GW2163-A

SPDT Switch for 2.4GHz and 6.0GHz Dual Band WLAN

Ver. 1.2

■ Features

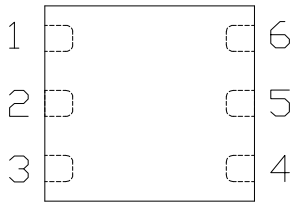
- WLAN 802.11a/b/g/n/ac Applications
- Low Insertion Loss: 0.4dB@2.4 ~ 2.5GHz
  0.5dB@4.9 ~ 6.0GHz
- High Isolation: 30dB@2.4 ~ 2.5GHz
  33dB@4.9 ~ 6.0GHz
- DFN 1.5mm×1.5mm 6 Lead Green Package
- 1KV ESD Capability (HBM)
- Low Cost and Good Reliability Performance

■ General Description

GW2163-A is a SPDT switch in a DFN 1.5mm×1.5mm 6 lead plastic package. GW2163-A features low insertion loss, high isolation and positive voltage operation with 2 controls. Typical applications are for IEEE WLAN 802.11 a/b/g/n/ac system or systems with operating frequency at 2.4GHz and 6.0GHz dual band for transmit and receive diversity.

■ Pin Functional Schematic and Assignment

(Top View)



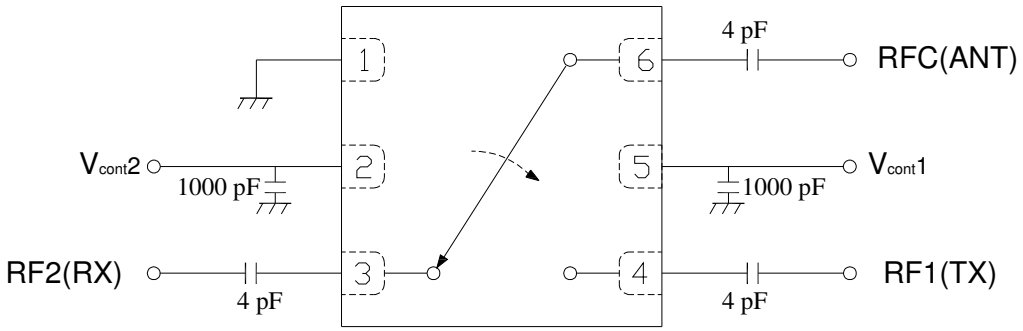
Pin No.	Pin Name	Description
1	GND	Ground
2	Vcont2	Voltage Control 2
3	RF2(Rx)	Receive Port
4	RF1(Tx)	Transmit Port
5	Vcont1	Voltage Control 1
6	RFC(Ant)	Antenna Port

■ Electrical Specifications at 25°C with (0, +3V) Control Voltages, 4pF Capacitor

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Insertion Loss	2.4 - 2.5 GHz	-	0.4	0.6	dB
	4.9 – 6.0 GHz	-	0.5	0.75	
Isolation (TX to Ant , RX to Ant)	2.4 - 2.5 GHz	28	31	-	dB
	4.9 – 6.0 GHz	30	33	-	
Isolation (Tx to Rx)	2.4 - 2.5 GHz	-	30	-	dB
	4.9 – 6.0 GHz	-	32	-	
Input/Output Return Loss	2.4 - 2.5 GHz	-	20	-	dB
	4.9 – 6.0 GHz	-	15	-	
Input Power for 1 dB compression	2.4 - 2.5 GHz	-	+32	-	dBm
	4.9 – 6.0 GHz	-	+30	-	
Second Harmonics	2.5 GHz, P_{IN} = 20dBm	-	-70	-	dBc
Third Harmonics	2.5 GHz, P_{IN} = 20dBm	-	-70	-	dBc
Switching Rise Time Switching Fall Time Switching On Time Switching Off Time	10/90% RF 90/10% RF 50% CTL to 10/90% RF 50% CTL to 90/10% RF	-	80 60 120 120	-	ns
Control Current	Input Power 0dBm	-	8	-	μA

Notes: All measurements are made in 50Ω system, unless otherwise specified.

■ Evaluation Circuit



■ Truth Table

Vcont1	Vcont2	RFC(ANT)-RF1(TX)	RFC(ANT)-RF2(RX)
High	Low	OFF (Isolation)	ON (Insertion Loss)
Low	High	ON (Insertion Loss)	OFF (Isolation)

■ Recommended Operating Conditions

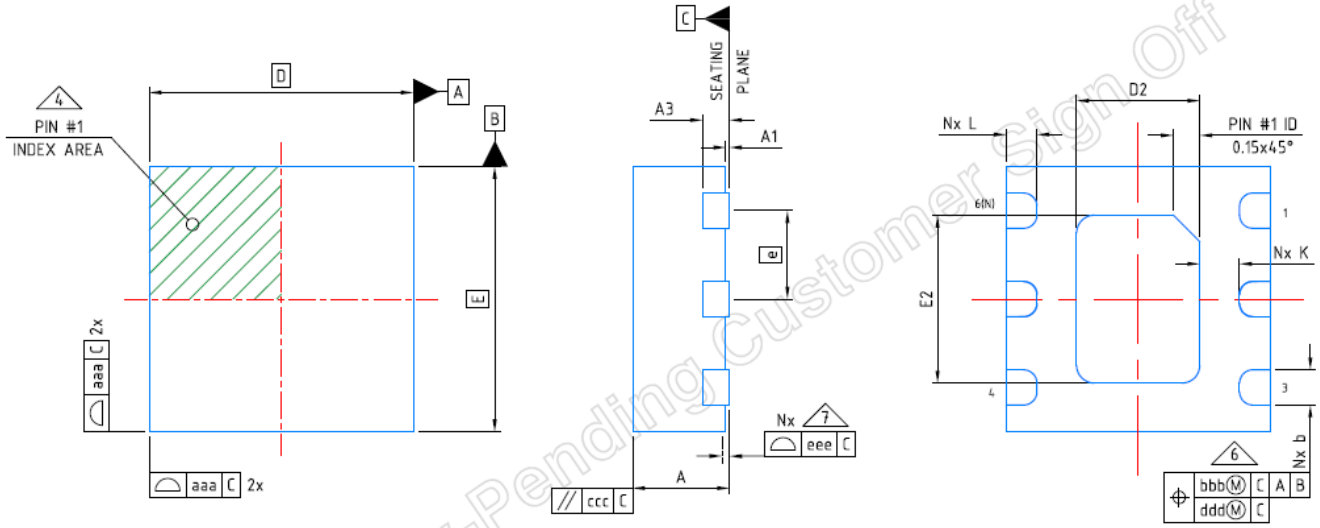
Parameter	MIN.	MAX.	Unit
Control Voltage (High)	+1.6	+3.5	V
Control Voltage (Low)	0	+0.4	V
Operating frequency	0.1	6.0	GHz

■ Absolute Maximum Ratings

Parameter	Absolute Maximum	Unit
Switch Control Voltage	+3.5	V
Max input Power	32	dBm
Operating Temperature	-40 to +85	℃
Storage Temperature	-40 to +125	℃

Operational exceeding any one of these limits may cause permanent damage to this device.

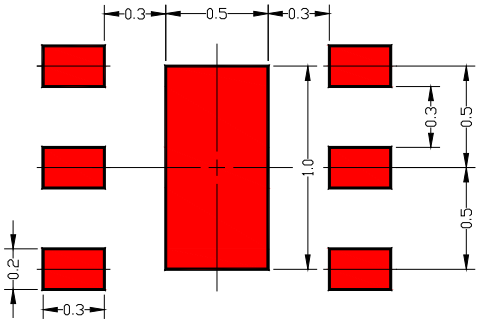
■ DFN 1.5mm×1.5mm 6Lead Package Dimensions (Unit: mm)



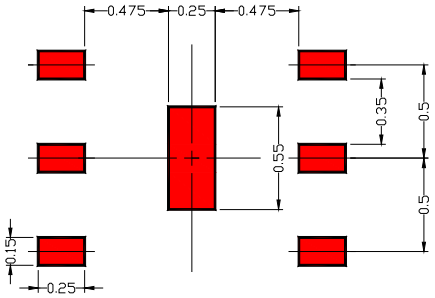
TOP VIEW SIDE VIEW BOTTOM VIEW

Dimension Table				
Thickness / Symbol	UT			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	0.51	0.55	0.60	
A1	0.00	0.02	0.05	
A3	---	0.15 Ref	---	
b	0.15	0.20	0.25	6
D		1.50 BSC		
E		1.50 BSC		
e		0.50 BSC		
D2	0.55	0.70	0.80	
E2	0.80	0.95	1.05	
K	0.15	---	---	
L	0.125	0.175	0.225	
aaa		0.05		
bbb		0.10		
ccc		0.10		
ddd		0.05		
eee		0.08		
N		6		3
NE		3		5
NOTES		1, 2		
LF PART NO.		443896		
LF DWG. NO.		CARSEM-HDS-043 Rev. A		

■ Mounting Pad and Solder Mask Layout Dimensions (Unit: mm)



Mounting Pad



Solder Pad

Stainless thickness：0.1mm~0.08mm
Remark The mounting pad layouts in this document are for reference only.

■ Recommended Soldering Conditions

This product should be mounted and soldered under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions	Rating
Infrared Reflow	Peak temperature (package surface temperature) Time at peak temperature Time at temperature of 200℃ or higher Preheating time at 120 to 180℃ Maximum number of reflow processes Maximum chlorine content of rosin flux (%mass)	260℃ or below 10 seconds or less 60 seconds or less 120±30 seconds 3 times 0.2%(Wt.) or below
Wave Soldering	Peak temperature (molten solder temperature) Time at peak temperature Preheating temperature (package surface temperature) Maximum number of flow processes Maximum chlorine content of rosin flux (%mass)	260℃ or below 10 seconds or less 120℃ or below 1 times 0.2%(Wt.) or below
Partial Heating	Peak temperature (terminal temperature) Soldering time (per side of device) Maximum chlorine content of rosin flux (%mass)	350℃ or below 3 seconds or less 0.2%(Wt.) or below

Caution: Do not use different soldering methods together (except for partial heating).