

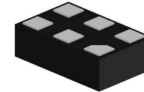
WS7812C

0.1GHz – 3GHz SPDT Antenna Switch

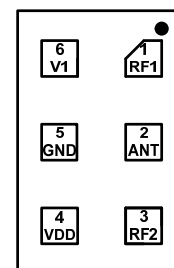
<http://www.sh-willsemi.com>

Descriptions

The WS7812C is a CMOS silicon-on-insulator (SOI), single-pole, double-throw (SPDT) switch. The device is optimized for the applications of WCDMA/LTE receiver and antenna switch for multimode systems. The high linearity performance and low insertion loss make the device an ideal choice for WCDMA/LTE handset and data card applications. The WS7812C switch is provided in a compact Land Grid Array (LGA) 1.1 x 0.7 mm² package.



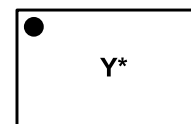
LGA 1.1X0.7-6L (Bottom view)



Pin configuration (Top view)

Features

- Small, low profile package 1.1mm x 0.7mm x 0.45mm
- Working frequency up to 3GHz
- Very low insertion loss
- Excellent isolation performance
- Low power consumption
- Exceptional linearity performance for WCDMA/LTE application
- Low harmonic generation
- Very good ESD performance



Y = Device code
* = Month code (A~Z)

Marking(Top view)

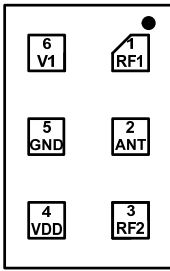
Applications

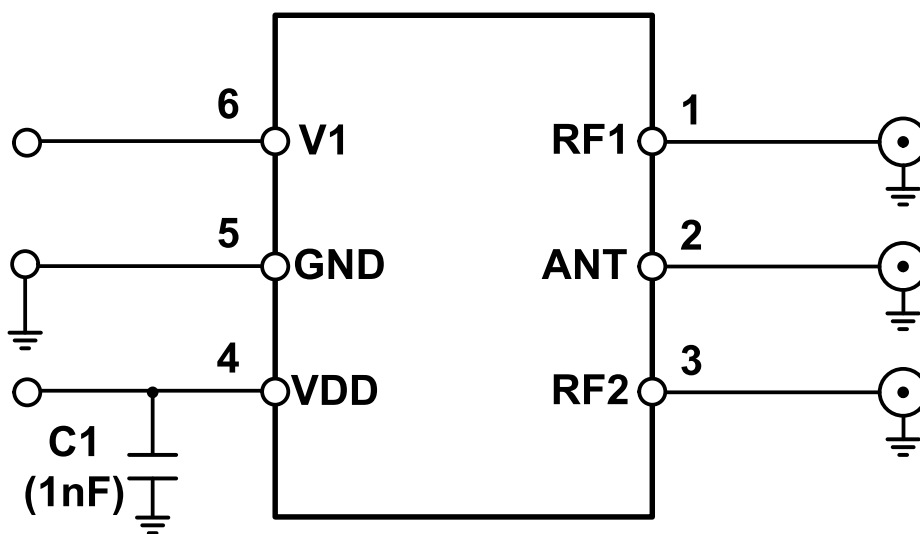
- Cell phones
- Tablets
- Other RF front-end modules

Order information

Device	Package	Shipping
WS7812C-6/TR	LGA 1.1X0.7-6L	6000/Reel&Tape

Pinning information

Pin	Function	Description	Transparent top view
1	RF1	RF port 1	
2	ANT	RF common (antenna) port	
3	RF2	RF port 2	
4	VDD	DC power supply	
5	GND	Ground	
6	V1	DC control voltage1	

Application information


Recommended operating conditions

Parameters	Conditions	Specifications			Unit
		Min.	Typ.	Max.	
ESD Rating					
ESD All Pins	HBM, JESD22-A114			1000	V
Power Supply					
Power Supply Voltage	Operating Voltage	2.4	2.8	3.0	V
Power Supply Current	VDD≤3.0V	20	28	40	μA
Control Voltage					
Logic Control "Low"		0	0	0.3	V
Logic Control "High"		1.2	1.8	2.7	V
RF Impedance					
RF Port Input and Output Impedance			50		Ω

Absolute maximum ratings

Maximum ratings are absolute ratings, exceeding only one of these values may cause irreversible damage to the integrated circuit.

Items	Value	Unit
VDD Voltage	-0.3 to +3.0	V
Control Voltage	-0.3 to +2.7	V
Maximum Input Power @ RF ports	26@0.88GHz, 32@2.0GHz	dBm
Operation Temperature	-40 to +85	°C
Storage Temperature	-65 to +150	°C

Characteristics (RF spec)

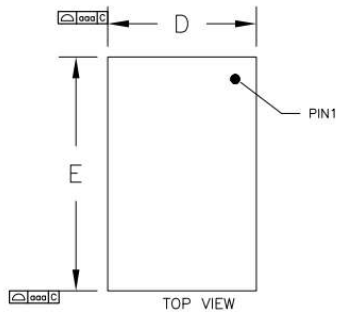
Normal test condition unless other-wise stated. All unused ports are 50Ω terminated. $V_{DD}=2.8V$, $Temp=+25^{\circ}C$.
 $P_{IN}=0dBm$.

Parameters	Conditions	Specifications			Unit
		Min.	Typ.	Max.	
Insertion Loss (RF1/RF2)	0.1GHz to 1.0GHz		0.40	0.55	dB
	1.0GHz to 2.0GHz		0.45	0.60	
	2.0GHz to 2.7GHz		0.50	0.65	
Isolation (ANT to RF1/RF2)	0.1GHz to 1.0GHz	32			dB
	1.0GHz to 2.0GHz	25			
	2.0GHz to 2.7GHz	20			
Return Loss (ANT pin to RF1/2)	0.1GHz to 1.0GHz	24			dB
	1.0GHz to 2.0GHz	20			
	2.0GHz to 2.7GHz	18			
Second Harmonics (RF1/RF2)	$P_{IN}=+26dBm@0.88G$		84		dBc
Third Harmonics (RF1/RF2)	$P_{IN}=+26dBm@0.88G$		78		dBc
0.1dB Compression Point (RF1/RF2)	@0.88GHz		24		dBm
	@2.00GHz		30		
3 rd Order Input Intercept Point (RF1/RF2)	$P_2= +20dBm$, $P_1= -15dBm$, Note 1		55		dBm

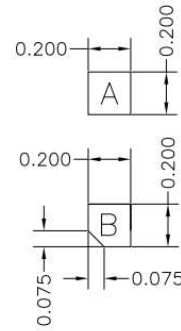
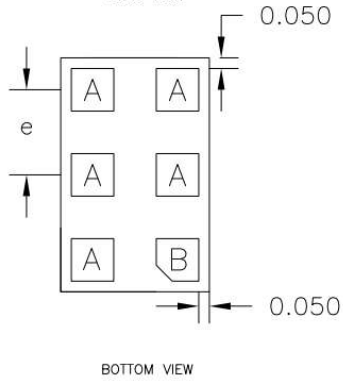
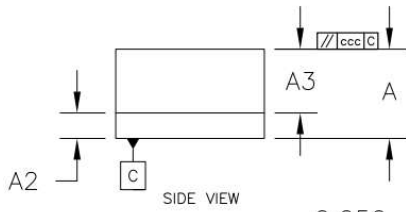
Note 1: $f_2=836.5MHz$, $f_1=791.5MHz$, $f_{IMD3}=881.5MHz$

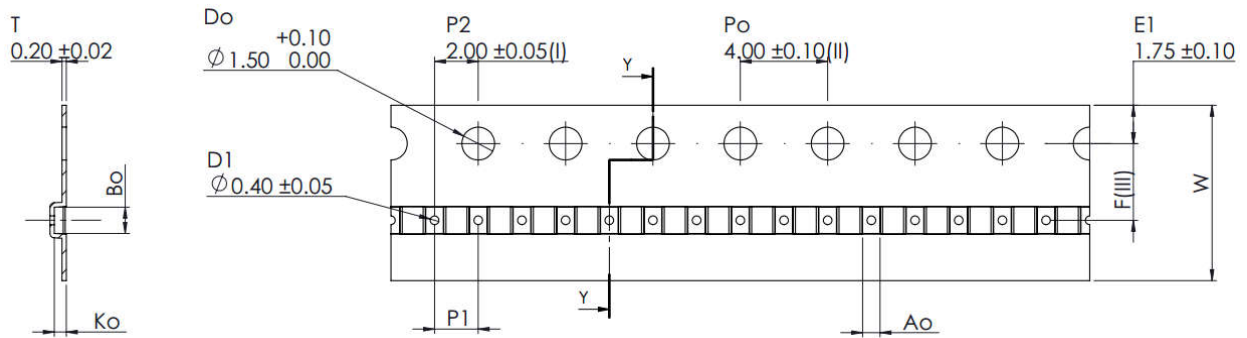
Truth Table for Operation

Mode	V1
RF1	0
RF2	1

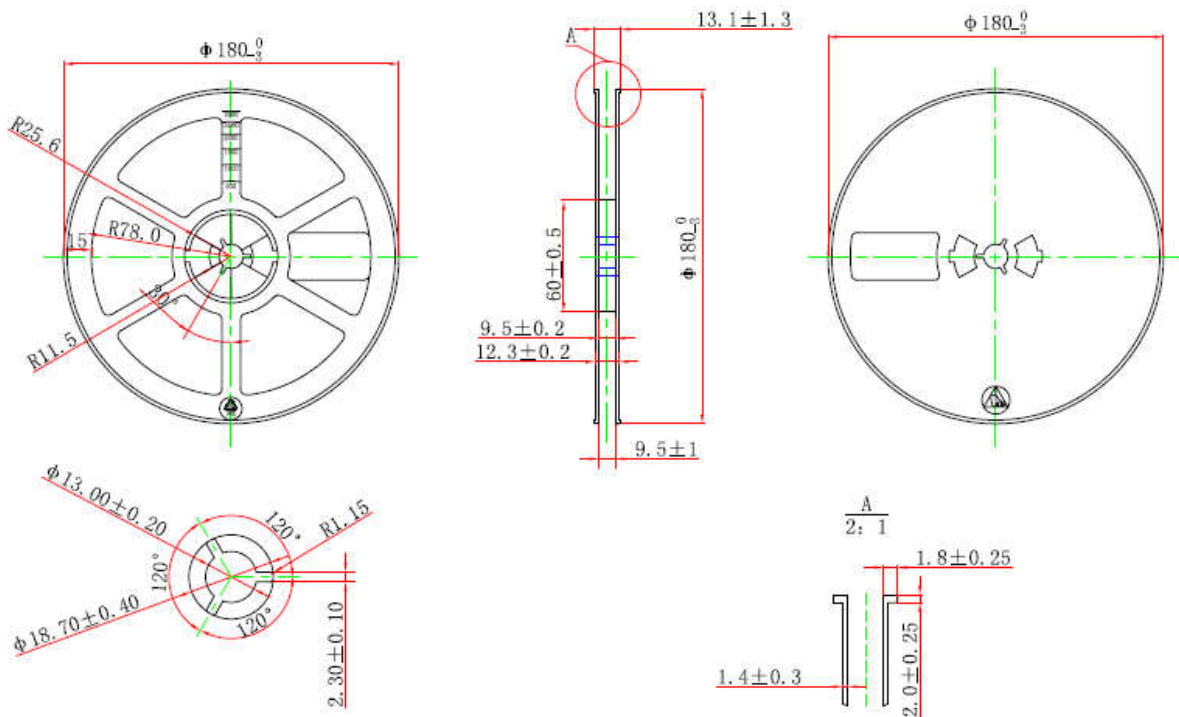
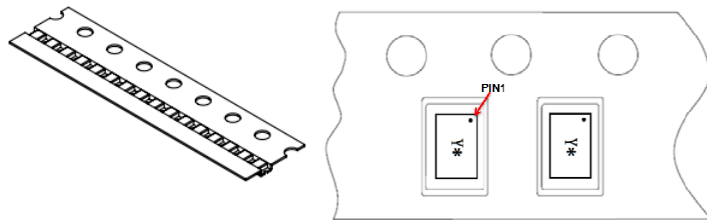
Package outline dimensions
LGA 1.1X0.7-6L


MILLIMETER			
SYMBOL	MIN	NOR	MAX
A	0.40	0.45	0.50
A2	0.09	0.12	0.15
A3	0.28	0.33	0.38
e	0.40 BSC		
D	0.65	0.70	0.75
E	1.05	1.10	1.15
aaa	0.10		
ccc	0.05		



Tape reel information


Ao	0.80	+/- 0.05
Bo	1.20	+/- 0.05
Ko	0.55	+/- 0.05
F	3.50	+/- 0.05
P1	2.00	+/- 0.10
W	8.00	+/- 0.10


Note:

1. Measured from centreline of sprocket hole to centreline of pocket.
2. Cumulative tolerance of 10 sprocket holes is ± 0.20 .
3. Measured from centreline of sprocket hole to centreline of pocket.
4. All dimensions in millimetres unless otherwise stated.