CW, 0/-2V Control Voltages

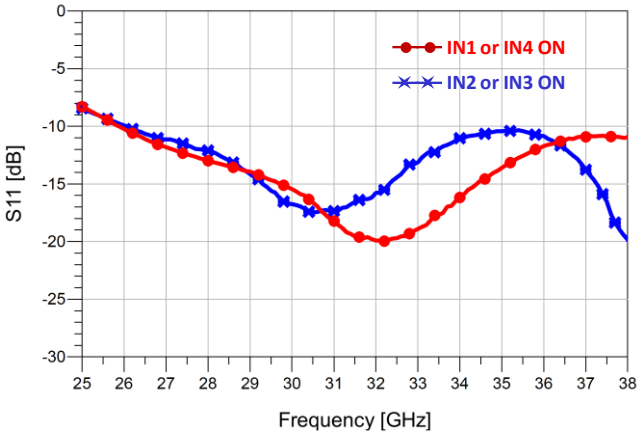
Parameter		Min	Typ	Max	Unit
Operating frequency		25	-	38	GHz
Insertion Loss (IN1 or IN4 "ON" to OUT)	25 – 31 GHz	2.5	-	3.2	dB
	31 – 38 GHz	2.5	-	3.5	dB
Insertion Loss (IN2 or IN3 "ON" to OUT)	25 – 31 GHz	2.5	-	2.9	dB
	31 – 38 GHz	2.5	-	3.5	dB
Isolation (IN1 or IN4 "OFF" to OUT)	25 – 31 GHz	40	-	-	dB
	31 – 38 GHz	40	-	-	dB
Isolation (IN2 or IN3 "OFF" to OUT)	25 – 31 GHz	40	-	-	dB
	31 – 38 GHz	40	-	-	dB
Input Return Loss (IN1 or IN4 "ON" to OUT)	25 - 31 GHz	-	-	-10	dB
Input Return Loss Absorptive (IN1 or IN4 "OFF" to OUT)	25 – 31 GHz	-	-	-10	dB
	31 – 38 GHz	-	-	-7	
Input Return Loss (IN2 or IN3 "ON" to OUT)	25 - 31 GHz	-	-	-10	dB
Input Return Loss Absorptive (IN2 or IN3 "OFF" to OUT)	25 – 31 GHz	-	-	-10	dB
	31 – 38 GHz	-	-	-5	
Output Return Loss (IN1 or IN4 "ON" to OUT)	25 - 31 GHz	-	-	-12	dB
Output Return Loss (IN2 or IN3 "ON" to OUT)	25 - 31 GHz	-	-	-12	dB
Control Current		-	≈ 0	-	mA

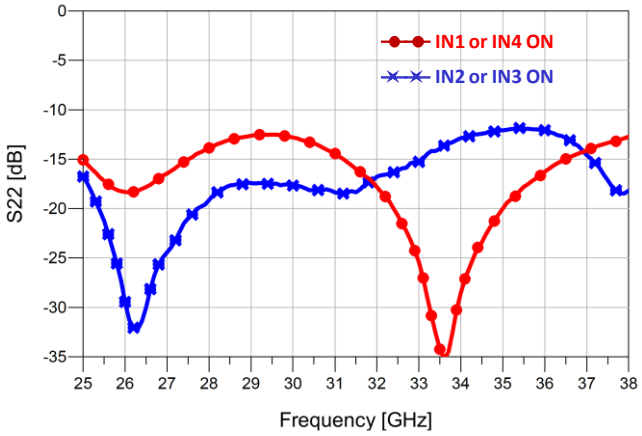
Insertion Loss, Isolation and Return Loss

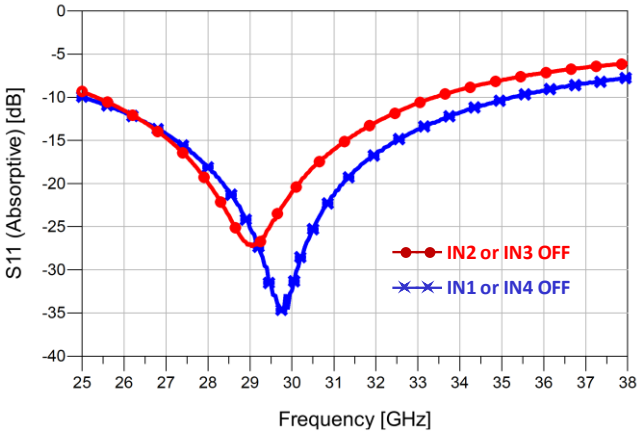
Test Conditions: Tbase_plate = 25°C - CW, 0/-2V Control Voltages



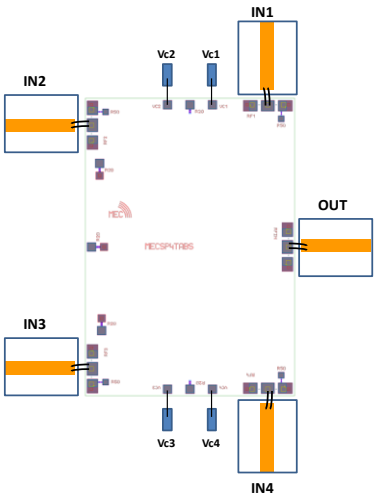




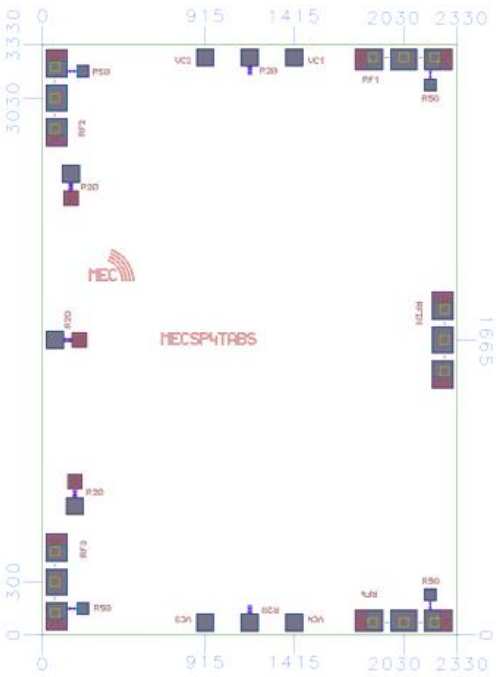




Bond Pad Configuration & Assembly Recommendations



Bond Pad #	Connection	External Components
IN1, IN2, IN3, IN4 and OUT	**2** Bonding Wires L_bond = 0.3nH	
Vc1, Vc2, Vc3 and Vc4	L_bond ≤ 1 nH	No external components required (Internal Series Resistance: Rs=4kΩ)



All dimensions are in µm.

Eutectic Die bond using AuSn (80/20) solder is recommended.

The backside of the die is the Source (ground) contact.

Thermosonic ball or wedge bonding are the preferred connection methods.

Gold wire must be used for connections.

Bias Procedure

Bias-Up

1. Set Vc1, Vc2, Vc3 and Vc4 to Control Voltage.
2. Apply RF signal.

Bias-Down

1. Turn off RF signal.
2. Turn off Vc1, Vc2, Vc3 and Vc4.

Contact Information

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