

## SW1179E

### DC-3GHz SP2T Switch with Fully-ESD-Protection

Aug 2020 V1.0

#### DESCRIPTION

The SW1179E is a MMIC single-pole two-throw (SP2T) high power switch in a low-cost miniature SOT363-6 package with  $\pm 1.5\text{kV}$  HBM ESD Protection. The SW1179E is ideally suited for applications where high power, low insertion loss, small size and low cost are required. Typical applications are for handset systems that connect separate transmit and receive functions to a common antenna, as well as other related handset and general-purpose applications. This part can be used in all systems operating up to 3 GHz requiring high power at low control voltage.

The SW1179E is available in a small lead-free, RoHS-Compliant, SOT363 6-pin package.

#### FEATURES

- Low Insertion Loss: 0.35dB @1.0GHz;
- Low Harmonics;
- P0.1dB +32dBm typical;
- Low Current: 1.5uA;
- $\pm 1.5\text{kV}$  HBM ESD Protection;
- Operating frequencies: 100~3000MHz;
- Slim SOT363-6L package.

#### APPLICATIONS

- Smart phones, Tablet PCS;
- Low power wireless system such as LORA and NB-IOT;
- IEEE802.11b/g/n WLAN Network;
- Bluetooth.

PIN CONFIGURATION AND MARKING

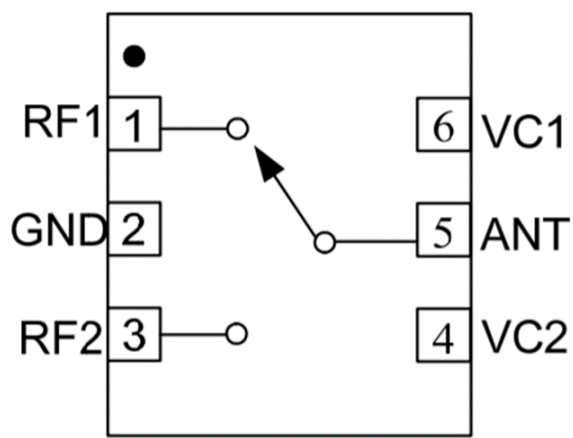
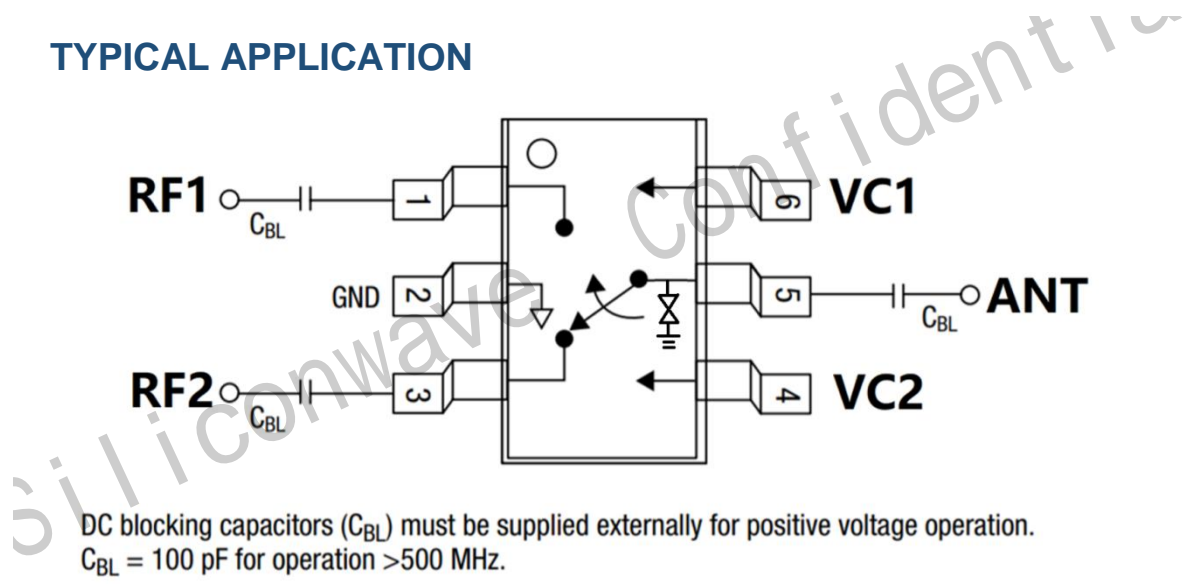


Figure 1. SW1179E Pin Configuration

TYPICAL APPLICATION



DC blocking capacitors ( $C_{BL}$ ) must be supplied externally for positive voltage operation.  
 $C_{BL} = 100 \text{ pF}$  for operation  $> 500 \text{ MHz}$ .

Figure 2. Application Schematic SW1179E

ORDER INFORMATION

Table 1. Order Information

Part Number	Temperature	Package	RoHS	Mark	SPQ
SW1179E	-40°C ~ 85°C	SOT363-6/SC-70	Yes	79E	Tape and Reel 3000 pcs/Reel

## ABSOLUTE MAXIMUM RATINGS

Table 3. Limiting Values

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
RF input power	Pin	-	-	+37	dBm
Voltage at pin EN	V <sub>EN</sub>	1.5	3.3	6.0	V
Package thermal resistance	$\theta_{JA}$	-	148.2		°C/W
Junction temperature	T <sub>J</sub>	-	-	150	°C
Storage temperature range	T <sub>STG</sub>	-65	-	150	°C
Ambient temperature range	T <sub>amb</sub>	-40	-	85	°C
Solder temperature(10s)		-	260	-	°C
HBM ESD Protection			±1500V		

## ELECTRICAL CHARACTERISTICS

(SW1179E EVB<sup>1)</sup>;  $V_{EN}=3.3V$ ,  $T_A=-40\sim+85^{\circ}C$ ,  $f=100MHz$  to  $3000MHz$ ; unless otherwise noted.)

**Table 3 .Electrical Characteristics**

Parameter		Conditions	Min.	Typ.	Max.	Units
<b>DC ELECTRICAL CHARACTERISTICS</b>						
$V_{EN}$	Digital Input-Logic High		1.5	3.3	3.6	V
$V_{EN}$	Digital Input-Logic Low				0.45	V
$I_{EN}$	EN CURRENT	$V_{EN}=3.3V$		1.5		uA
<b>AC ELECTRICAL CHARACTERISTICS</b>						
IL	Insertion Loss	F<1GHz 1GHz<F<2GHz 2GHz<F<3GHz		0.35 0.55 1.75		dB
RL	Return Loss			20.0		dB
ISL	Reverse Isolation			30.0		dB
IP0.1dB	In-Band input 0.1dB-compression point	$f=433MHz$ ;		+32		dBm
HD2	Second Harmonics	$f=433MHz$ ; $P_0=+25dBm$		+65		dBc
HD3	Third Harmonics	$f=433MHz$ ; $P_0=+25dBm$		+52		dBc
$t_{on}$	Turn-on time <sup>2)</sup>			20		ns
$t_{off}$	Turn-off time <sup>3)</sup>			20		ns

**Note1:** 0.08dB PCB losses are subtracted.

**Note2&3:** Within 10% of the final gain.

## APPLICATION INFORMATIONS

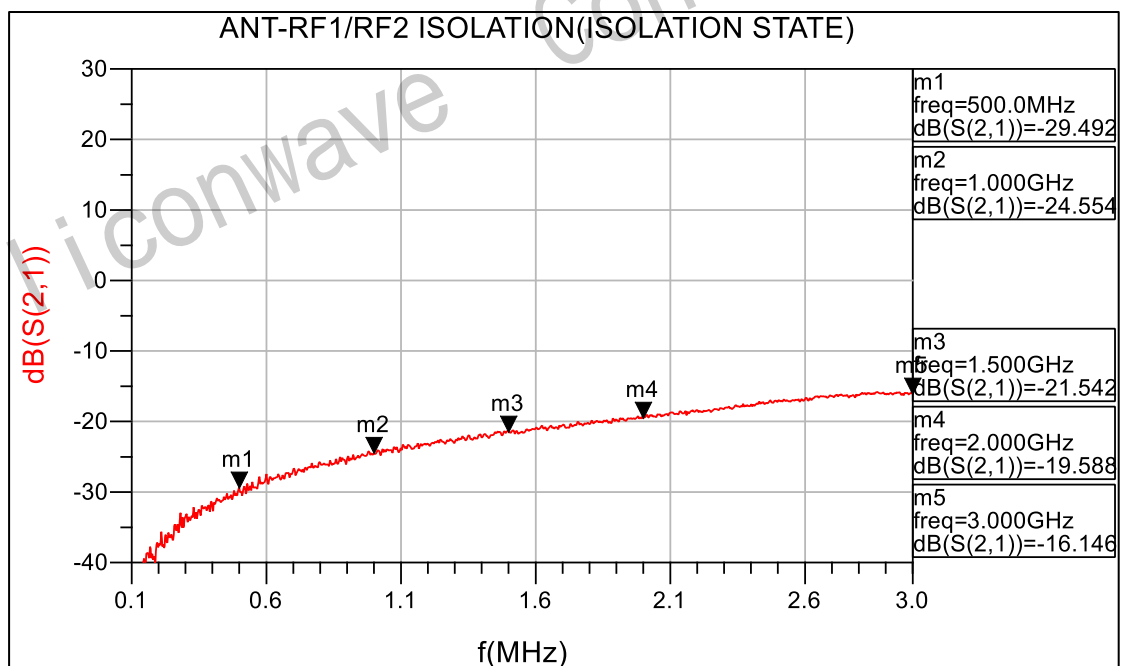
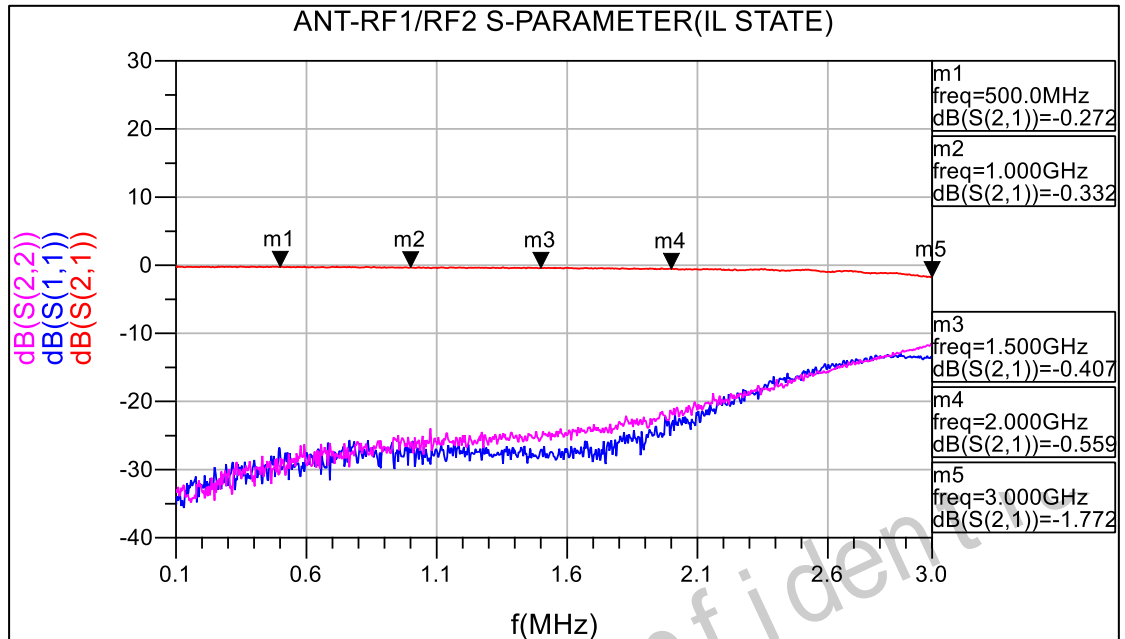
**Table 4:** list of RF control path

State	VC1	VC2	RF1	RF2
1	0	1	ON	OFF
2	1	0	OFF	ON

## TYPICAL PERFORMANCE CHARACTERISTICS

T=25°C, 50  $\Omega$  system with VC=0/3.3V, Pin=0dBm, 100nF block cap, unless otherwise noted

### ANT - RF1 /RF2 S-PARAMETER



## PACKAGE INFORMATION

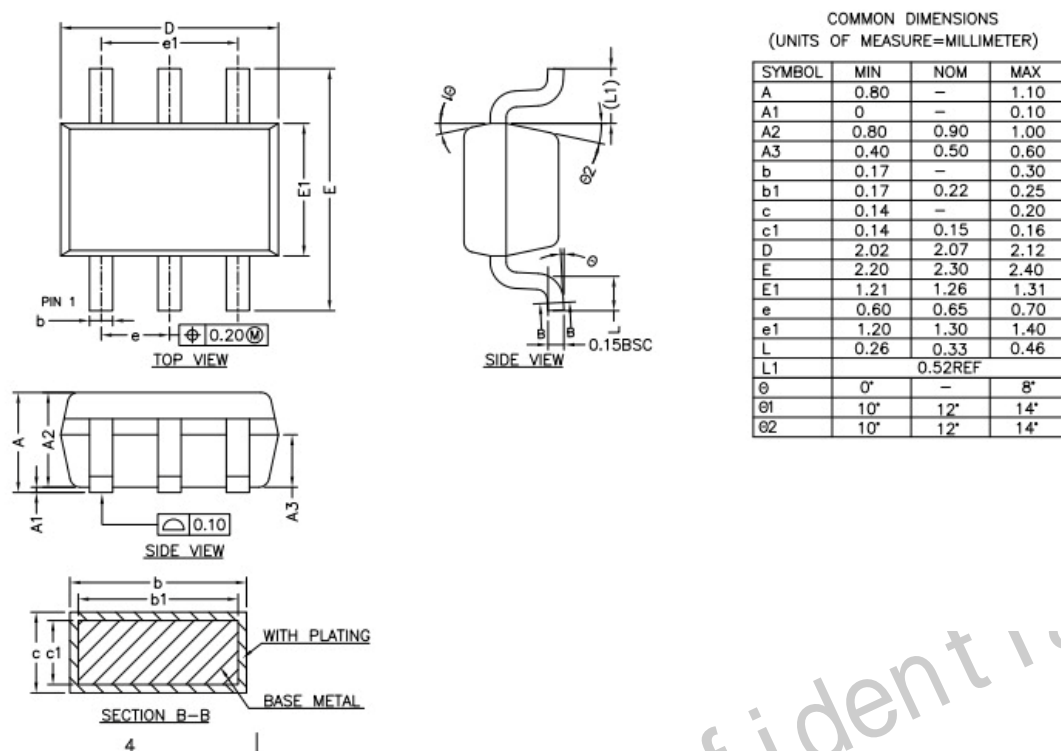
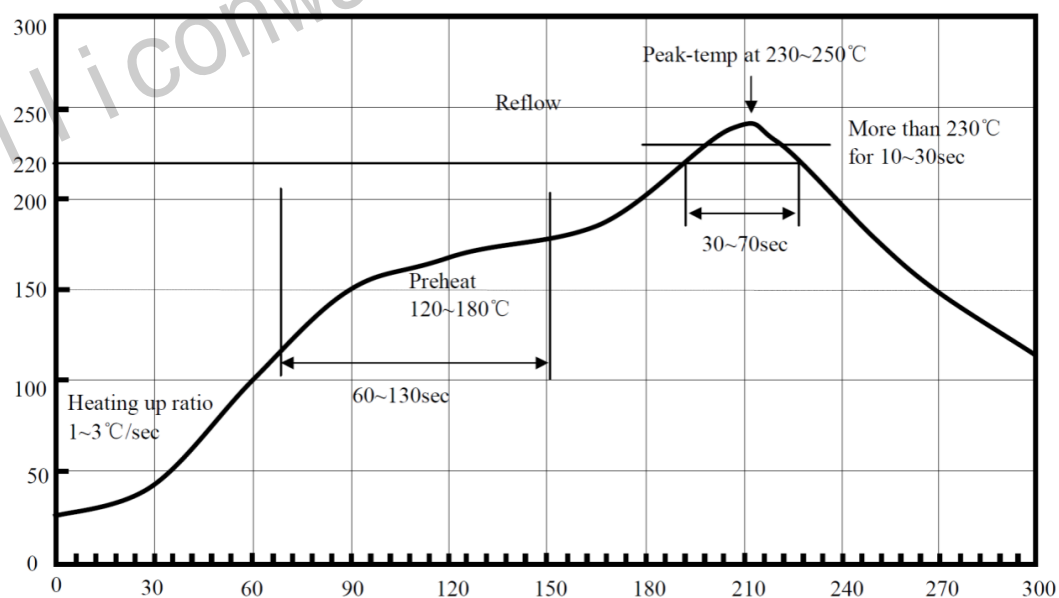


Figure 3. Package Outline

## RECOMMENDED SOLDER TEMPERATURE



Recommended Temperature Sn95.5Ag4.0Cu0.5

## ROHS COMPLIANT

The product does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls(PBB) or polybrominated diphenyl ethers(PBDE), and are therefore considered RoHS compliant.

## REVISION HISTORY

Document ID	Release Date	Change Record
SW1179E_V1.0	2020.7	Primary Version

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