

## TX-RX Diversity Switch

### Description:

CSH210 is a general purpose single-pole, single-throw switch device designed for mobile communications applications such as cellular and PCS mobile phones, ISM bands, GPS receivers, L-band satellite terminals, WLAN and pagers. The device is based on pHEMT technology and exhibits very low insertion loss and high intermodulation performance.

The CSH210 does not need a supply voltage and switching is accomplished with a positive control voltage. The device exhibits excellent VSWRs and isolation as well. It is useable from DC to 3 GHz.

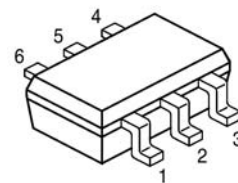
### Features:

- TX-RX Diversity Switch for mobile communications:
  - Insertion Loss: 0.4 dB
  - Isolation: 20 dB
  - VSWR: 1.3:1
  - P-0.1dB: +26 dBm
- RF-frequency range DC - 3 GHz
- No supply voltage
- Positive control voltage
- Small SOT363 plastic package

### Applications:

- Antenna Diversity Switching
- TX-RX Switching
- Mobile Phones
- ISM and WLAN
- L-Band Satellite Terminals

### Package Outline:



#### SOT363

#### Pin configuration:

- |    |            |
|----|------------|
| 1: | RF Port    |
| 2: | GND        |
| 3: | RF Port    |
| 4: | Control V2 |
| 5: | RF Common  |
| 6: | Control V1 |

# CSH210 Datasheet

## Electrical Performance:

Maximum Ratings	Symbol	Value		Unit
		min	max	
Control Voltage Range	Vcntrl	-5	5	V
RF Input Power	Pin		3	W
Junction Temperature @ 30dbm input and 25°C	T <sub>j</sub>		50	°C
Storage Temperature	T <sub>stg</sub>	-55	150	°C

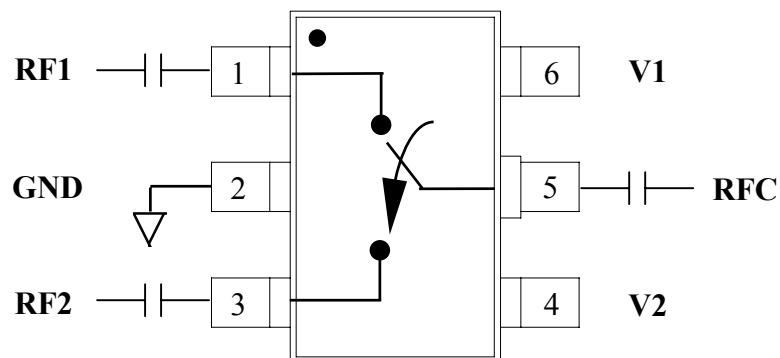
## Electrical Characteristics:

(T=25°C; Vcntrl=3.0V; Pin=0dBm)

Parameter	Symbol	Test Condition	min	typ	max	Unit
Insertion Loss RFC-RF1, RFC-RF2	ILRF	DC-0.5GHz		0.25	0.3	dB
		DC-1.0GHz		0.3	0.4	
		DC-2.0GHz		0.4	0.6	
		DC-3.0GHz		0.5	0.75	
Isolation RF1-RF2	ISOL	DC-0.5GHz	25	28		dB
		DC-1.0GHz	22	24		
		DC-2.0GHz	18	20		
		DC-3.0GHz	15	18		
VSWR* (all ports)	VSWR	DC-2.5GHz		1.3:1		
		DC-3.0GHz		1.5:1		
Gate Leakage	I <sub>L</sub>				0.1	mA
Trise /Tfall (10% RF to 90%RF)				10		nS
Ton /Toff (50% CNTRL -90%/10%RF)				20		nS
Output Power for 0.1 dB compression	P-0.1	DC-3.0GHz		26		dBm
Output Power for 1 dB compression	P1	DC-3.0GHz		30		dBm
Intermodulation Intercept Point	IP3	Pin=25dBm	50	56		dBm
		Freq.=1.0Ghz				

\*VSWR defined for Insertion Loss State Only

## PIN Assignments & Functional Block Diagram



\*External DC blocking capacitor required 100pF 3 places

### Pin Assignments:

PIN	Symbol	Abbreviation	Description
1	RF OUTPUT 1	RF1	RF OUTPUT
2	GND	GND	Circuit common and DC return
3	RF OUTPUT 2	RF2	RF OUTPUT
4	V_CONTROL 2	V2	RF OUTPUT 2 control
5	RF COMMON	RFC	Common RF port
6	V_CONTROL 1	V1	RF OUTPUT 1 control

### Truth Table:

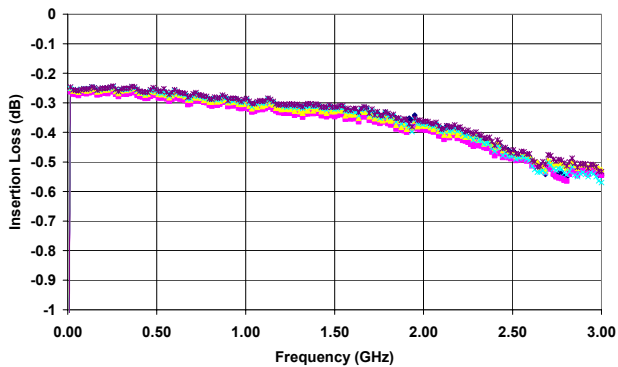
V1	V2	Through Path
3V	0V	RFC – RF1
0V	3V	RFC – RF2

## Electrical Performance, Continued:

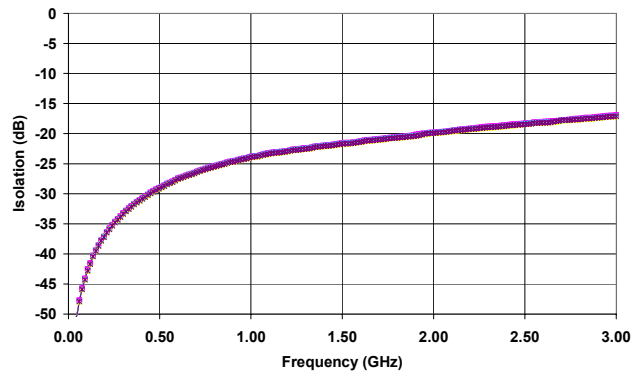
### Measured Results:

(All Ports connected to 50ohms, Pin=0dBm, Vcntrl=3V unless otherwise specified)

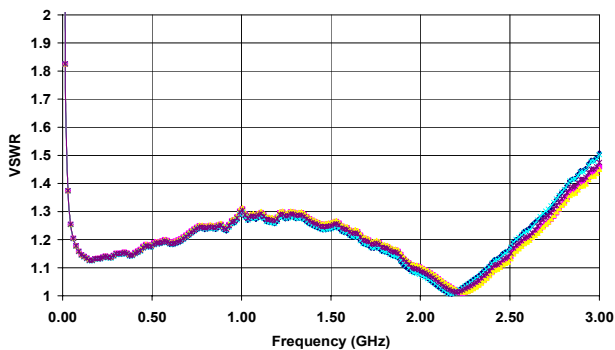
Insertion Loss vs. Frequency



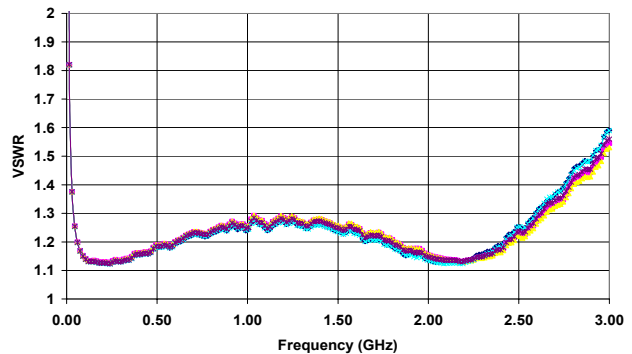
Isolation vs. Frequency



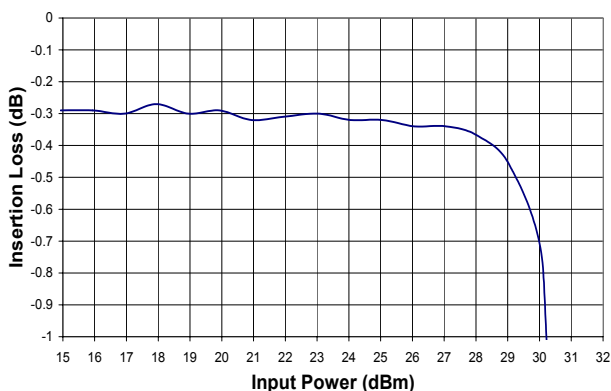
Input VSWR vs. Frequency



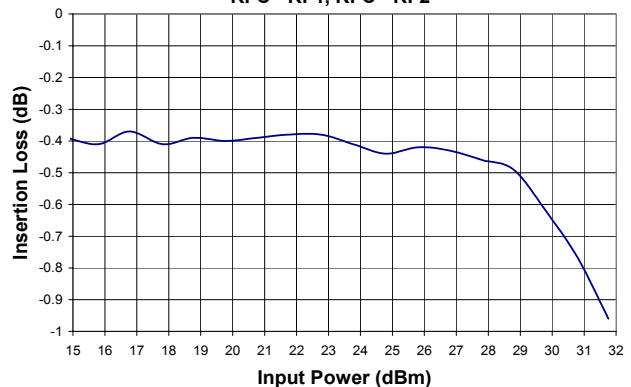
Output VSWR vs. Frequency



Insertion Loss vs. Input Power at F=1GHz  
(RFC - RF1, RFC - RF2)

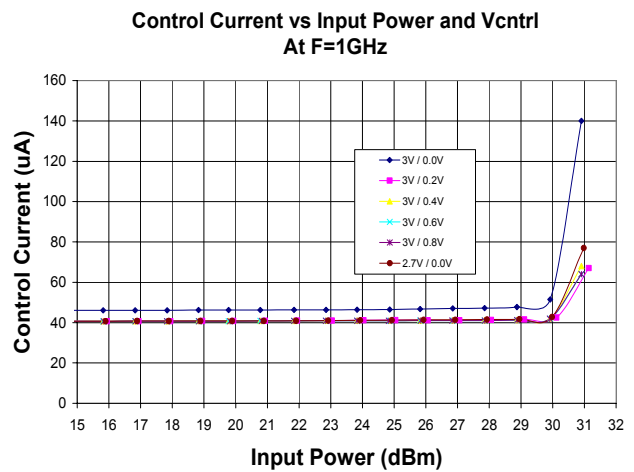
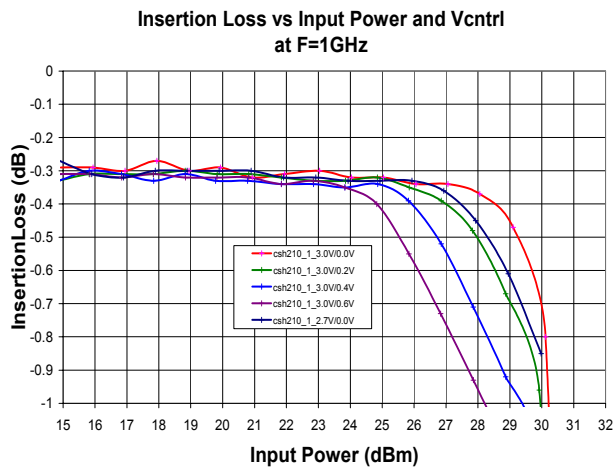


Insertion Loss vs. Input Power at F=2GHz  
RFC - RF1, RFC - RF2



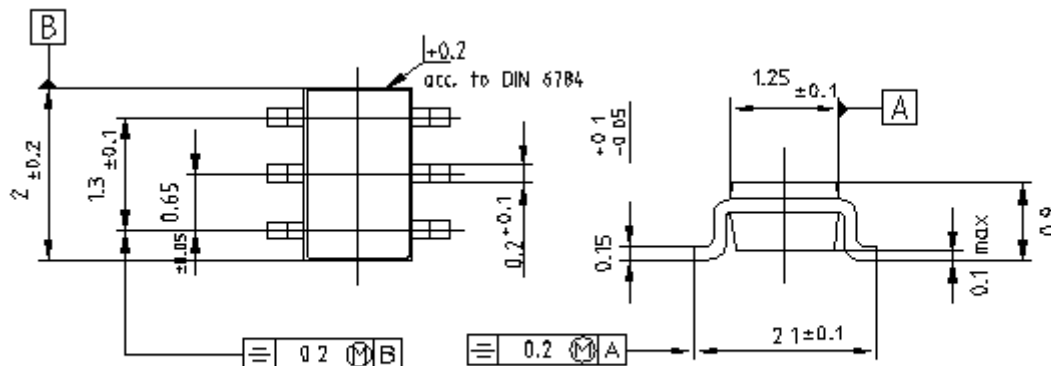
## Electrical Performance, Continued: Measured Results:

(All Ports connected to 50ohms, Pin=0dBm, Vcntrl=3V unless otherwise specified)

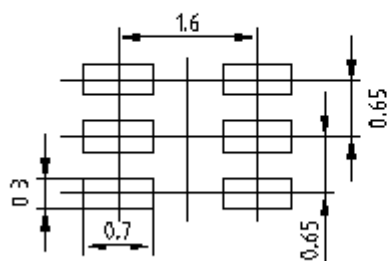


## Applications Information:

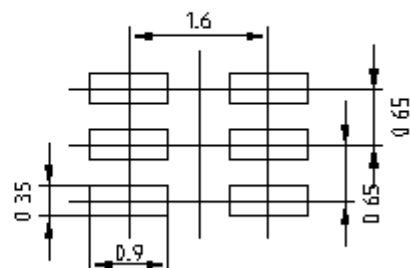
### Package Outline - SOT363



### Reflow soldering



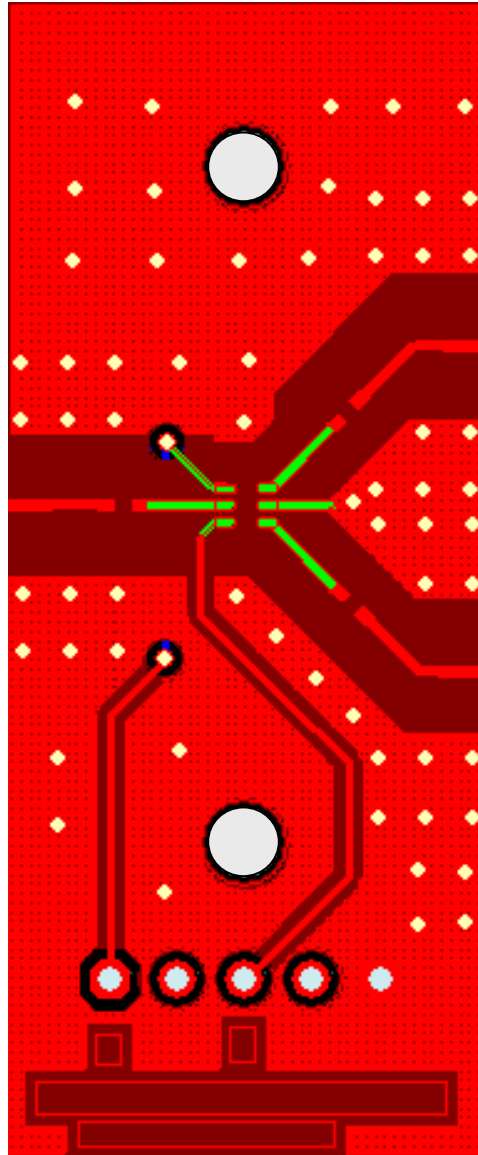
### Wave soldering



### Evaluation Board Layout

Board Size 0.75" x 1.75"

Board Thickness 0.047", Board Material FR4 Multi-Layer



## Ordering Information:

Type	Marking	Ordering code (tape and reel)	Package
<b>CSH210</b>	<b>S1</b>	<b>Q62705K 648</b>	<b>SOT363</b>

ESD: **E**lectrostatic discharge sensitive device  
Observe handling Precautions!

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