

### RFIC Preliminary 2016.05 Rev1.1

#### DESCRIPTION

The SW438 is a DPDT GaAs switch, and designed for DC to 6GHz , dual-band wireless LAN applications . The switch can be used for two voltage inputs (V1 and V2). Depending on the logic voltage level applied to the control pins, the ANT1 and ANT2 pins connect to one of two switched RF outputs (RX or TX) diversity function in a variety of wireless communication systems.

The SW438 is housed in a miniature 1.5 x 1.5 (mm), 6-pin, DFN leadless package (Pb free), and features low insertion loss, high isolation and high linearity, particularly suitable for GSM/3G/LTE/WLAN applications where high power switching is required.

#### KEY FEATURES

- Insertion loss: 0.6dB @ 2.4GHz  
0.8dB @ 5.8GHz
- Isolation: 27dB @ 2.4GHz  
23dB @ 5.8GHz
- High P-1dB:30dBm@3.3V
- DFN 1.5mmX1.5mm—6 Pin
- Lead-Free and RoHS compliant
- Support 1.8V, 3.3V and 5V control voltage

#### Pin Assignment



DC blocking capacitors are necessary for all RF ports.

The typical value of  $C_{BL}$  is 22pF for >2.4GHz application.

#### Pin Details

Pin No.	Name	Description
1	ANT2	Antenna port 2
2	V2	Control voltage 2
3	RX	Receive port
4	TX	Transmit port
5	V1	Control voltage 1
6	ANT1	Antenna port 1

#### Logic Control Table

V1	V2	ANT1- TX	ANT1- RX	ANT2- TX	ANT2- RX
$V_{HIGH}$	$V_{LOW}$	OFF	ON	ON	OFF
$V_{LOW}$	$V_{HIGH}$	ON	OFF	OFF	ON

NOTE: High = +2V to +5V, Low = +0V to +0.2V

Any state other than described in this Table places the switch into an undefined state.

An undefined state will not damage the device

### Electrical Characteristics for +3V Control Voltages

Logic High = 3V; Logic Low = 0V; TA = 25°C; unless otherwise noted.

Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Insertion Loss		0.4	0.6	dB	DC – 1GHz 1 – 3GHz 3 – 5GHz 2.4 – 2.5GHz 4.9 – 5.9GHz
		0.6	0.8		
		0.7	0.9		
		0.6	0.8		
		0.8	1.0		
Isolation		32		dB	DC – 1GHz 1 – 3GHz 3 – 5GHz 2.4 – 2.5GHz 4.9 – 5.9GHz
	24	27			
	22	24			
	24	27			
	21	23			
Input/Output RL		15		dB	DC – 6GHz
P1dB		31		dBm	0.5-6GHz V <sub>LOW</sub> =0V, V <sub>HIGH</sub> =5V V <sub>LOW</sub> =0V, V <sub>HIGH</sub> =3.3V V <sub>LOW</sub> =0V, V <sub>HIGH</sub> =1.8V
		30			
		21			
IIP3		46		dBm	Δ F = 1MHz, PIN = +20 dBm/tone @0.5 -6GHz
Switching Time		100		ns	10/90% or 90/10% RF 50% CLT to 90/10% RF
		100			
Control Current	0		0.2	V	V <sub>LOW</sub> 10uA control current V <sub>HIGH</sub> 100uA control current
	1.8		5		

Note: Insertion Loss and Isolation are measured from RFC to RF1, RF2

#### Absolute Maximum Ratings

Parameter	Rating	Unit
DC Power Supply For Collector	+6	V
RF Input Power 0.5 - 6GHz	+35	dBm
Operating Ambient Temperature	-40 to +125	°C
Storage Temperature	-60 to +150	°C
MSL	LEVEL 1	
ESD	HBM Class 1A	

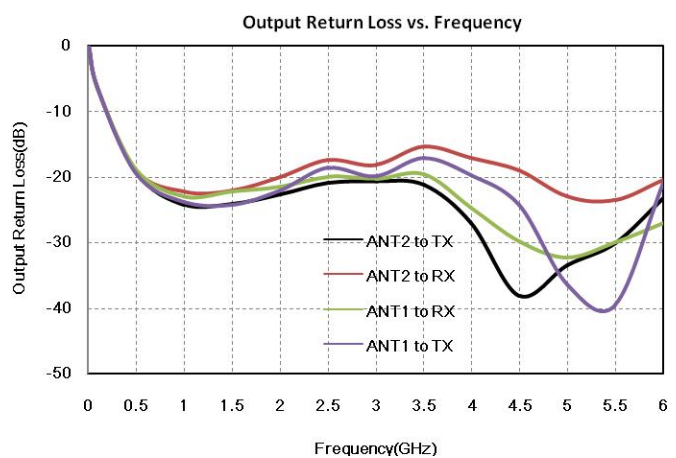
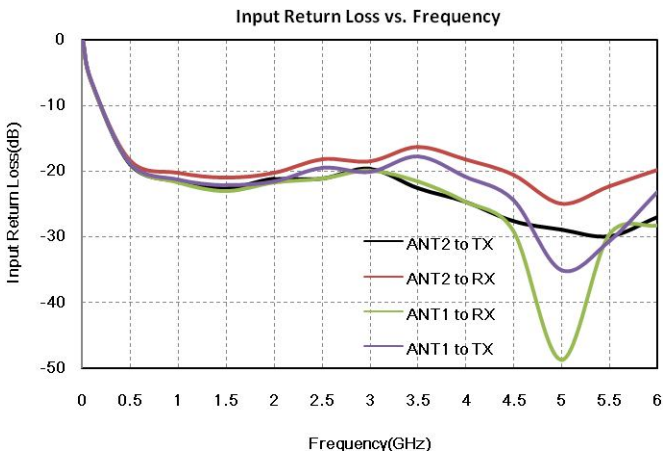
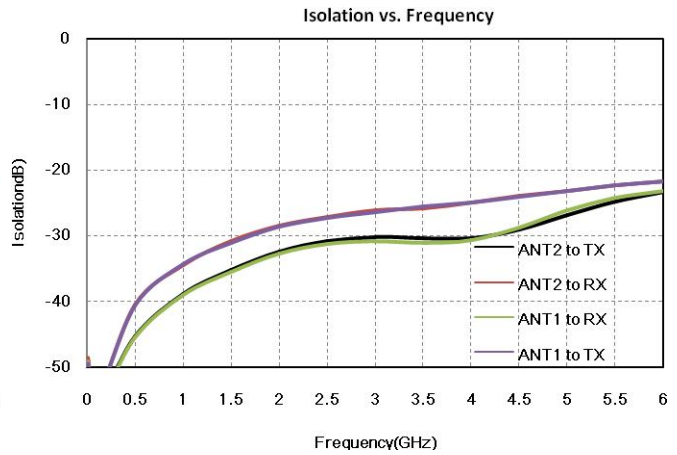
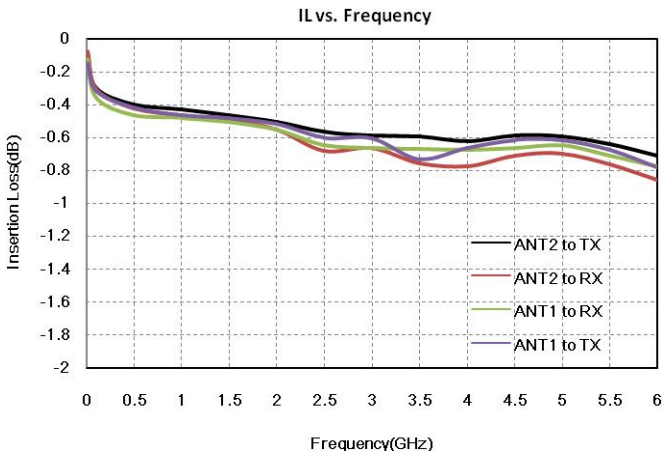
#### Important Note:

The information provided in this datasheet is deemed to be accurate and reliable only at present time. RFIC Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.



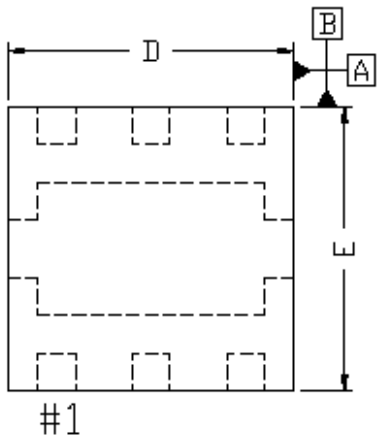
**Caution: ESD Sensitive**  
Appropriate precaution in handling, packaging  
And testing devices must be observed.

### Typical Characteristic Chart (0, +3V)

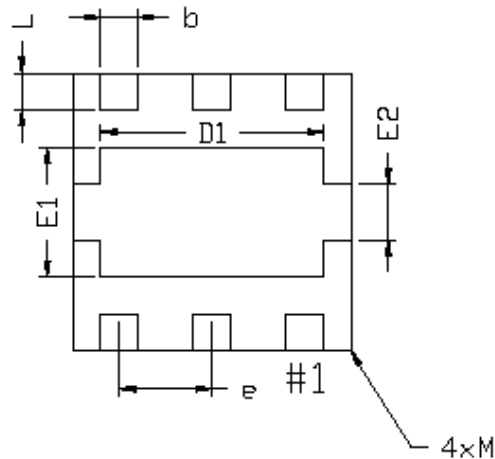


## Package Outline

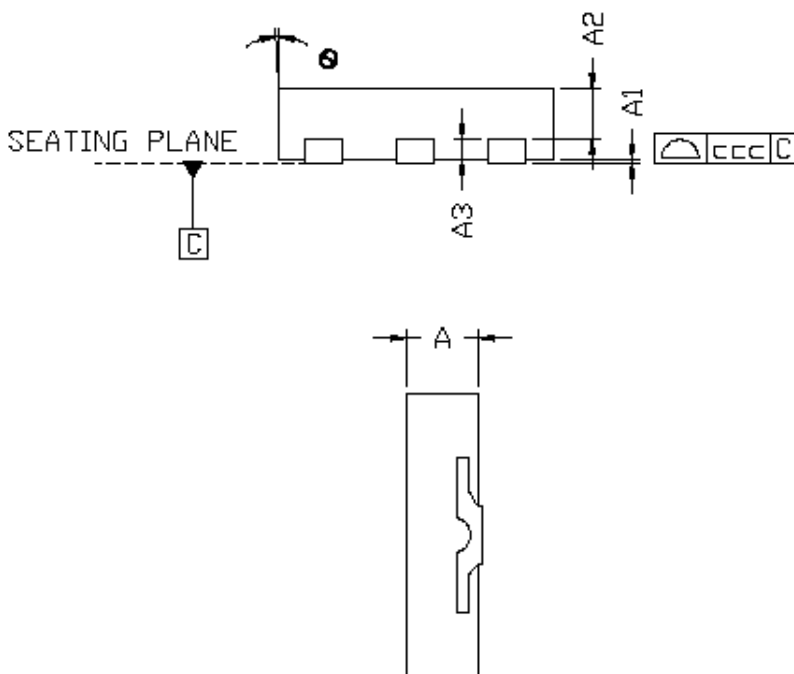
Top View



Bottom View

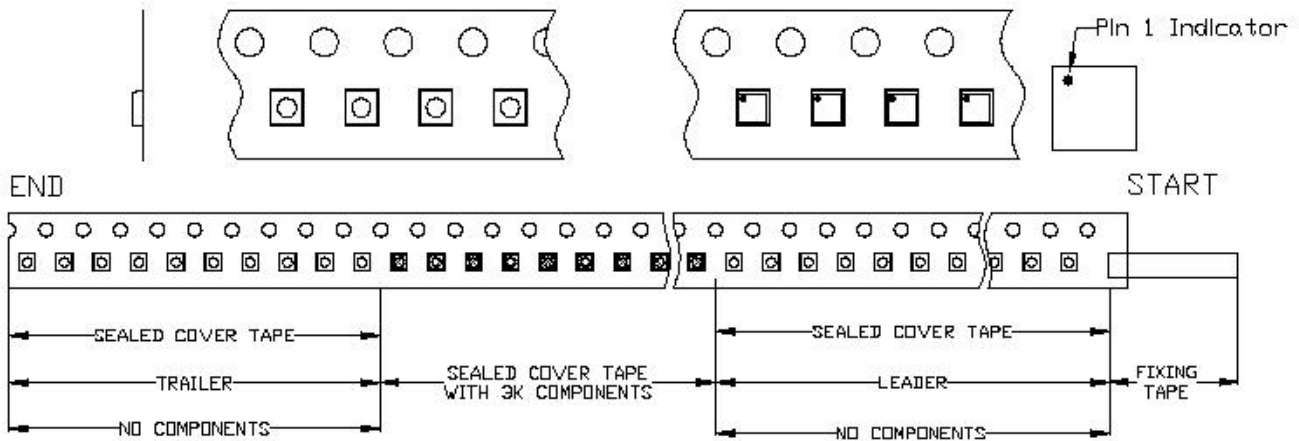


Side View



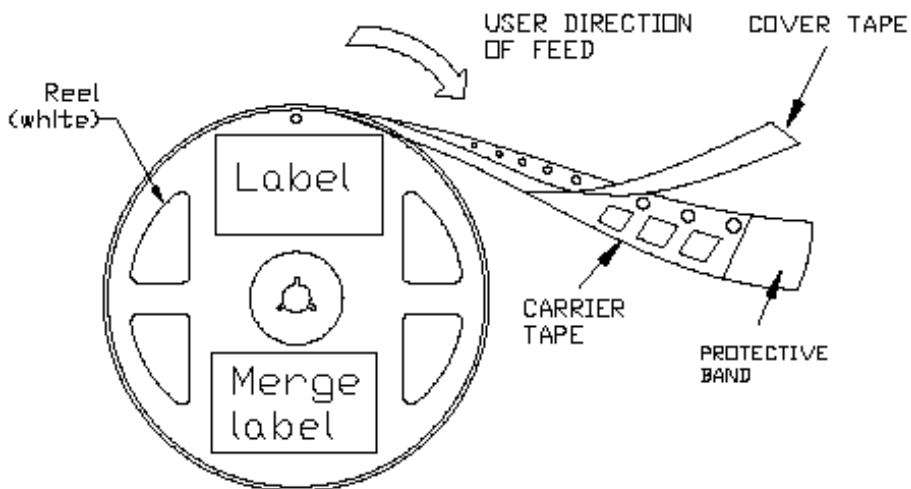
Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	0.35	---	0.40
A1	0.00	---	0.05
A2	0.223	---	0.273
A3	---	0.127REF	---
b	0.15	0.20	0.25
D	1.45	1.50	1.55
D1	---	1.2BSC	---
E	1.45	1.50	1.55
E1	---	0.70BSC	---
E2	---	0.30BSC	---
e	---	0.50BSC	---
L	0.15	0.20	0.25
⌀	-12	---	0
ccc	---	0.08	---
M	---	---	0.05
Burr	0.00	0.03	0.06

### Packing



ITEM		SPECIFICATION (mm)(minimum)
LEADER	COVER TAPE WITH EMPTY CAVITIES	840(210格)
TRAILER	COVER TAPE WITH EMPTY CAVITIES	400(100格)
FIXING TAPE		100
PROTECTIVE BAND (t=1.0mm)		1200

PKG TYPE	Tape Width (mm)	Reel Size	Devices Per Reel
SV3KX30N 15x15x(A55-8L)	8	7"	3000





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