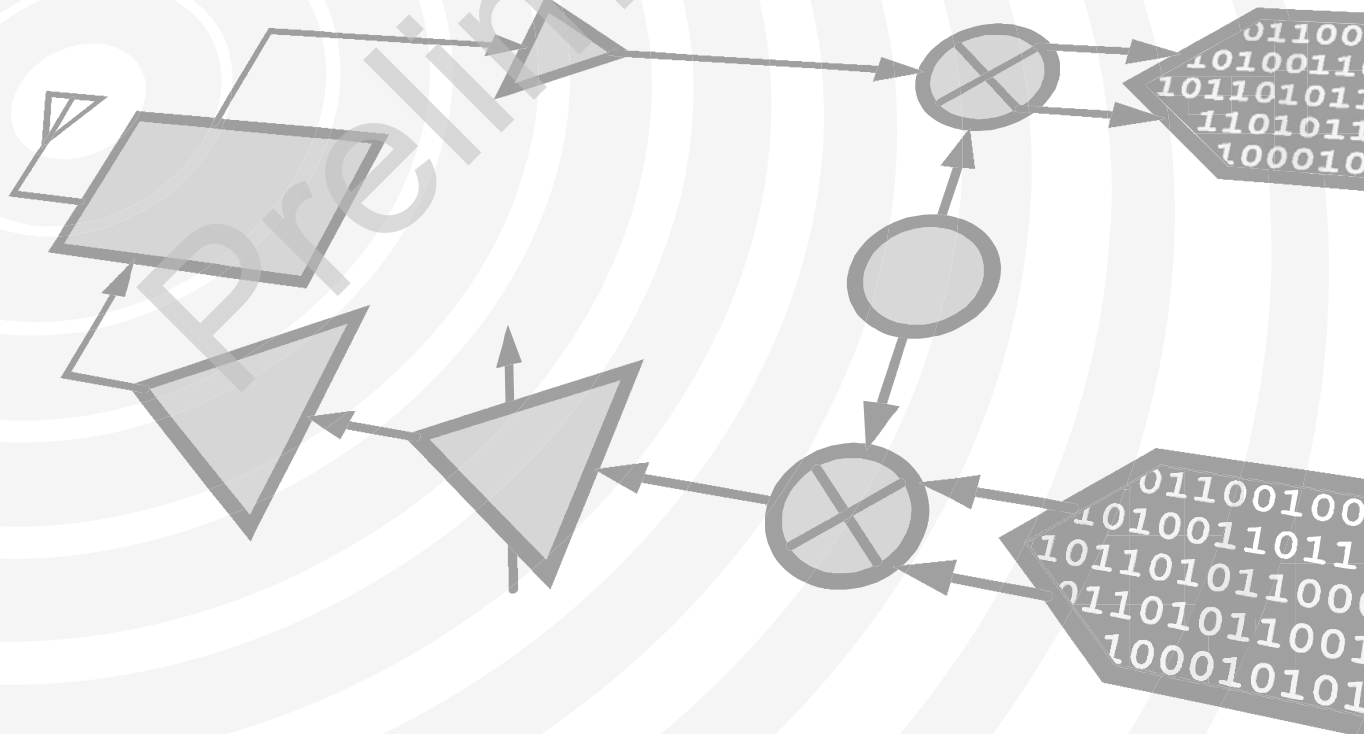


# Analog Devices Welcomes Hittite Microwave Corporation



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Preliminary

### Typical Applications

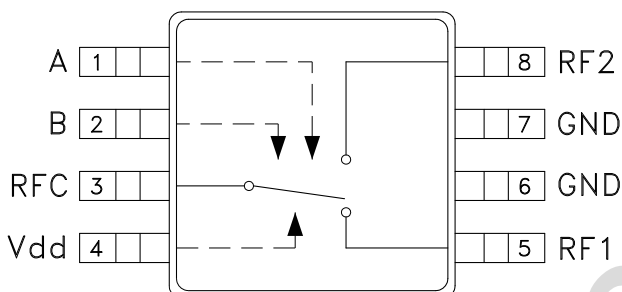
The HMC574AMS8 / HMC574AMS8E is ideal for:

- Cellular/3G Infrastructure
- Private Mobile Radio Handsets
- WLAN, WiMAX & WiBro
- Automotive Telematics
- Test Equipment

### Features

- Low Insertion Loss: 0.3 dB
- High Third Order Intercept: +65 dBm
- Isolation: 30 dB
- Single Positive Supply: +3 to +8V
- SMT Package: MSOP8
- Included in the HMC-DK005 Designer's Kit

### Functional Diagram



### General Description

The HMC574AMS8 & HMC574AMS8E are low-cost SPDT switches in 8-lead MSOP packages for use in transmit/receive applications which require very low distortion at high incident power levels. The device can control signals from DC to 3 GHz and is especially suited for Cellular/3G infrastructure, WiMAX and WiBro applications with only 0.3 dB typical insertion loss. The design provides 5 watt power handling performance and +65 dBm third order intercept at +8 Volt bias. RF1 and RF2 are reflective shorts when "Off".

### Electrical Specifications,

$T_A = +25^\circ\text{C}$ ,  $V_{ctl} = 0/+5\text{ Vdc}$ ,  $V_{dd} = +5\text{ Vdc}$  (Unless Otherwise Stated), 50 Ohm System

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 1.0 GHz		0.25	0.5	dB
	DC - 2.0 GHz		0.3	0.6	dB
	DC - 2.5 GHz		0.4	0.7	dB
	DC - 3.0 GHz		0.5	0.8	dB
Isolation	DC - 1.0 GHz	26	30		dB
	DC - 2.0 GHz	24	28		dB
	DC - 2.5 GHz	21	25		dB
	DC - 3.0 GHz	16	20		dB
Return Loss	DC - 1.0 GHz		35		dB
	DC - 2.0 GHz		25		dB
	DC - 2.5 GHz		18		dB
	DC - 3.0 GHz		16		dB
Input Power for 1dB Compression	0.5 - 3.0 GHz	$V_{ctl} = 0/+3\text{V}$	33	36	dBm
		$V_{ctl} = 0/+5\text{V}$	35	38	dBm
		$V_{ctl} = 0/+8\text{V}$	37	39	dBm
Input Third Order Intercept (Two-tone Input Power = +27 dBm Each Tone)	0.5 - 3.0 GHz	$V_{ctl} = 0/+3\text{V}$		55	dBm
		$V_{ctl} = 0/+5\text{V}$		63	dBm
		$V_{ctl} = 0/+8\text{V}$		65	dBm
Switching Characteristics	DC - 3.0 GHz	tRISE, tFALL (10/90% RF)		80	ns
		tON, tOFF (50% CTL to 10/90% RF)		120	ns

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## GaAs MMIC 5 WATT T/R SWITCH DC - 3 GHz

### Absolute Maximum Ratings

Max. Input Power $V_{dd} = 0/+8V$	0.5 - 2.5 GHz	39 dBm
Bias Voltage Range (Vdd)		-0.2 to +10 Vdc
Control Voltage Range (A & B)		-0.2 to +Vdd Vdc
Hot Switching Power Level $V_{dd} = +8V$		39 dBm
Channel Temperature		150 °C
Continuous P <sub>diss</sub> ( T = + 85 °C) (derate 10 mW/°C above 85 °C)		0.65W
Thermal Resistance		100 °C/W
Storage Temperature		-65 to +150 °C
Operating Temperature		-40 to +85 °C
ESD Sensitivity (HBM)		Class 1A

DC Blocks are required at ports RFC, RF1 and RF2



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

### Bias Voltage & Current

Vdd (Vdc)	Typical I <sub>dd</sub> (µA)
+3	2
+5	10
+8	40

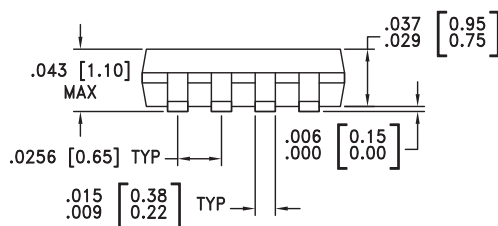
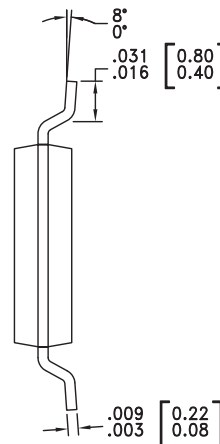
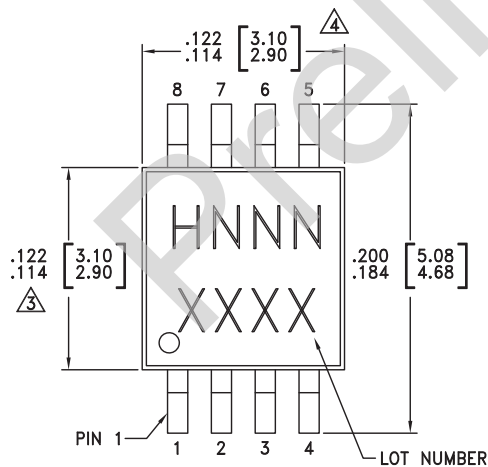
### Control Voltages

State	Bias Condition
Low	0 to +0.2 Vdc @ 10 µA Typical
High	Vdd ± 0.2 Vdc @ 10 µA Typical

### Truth Table

Control Input (Vctl)		Signal Path State	
A	B	RFC to RF1	RFC to RF2
High	Low	Off	On
Low	High	On	Off

### Outline Drawing



**NOTES:**

- LEADFRAME MATERIAL: COPPER ALLOY
- DIMENSIONS ARE IN INCHES [MILLIMETERS]
- DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
- DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
- ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.