

4X6 RF Matrix Switch

Functional Schematic

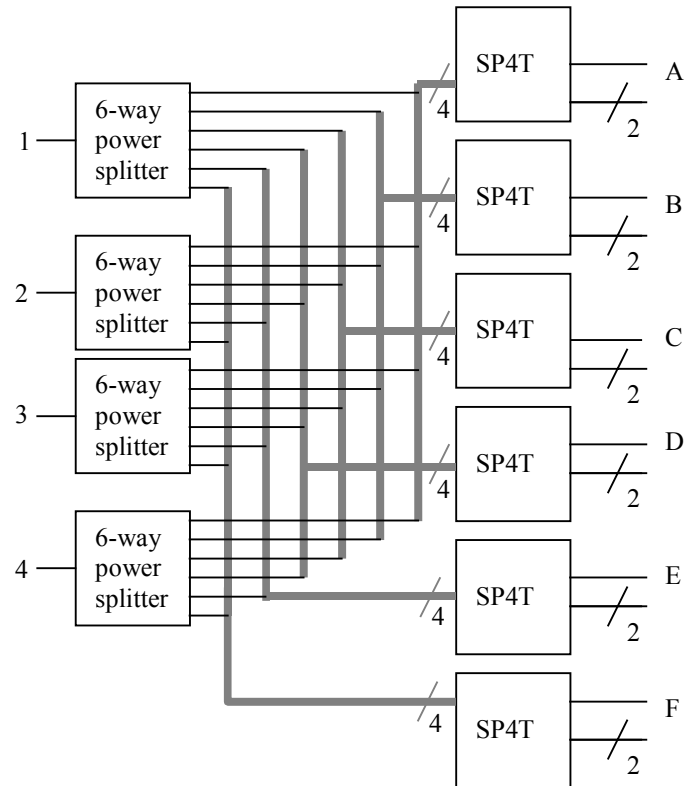
Features

- Dual Band (AMPS/PCS) Operation
- High Isolation of ~ 25 dB
- Low Insertion Loss of ~12dB
- Integrated 2 bit CMOS Parallel Control Logic
- Integrated ESD Protection on Digital I/O
- Single 3V Positive Supply Voltage, AC Coupled RF
- Ultra Small LPCC™ Packaging
- Impedance matched for 50 Ohm systems

Product Description

The Honeywell HRF-SW1040 is a high performance four (4) input by six (6) output RF distribution switch, that is ideal for use in wireless basestation applications that require minimum power and optimum integration. Under independent parallel control, each of 4 inputs are connected exclusively to any of 6 RF outputs. Dual band operation is provided, allowing either 1 AMPS and 3 PCS or 3 AMPS and 1 PCS antenna connections.

The HRF-SW1040 is manufactured with Honeywell's patented Silicon On Insulator (SOI) CMOS technology, which provides the performance of GaAs with the economy and integration capabilities of conventional CMOS technology.



RF Electrical Specifications @ + 25°C

Parameter	Test Condition	Frequency	Minimum	Typical	Maximum	Units
Insertion Loss	High or Low band selected			12	13	dB
Insertion Loss Balance	Channel to Channel				+/- 0.5	dB
Input to Input Isolation	All states	824 – 1990 MHz	25	30		dB
Output to Output Isolation	All states	824 – 1990 MHz	20	30		dB
Input to Output Isolation	Off state	824 – 1990 MHz	25	30		
Input / Output VSWR	In band of selected frequency band only	824 –894 or 1850 - 1990		1.25:1	1.5:1	ratio
1dB Compression	Input Power	824 –894 or 1850 - 1990		27		dBm
Input IP3	Input power referenced	824 –894 or 1850 - 1990		47		dBm
Trise, Tfall	10% To 90%			50		nS
Ton, Toff	50% Cntl To 90%/10%Rf			70		nS
Transients	In-Band			10		mV

Results @ Vdd=3.3 +/- 10%, Vss = 0 unless otherwise stated, Z0= 50 ohms

DC Electrical Specifications @ + 25°C

Parameter	Minimum	Typical	Maximum	Units
Single V_{DD} Supply Voltage	3.0	3.3	3.6	V
CMOS Logic Level (0)	0		0.8	V
CMOS Logic Level (1)	$V_{DD} - 0.8$		V_{DD}	V
Input Leakage Current			50	uA
Static Supply Current			50	uA

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
V_{DD}	+4.0	V
Vin Digital Logic 0	- 0.6	V
Vin Digital Logic 1	$V_{DD} + 0.6$	V
Maximum Input Power	> 33	dBm
ESD Voltage (Human Body Model), Digital I/O's	TBD	V
ESD Voltage (Human Body Model), RF I/O's	TBD	V
Operating Temperature	+85	Degrees C
Storage Temperature	+125	Degrees C

(Note 1) Operation beyond any of these parameters may cause permanent damage.

Latch-Up: Unlike conventional CMOS RF switches, Honeywell's Microwave SOI technology is immune to latch-up.

ESD Protection: Although this device contains ESD protection circuitry on all digital inputs, conventional precautions should be taken to ensure that the Absolute Maximum Ratings are not exceeded.

Package Outline Drawing

Ask your local Honeywell representative for details.

Truth Table For Each Of Six (6) Outputs

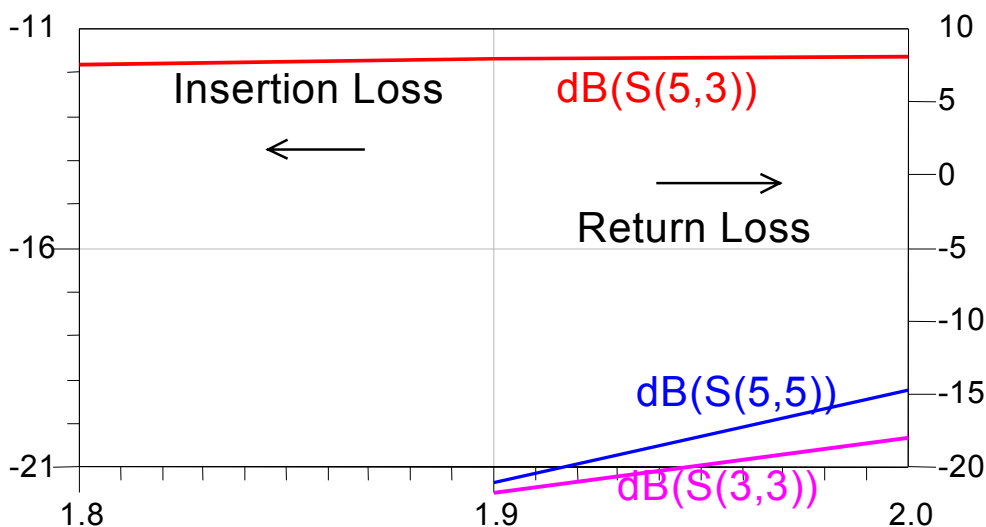
C0	C1	RF Output
0	0	RFINPUT1
0	1	RFINPUT2
1	0	RFINPUT3
1	1	RFINPUT4

"0" = CMOS Low, "1" = CMOS High

Pin Configuration

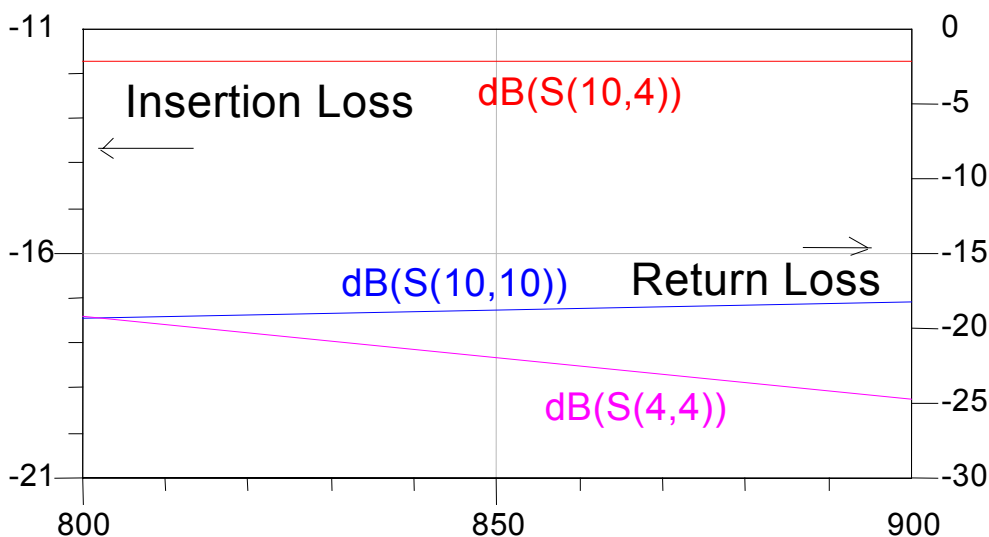
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Performance Curves



Frequency (GHz)

Input And Return Loss (dB) For High Band Channel Selection



Frequency (MHz)

Input And Return Loss (dB) For Low Band Channel Selection

Typical Application Circuit

Call Honeywell for details.

Evaluation Circuit Board Connections

Ask your local Honeywell representative for details.

Evaluation Circuit Board

Ask your local Honeywell representative for details.

Evaluation Circuit Board Layout Design Details

Ask your local Honeywell representative for details.

Ordering Information

Ordering Number	Product
HRF-SW1040-B	Delivered In Chip Tubes
HRF-SW1040-T	Delivered On Tape And Reel ²
HRF-SW1040-E	Engineering Evaluation Board

(Note 2) Contact Honeywell for details

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