

AM6055 – Switch

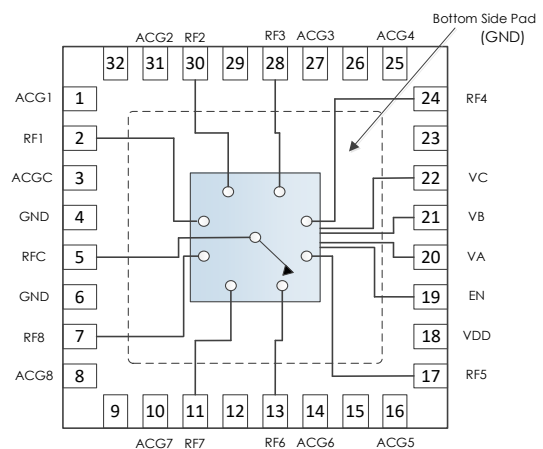
DC to 18 GHz, SP8T, Absorptive

AM6055 is an absorptive Single-Pole Eight-Throw (SP8T) switch covering the DC to 18 GHz frequency range suited for a wide range of wireless applications. The AM6055 provides low insertion loss, flat frequency response, high isolation and linearity, and fast switching speed making this switch ideal for high frequency, low power transmit/receive applications. The AM6055 requires a single positive supply and three positive control voltages. With internal 50Ω matching, internal decoder circuitry, and low current draw all packaged in a 5 mm QFN, the AM6055 represents a compact total PCB footprint with minimal size, weight, and power (low SWaP).

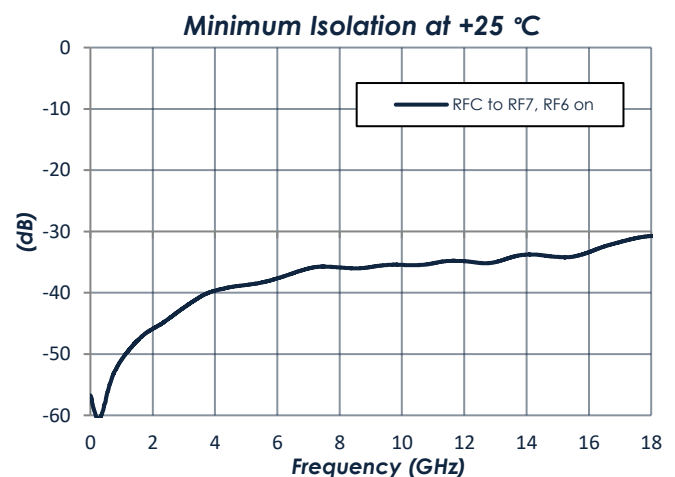
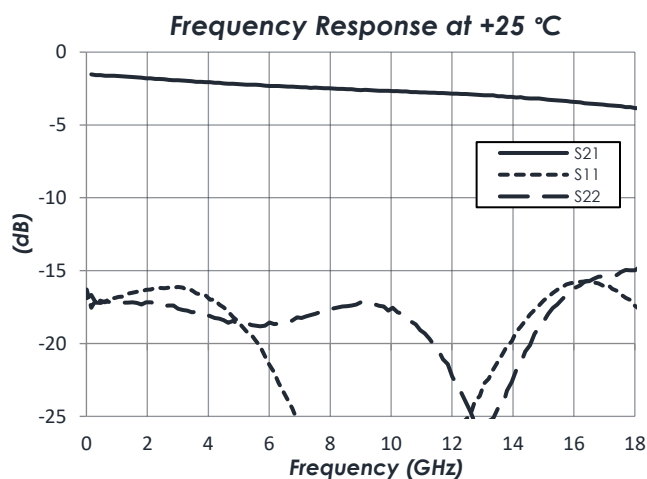
FEATURES

- 3 dB Insertion Loss
- 40 dBm Input IP3
- +3.3 V to +5.0 V Supply
- +3.3 V to +5.0 V Control
- >30 dB Isolation
- 5 mm QFN
- -40 °C to +85 °C Operation

FUNCTIONAL DIAGRAM



CHARACTERISTIC PERFORMANCE





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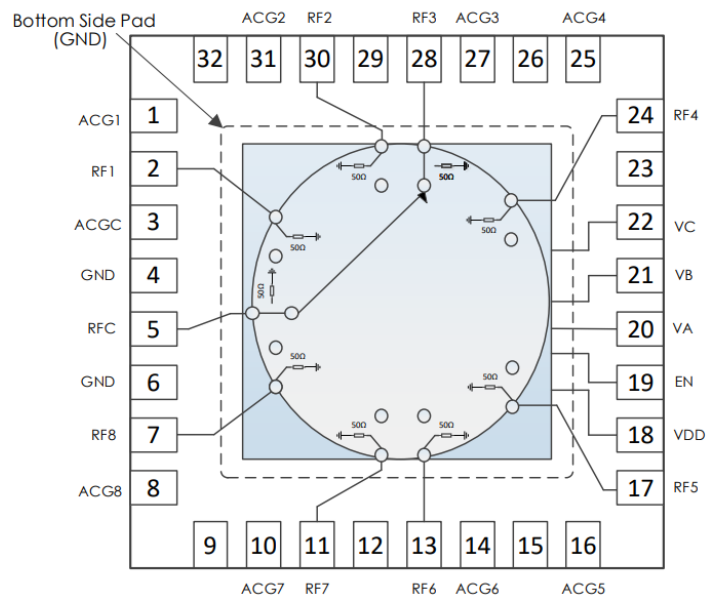
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REVISION HISTORY

Date	Revision	Notes
July 14, 2025	1	Initial Release.
September 30, 2025	2	Added across temperature and switching speed data.

PIN LAYOUT AND DEFINITIONS

Note: All Non-Named Pins are NC or GND

**Notes:**

* AC Ground caps optional. Installing AC ground capacitors offer optimum absorptive performance below 400 MHz. See Typical Performance section for more details.

Pin	Name	Function
2	RF1	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
4	GND	Ground – Common
5	RFC	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
6	GND	Ground – Common
7	RF8	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
9	GND	Ground – Common
11	RF7	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
12	GND	Ground – Common
13	RF6	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
15	GND	Ground – Common
17	RF5	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
18	VDD	DC Power Input
19	EN	Switch Enable – All ports 50 Ohm terminated when disabled
20	VA	Switch Control A
21	VB	Switch Control B
22	VC	Switch Control C
23	GND	Ground – Common
24	RF4	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
26	GND	Ground – Common
28	RF3	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
29	GND	Ground – Common
30	RF2	RF Output – 50 Ohms – DC Coupled. External DC blocking capacitor required
32	GND	Ground – Common
1,3,8,10,14,16,25,27,31	ACG	Optional AC Ground*

SPECIFICATIONS

Absolute Maximum Ratings

	Minimum	Maximum
Supply Voltage	-0.3 V	+6.0 V
RF Input Power		+27 dBm
Storage Temperature Range	-55 °C	+150 °C

Note: Any device operation beyond the Absolute Maximum Ratings may result in permanent damage to the device. The values listed in this table are extremes and do not imply functional operation of the device at these or any other conditions beyond what is listed under Recommended Operating Conditions. Any part subjected to conditions outside of what is recommended for an extended amount of time may suffer from reliability concerns.

Handling Information

	Minimum	Maximum
Moisture Sensitivity Level	MSL 3	



Mercury products are electrostatic sensitive.
Follow safe handling practices to avoid damage.

Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage	+3.3 V	+5.0 V	
Operating Case Temperature	-40 °C		+85 °C

Timing Characteristics

Parameter	Minimum	Typical	Maximum
Switching Speed (Path Enabled to Disabled)		20 ns	
Switching Speed (Path Disabled to Enabled)		17 ns	

Note: Measured as configured in typical application. Trigger points are 50% control and 90% RF.

DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max.
DC Supply Voltage		+3.3 V	+5.0 V	+5.0 V
DC Supply Current	VDD = +3.3 V		12 mA	
	VDD = +5.0 V		15 mA	
Power Dissipated	VDD = +3.3 V		39.6 mW	
	VDD = +5.0 V		75 mW	
Logic Level Low		0.0 V		+0.5 V
Logic Level High		+2.0 V		+VDD

RF Performance

(T = 25 °C unless otherwise specified)

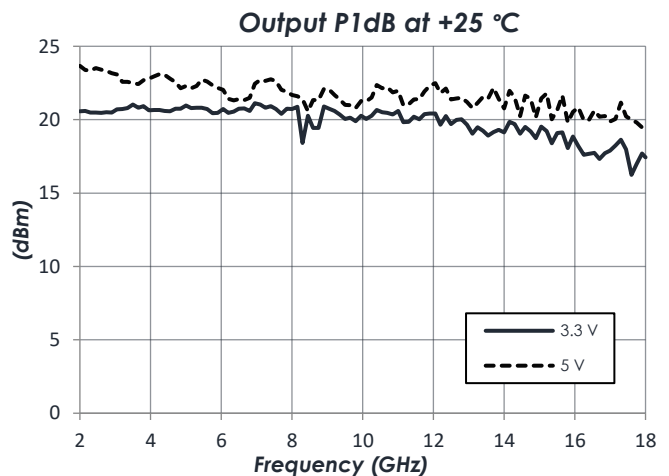
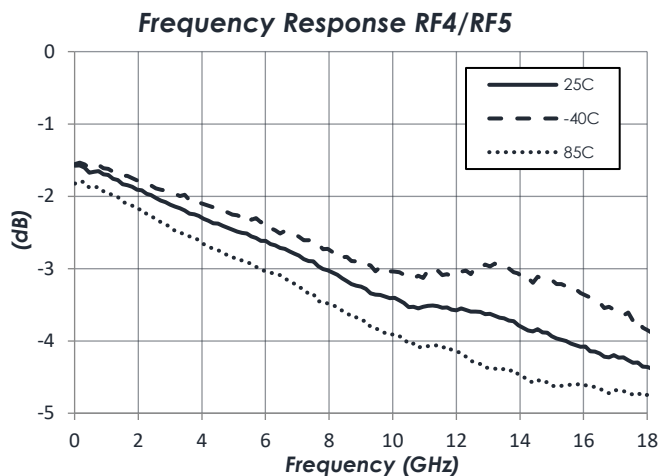
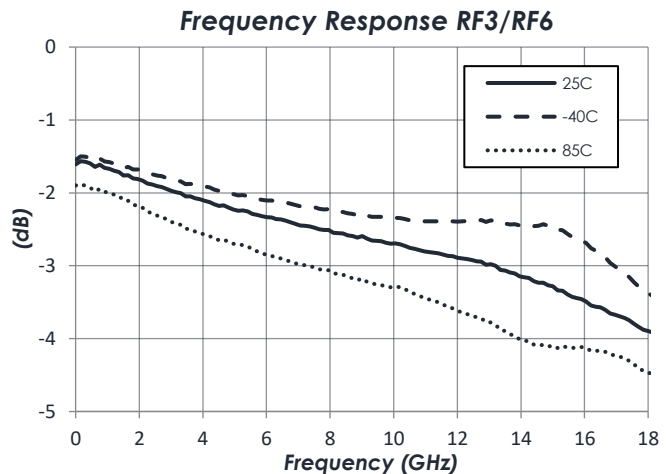
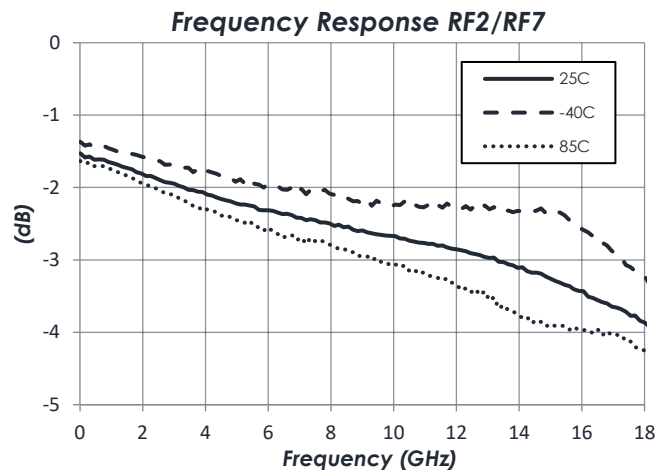
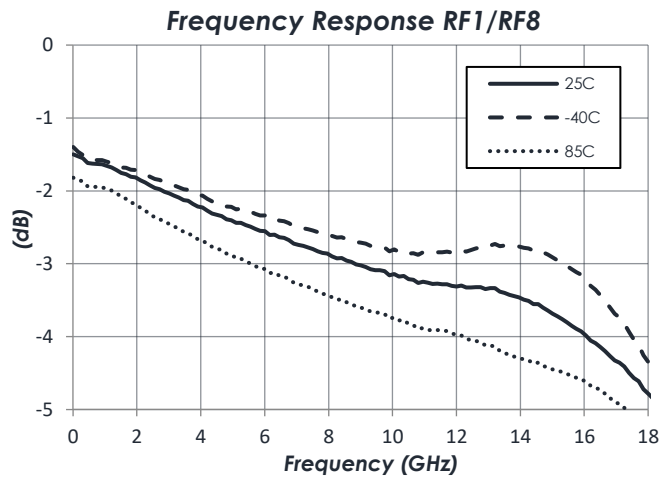
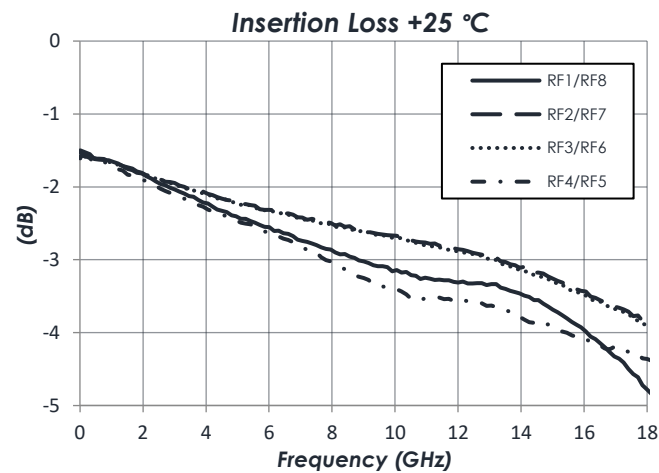
Param	Testing Conditions	Min	Typical	Max.
Frequency Range		DC		18 GHz
Insertion Loss	0 to 8 GHz		2.1 dB	
	8 to 14 GHz		3 dB	
	14 to 18 GHz		3.7 dB	
Return Loss	0 to 8 GHz		20 dB	
	8 to 14 GHz		23 dB	
	14 to 18 GHz		17 dB	
Input IP3	VDD = +5.0 V		40 dBm	
Isolation	VDD = +5.0 V		30 dB	

State Table

VC	VB	VA	EN	State
Low	Low	Low	High	RFC to RF1
High	Low	Low	High	RFC to RF2
Low	High	Low	High	RFC to RF3
High	High	Low	High	RFC to RF4
Low	Low	High	High	RFC to RF5
High	Low	High	High	RFC to RF6
Low	High	High	High	RFC to RF7
High	High	High	High	RFC to RF8
X	X	X	Low	Disabled

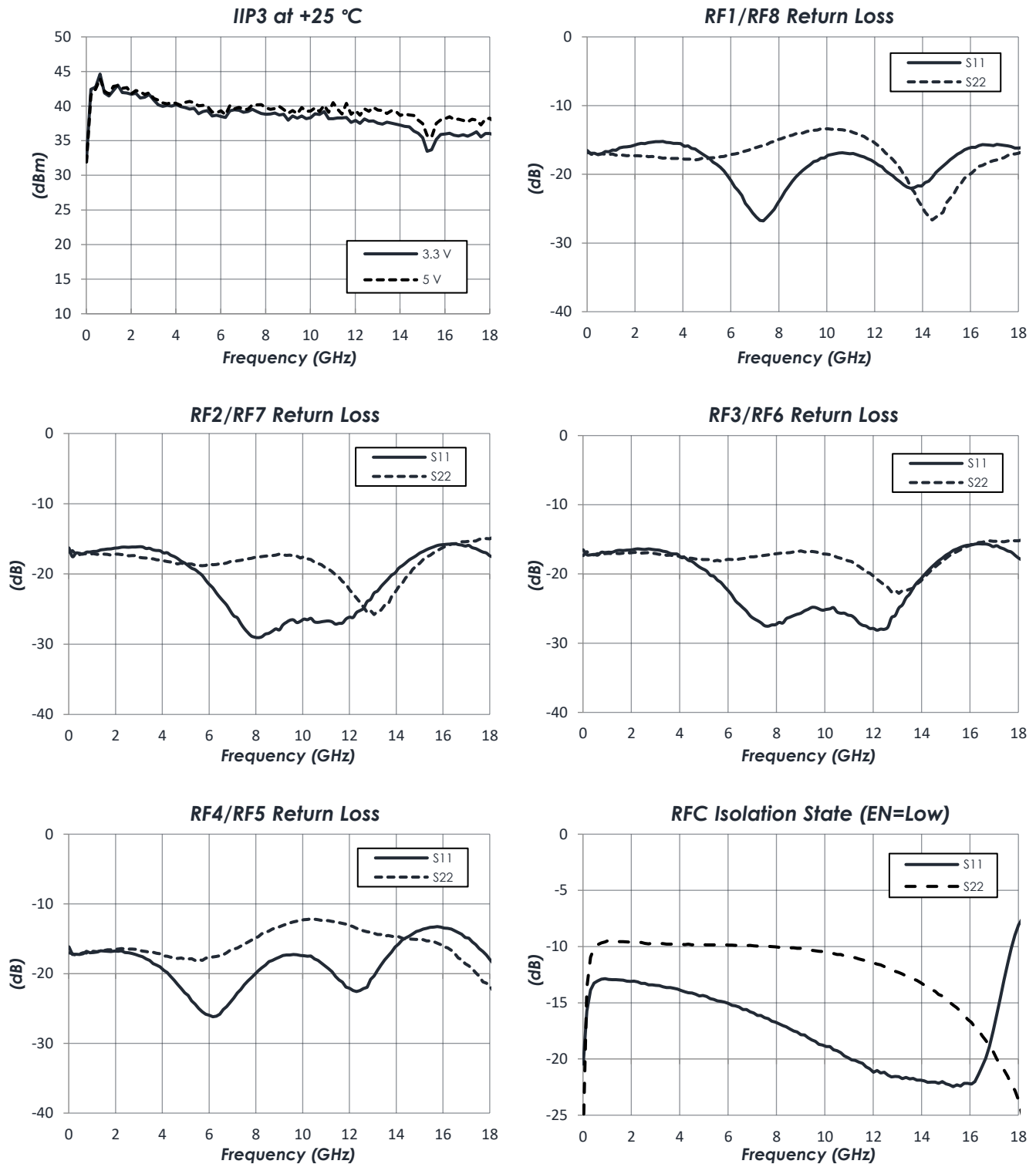
TYPICAL PERFORMANCE

(VDD = +5.0 V, T = 25 °C. Data measured via probes outside IC package on 10 mil Rogers R04350B™)



TYPICAL PERFORMANCE (continued)

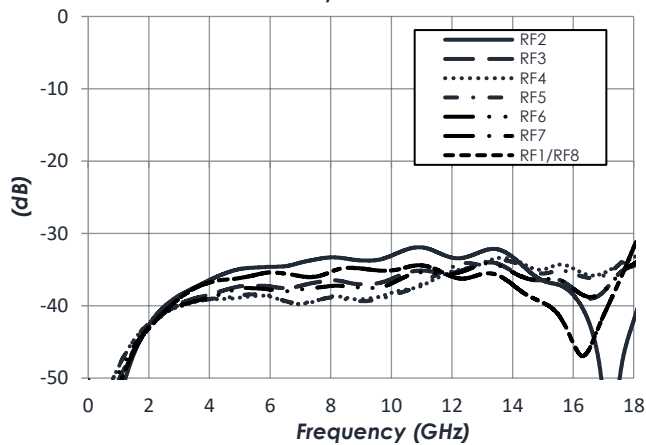
(VDD = +5.0 V, T = 25 °C. Data measured via probes outside IC package on 10 mil Rogers RO4350B™)



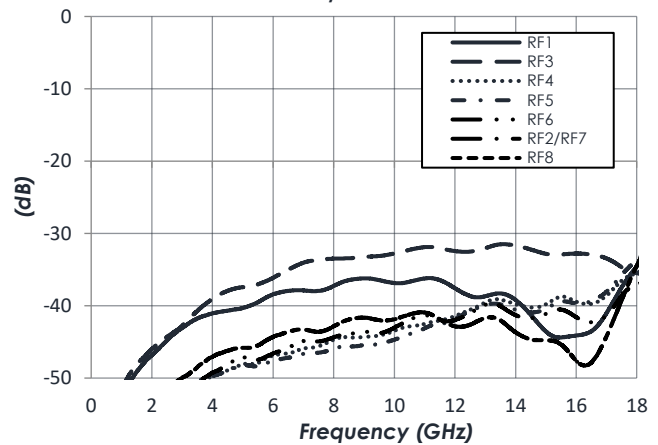
TYPICAL PERFORMANCE (continued)

(VDD = +5.0 V, T = 25 °C. Data measured via probes outside IC package on 10 mil Rogers RO4350B™)

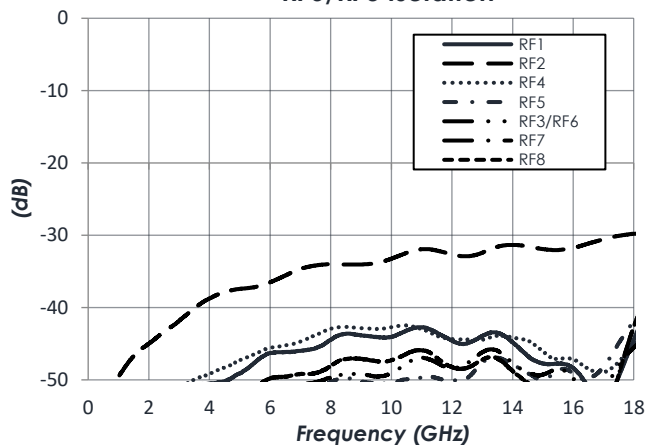
RF1/RF8 Isolation



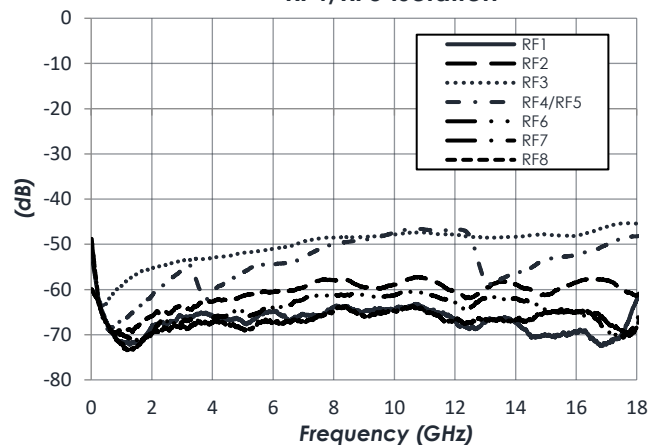
RF2/RF7 Isolation



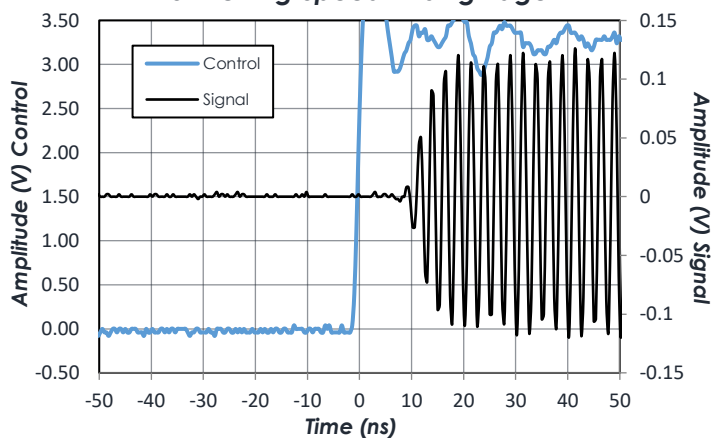
RF3/RF6 Isolation



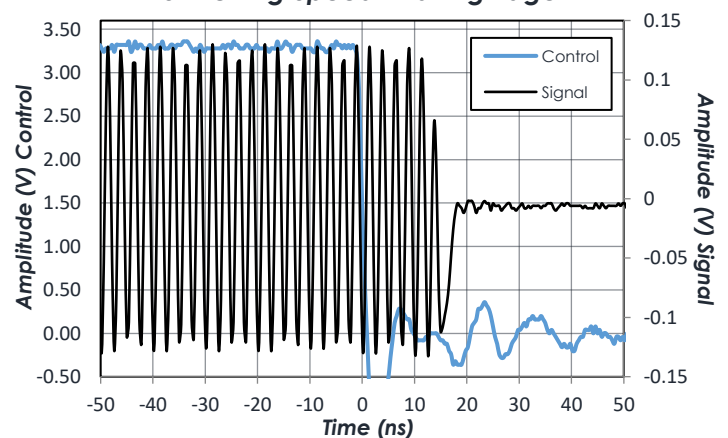
RF4/RF5 Isolation



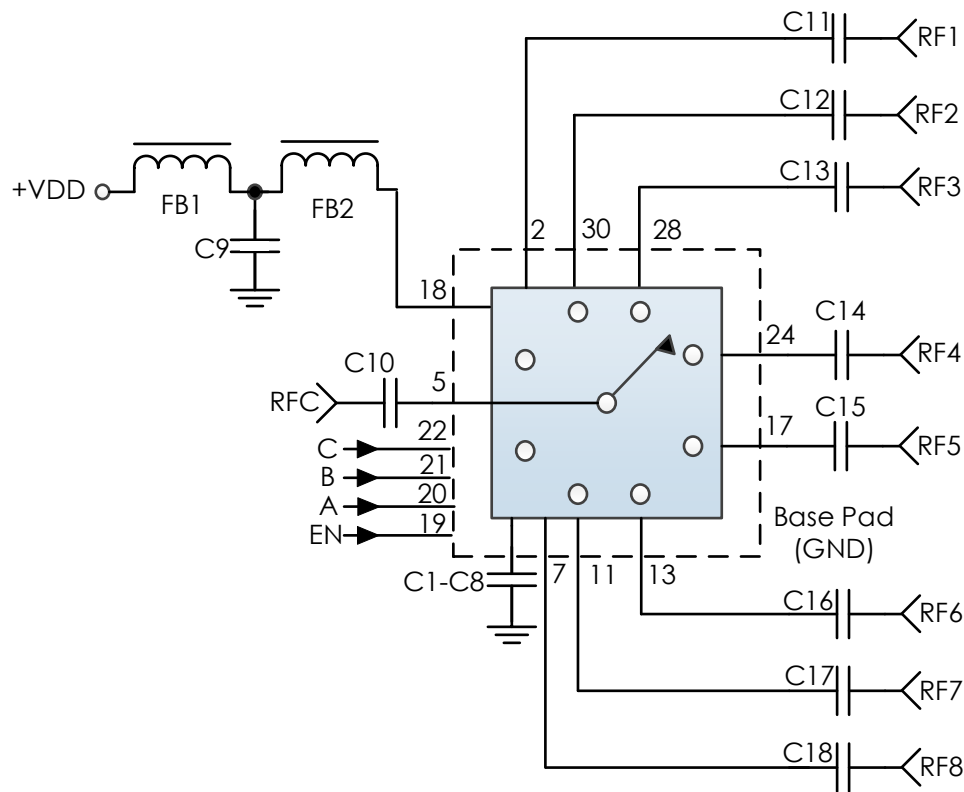
Switching Speed- Rising Edge



Switching Speed - Falling Edge



TYPICAL APPLICATION



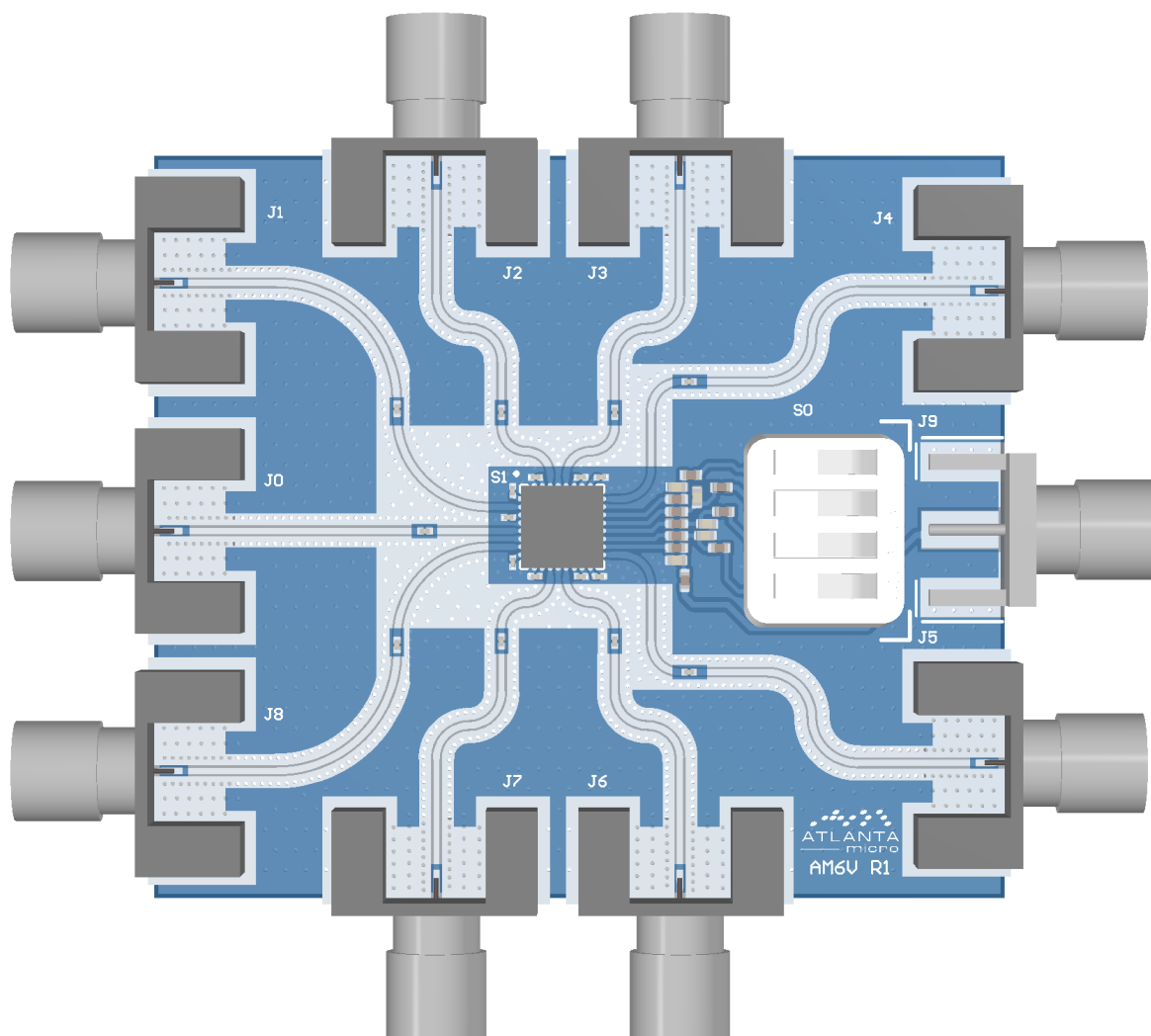
RECOMMENDED COMPONENT LIST (OR EQUIVALENT)

Part	Value	Part Number	Manufacturer
C1-C9	0.1 μ F	GRM155R71C104KA88	Murata
C10-C18	0.1 μ F	0201BB104KW160	Passives Plus
FB1-FB2	-	MMZ1005A222E	TDK

Notes:

1. DC blocking capacitors should be high performance, low-loss, broadband capacitors for optimal performance.
2. RC Filtering on the control line is recommended to prevent digital noise from coupling to the RF path.
 - a. Select control line RC filter values based on desired logic source decoupling and switching speed.
3. Installing capacitors C1-C8 is recommended for absorptive performance below 400 MHz.

EVALUATION PC BOARD



RELATED PARTS

Part Number		Description
AM6011	DC to 10 GHz	SP8T, Reflective
AM6012	DC to 18 GHz	SPDT, Reflective
AM6013	DC to 18 GHz	SP4T, Reflective
AM6015	DC to 18 GHz	SP6T, Reflective
AM6016	DC to 26.5 GHz	SPDT, Reflective
AM6017	DC to 26.5 GHz	SP4T, Reflective
AM6029	DC to 18 GHz	SP4T, Reflective
AM6031	DC to 20 GHz	SPDT, Absorptive
AM6042	DC to 20 GHz	SP4T, Absorptive

COMPONENT COMPLIANCE INFORMATION

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Substance List	Allowable Maximum Concentration
Lead (Pb)	<1000 PPM (0.1% by weight)
Mercury (Hg)	<1000 PPM (0.1% by weight)
Cadmium (Cd)	<75 PPM (0.0075% by weight)
Hexavalent Chromium (CrVI)	<1000 PPM (0.1% by weight)
Polybrominated Biphenyls (PBB)	<1000 PPM (0.1% by weight)
Polybrominated Diphenyl ethers (PBDE)	<1000 PPM (0.1% by weight)
Decabromodiphenyl Deca BDE	<1000 PPM (0.1% by weight)
Bis (2-ethylhexyl) Phthalate (DEHP)	<1000 PPM (0.1% by weight)
Butyl Benzyl Phthalate (BBP)	<1000 PPM (0.1% by weight)
Dibutyl Phthalate (DBP)	<1000 PPM (0.1% by weight)
Diisobutyl Phthalate (DIBP)	<1000 PPM (0.1% by weight)

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