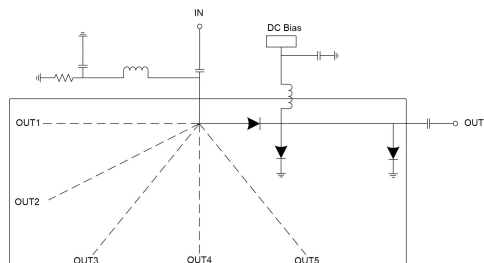


GaAs PIN Reflective SP6T Switch Chip, 2-20GHz

Performance characteristics

- Frequency Range: 2-20GHz
- Insertion loss : 1.0dB typ.
- Isolation: 44 dB typ.
- P-1dB: 25dBm
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.32 x 2.15 x 0.1mm
- Silicon nitride passivation, scratch protection

Functional Block Diagram



Product Introduction

GSW610D/E are two GaAs PIN reflective single-pole six-throw switch chips, with 50Ω matching at the input/output ends, a frequency range of 2 to 20GHz, and -5V/+5V control. ISW610D/E are mirror versions of each other. Built-in bias network and DC blocking capacitors are easy to use. It has excellent switching characteristics and port standing wave characteristics throughout the entire operating frequency range, and is very suitable for microwave hybrid integrated circuits, multi-chip modules, and low-power systems. The switch chip uses on-chip through-hole metallization technology to ensure good grounding, does not require additional grounding measures, and is simple and convenient to use. The back of the chip is metallized, which is suitable for eutectic sintering or conductive adhesive bonding processes.

Use restriction parameter ¹

Maximum input voltage	2.5V
Maximum input power (test frequency 17GHz, test time 30 minutes)	+33dBm CW
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

【1】 Exceeding any of these maximum limits may cause permanent damage.

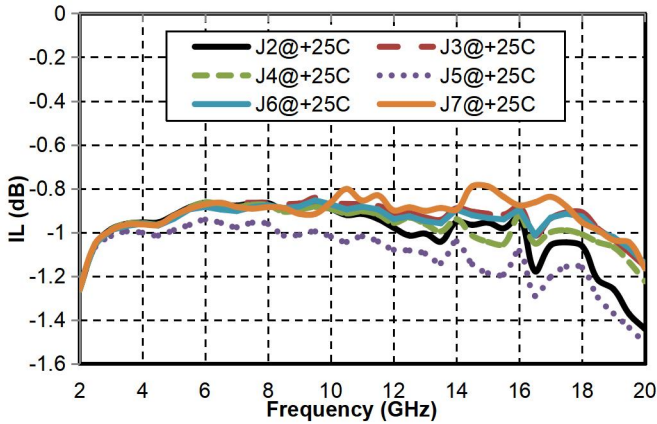
Electrical performance parameter (TA = +25°C)

index	Minimum	Typical Value	Maximum	unit
Frequency Range	2-20			GHz
Insertion loss	-	1.0	1.5	dB
Isolation	34	44	-	dB
Input return loss	10	17	-	dB
Output return loss	11	20	-	dB
P-1dB @ 2GHz/10GHz/ 17GHz	-	24/27/24	-	dBm
Switching speed	-	30	-	ns

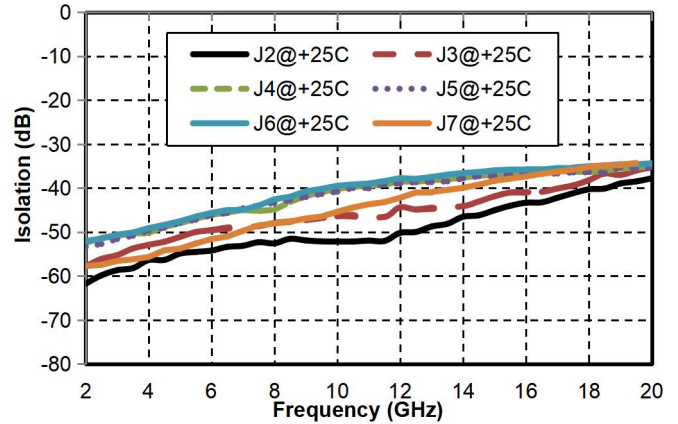
GaAs PIN Reflective SP6T Switch Chip, 2-20GHz

Main index test curve

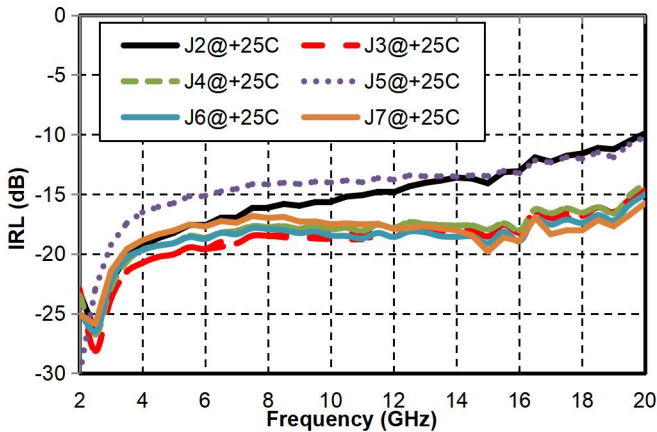
Insertion Loss vs. Operating Frequency



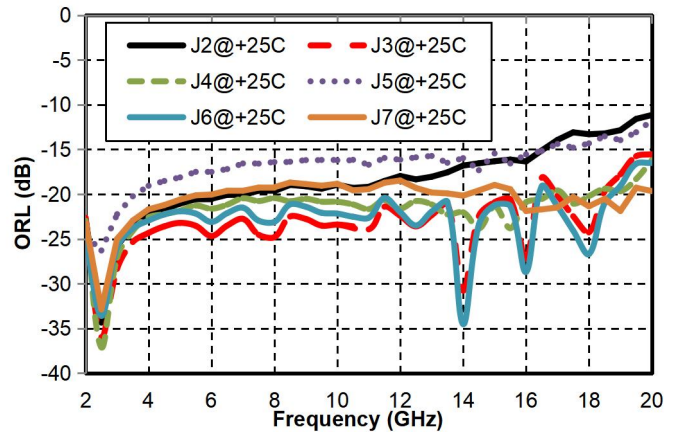
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



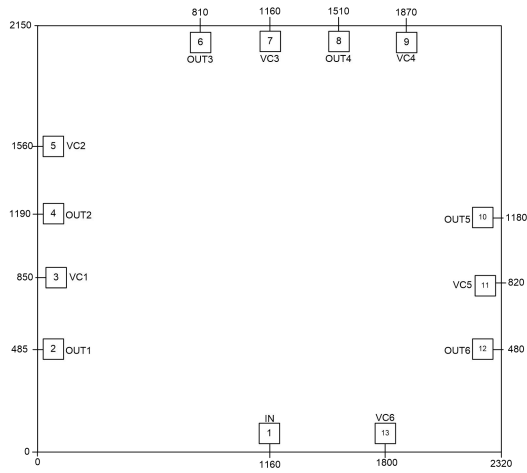
Typical Driver Connections

Control port (mA)						Output conduction condition					
VC1	VC2	VC3	VC4	VC5	VC6	J2-J1	J3-J1	J4-J1	J5-J1	J6-J1	J7-J1
-10	+20	+20	+20	+20	+20	Continuity	isolation	isolation	isolation	isolation	isolation
+20	-10	+20	+20	+20	+20	isolation	Continuity	isolation	isolation	isolation	isolation
+20	+20	-10	+20	+20	+20	isolation	isolation	Continuity	isolation	isolation	isolation
+20	+20	+20	-10	+20	+20	isolation	isolation	isolation	Continuity	isolation	isolation
+20	+20	+20	+20	-10	+20	isolation	isolation	isolation	isolation	Continuity	isolation
+20	+20	+20	+20	+20	-10	isolation	isolation	isolation	isolation	isolation	Continuity

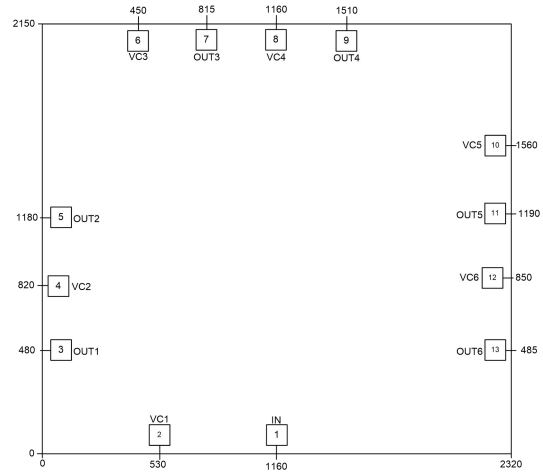
Note: V = +1.35 V , I = +20mA; V = -3.2V, I = -10mA (including J1 on-chip resistor RIN = 50 ohm voltage divider)

GaAs PIN Reflective SP6T Switch Chip, 2-20GHz

Appearance structure



ISW 6 10 D



ISW 6 10 E

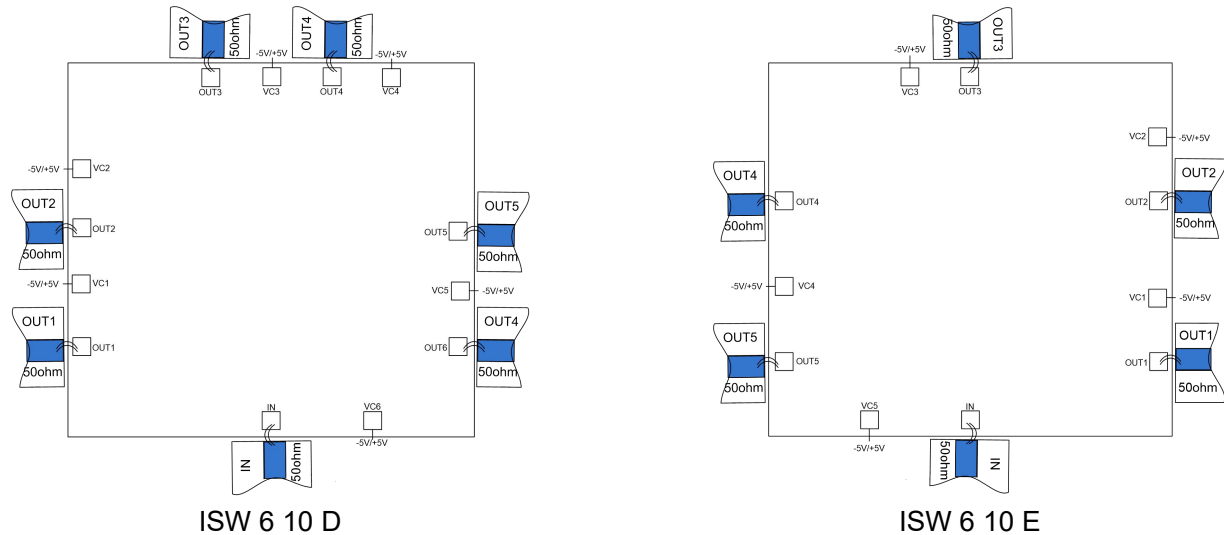
All units in the figure are micrometers

Bonding point definition (ISW 6 10 D)		
Bonding point number	Function Symbol	Functional Description
1	IN(J1)	RF input signal terminal
2, 4, 6, 8, 10, 12	OUT1(J2), OUT2(J3), OUT3(J4), OUT4(J5), OUT5(J6) OUT6(J7)	RF output signal terminal
3, 5, 7, 9, 11, 13	VC1, VC2, VC3, VC4, VC5, VC6	Signal control terminal
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

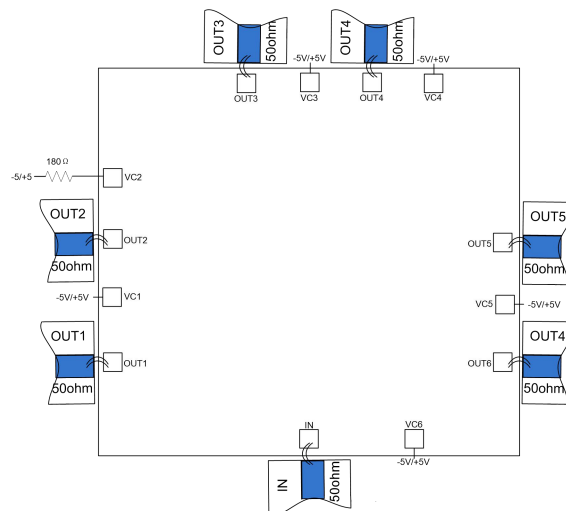
Bonding point definition (ISW510C)		
Bonding point number	Function Symbol	Functional Description
1	IN(J1)	RF input signal terminal
2, 4, 6, 8, 10, 12	OUT1(J2), OUT2(J3), OUT3(J4), OUT4(J5), OUT5(J6) OUT6(J7)	RF output signal terminal
3, 5, 7, 9, 11, 13	VC1, VC2, VC3, VC4, VC5, VC6	Signal control terminal
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

GaAs PIN Reflective SP6T Switch Chip, 2-20GHz

Recommended assembly circuit diagram



Recommended use



+5V is connected in series with R=180 ohm resistor , V =+ 1.35V , I=+20mA . -5V is connected in series with R=180 ohm resistor , V=-3.2V, I=-10mA .

Note: If you need to reduce power consumption, you need to connect +5V /-5V in series with resistors of different resistance values. For example: +5V in series with R=370 ohm resistor : V=+1.3V, I=+10mA; -5V in series with R=180 ohm resistor V=-3.2V, I=-10mA . (Including the internal resistor R_{IN}=50 ohm voltage divider at J1 end). Please contact the manufacturer for specific usage.