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TPAS179-92LF

GaAs DC-3 GHz SPDT Switch

www.sot23.com.tw

Description

The TPAS179 is a GaAs SPDT switch operating at DC-3 GHz in a low cost SOT-363 plastic lead (Pb) free package. The TPAS179 features low insertion loss with very low DC power consumption. This AS179-92LF PIN to PIN fully compatible switch can be used in many wireless digital communication systems like IEEE 802.11b/g WLAN and Bluetooth for transmit/receive selection or antenna diversity function.

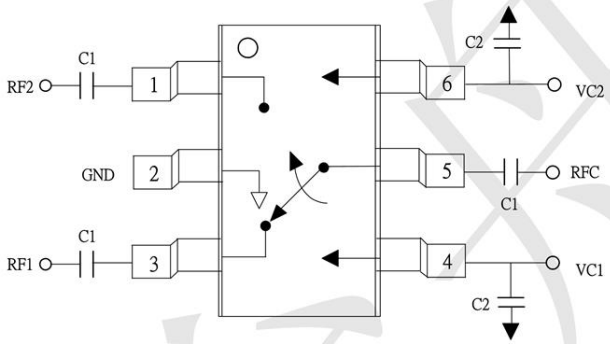
Features

- Low Insertion Loss: 0.4dB @ 2.5GHz
- High Isolation: 30dB @ 2.5GHz
- P_{-1dB}: +31dBm Typical @ +3V
- IIP3: 55dBm @ Input Power up to 20dBm
- Good Reliability Performance
- SOT-363 6 Lead Plastic Package
- T/R Switches in 802.11b/g/n WLAN Systems

Applications

- WLAN
- Mobile Phone
- Bluetooth
- DECT
- PHS
- GPS

■ Pin Connections and Internal Block



DC blocking capacitors C1 are required on all RF ports.
C1=56pF , C2=1000pF for operation >500MHz

■ Pin Assignment

Pin No.	Pin Name
1	RF2
2	GND
3	RF1
4	VC1
5	RFC
6	VC2

■ Reliability Testing Items

No.	Testing Items
1	Temperature Cycling Testing + IR Reflow
2	Pressure Cooker Testing + IR Reflow
3	Thermal Humidity Testing
4	Working Life
5	Electro-Static Discharge
6	Over Voltage
7	Over Power

All sample passed reliability testing

■ SW Truth Table

VC1	VC2	RFC-RF1	RFC-RF2
High	Low	Isolation	Insertion Loss
Low	High	Insertion Loss	Isolation

High: 2.8V to 5V
Low: -0.2V to 0.2V

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Absolute Maximum Ratings

Parameter	Value	Unit
Switch Control VC1 , VC2	-6.0 to +6.0 Note	V
RF input Power (>500MHz)	33	dBm
Operating Temperature	-40 to +85	℃
Storage Temperature	-65 to +150	℃

Note $|VC1-VC2| \leqq 6.0V$

■ Electrical Specifications at 25°C with 0, +3V Control Voltages

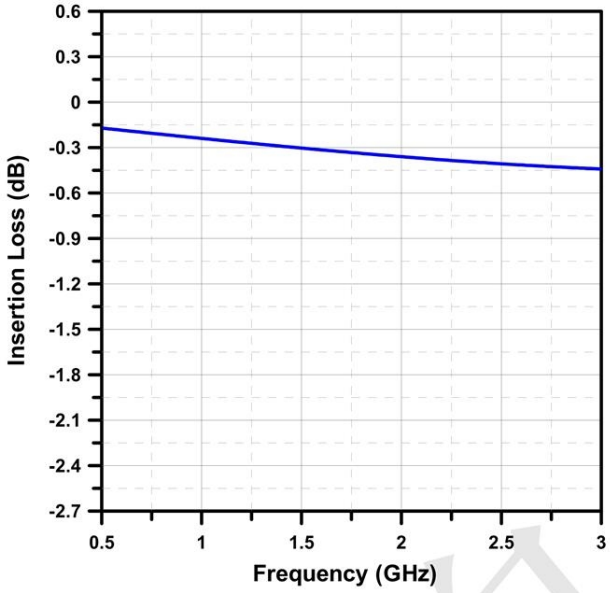
Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Insertion Loss	Input Power +25dBm DC–2.5GHz	-	0.4	0.6	dB
Isolation	Input Power +25dBm DC–2.5GHz	24	30	-	dB
VSWR	Insertion Loss state DC–2.5GHz	-	1.2	-	-
Input Power for 1 dB compression	2.5GHz	-	31	-	dBm
Second Harmonics	f=2.5GHz, P_{in}=25dBm	-	-75	-	dBc
Third Harmonics	f=2.5GHz, P_{in}=25dBm	-	-75	-	dBc
Intermodulation Intercept Point (IIP3)	For two tones (f=2.5GHz, 2.501GHz) @ Input power +20dBm	-	55	-	dBm
Switch Time	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF)	-	50	-	ns
Control Current	Input Power +25dBm	-	4	100	μA

Notes: All measurements made in 50Ω system, unless otherwise specified.
DC=500MHz

PROTECTION PRODUCTS
Typical charateristics

(Vcc=0V/3.0V , 0.5~3GHz @+25℃)

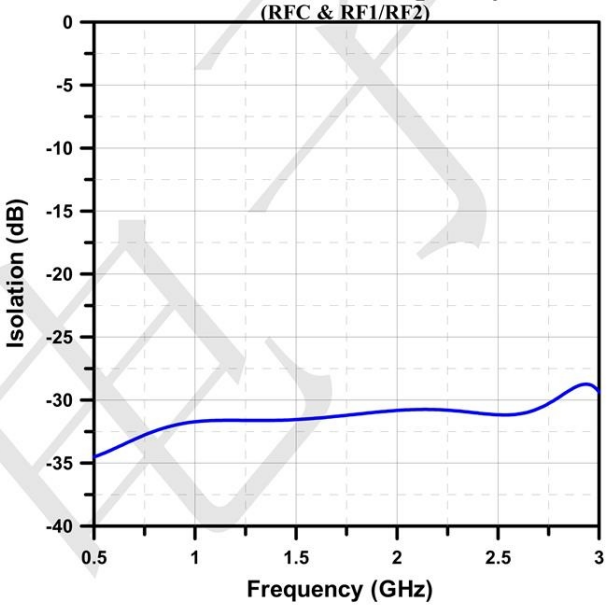
Insertion Loss vs. Frequency



(Vcc=0V/3.0V , 0.5~3GHz @+25℃)

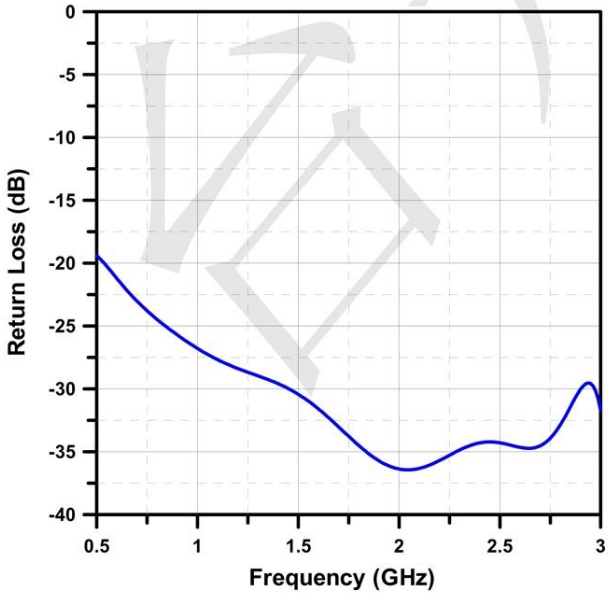
Isolation vs. Frequency

(RFC & RF1/RF2)



(Vcc=0V/3.0V , 0.5~3GHz @+25℃)

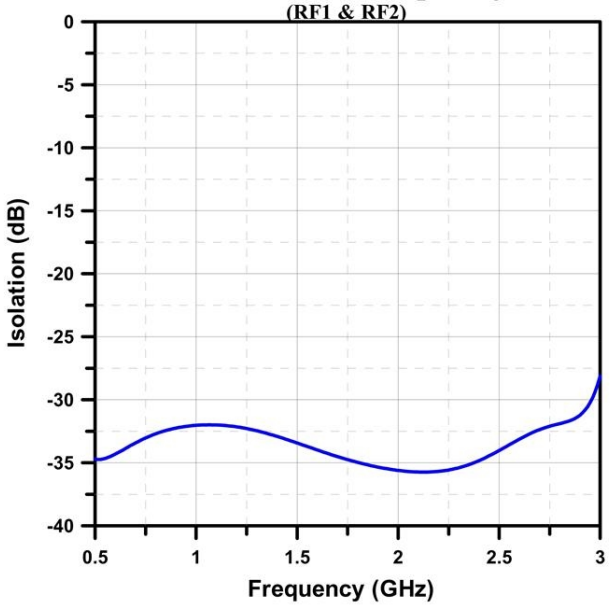
Return Loss vs. Frequency



(Vcc=0V/3.0V , 0.5~3GHz @+25℃)

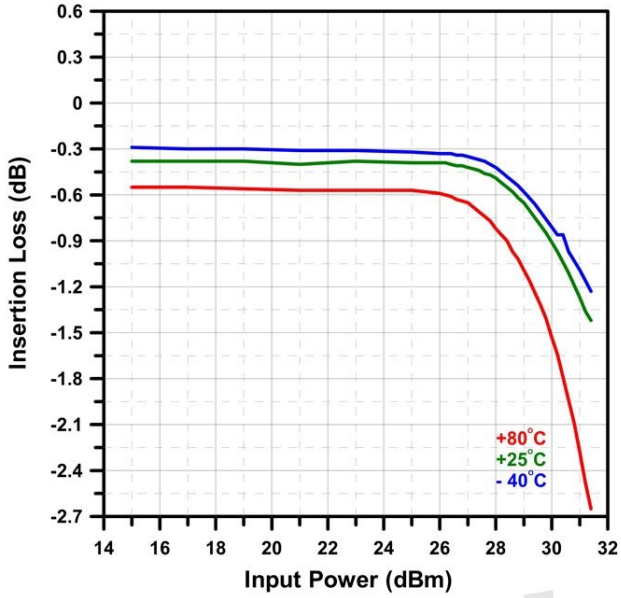
Isolation vs. Frequency

(RF1 & RF2)



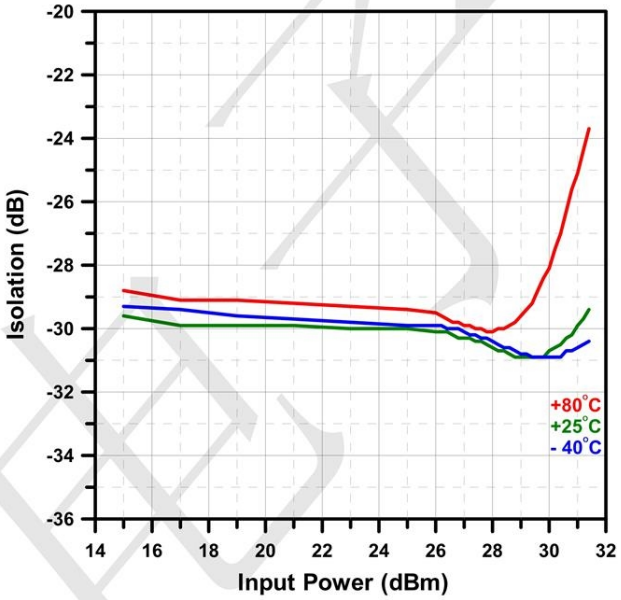
(Vcc=0V/3.0V , 2.5GHz@-40℃,+25℃,+80℃)

Insertion Loss vs. Input Power



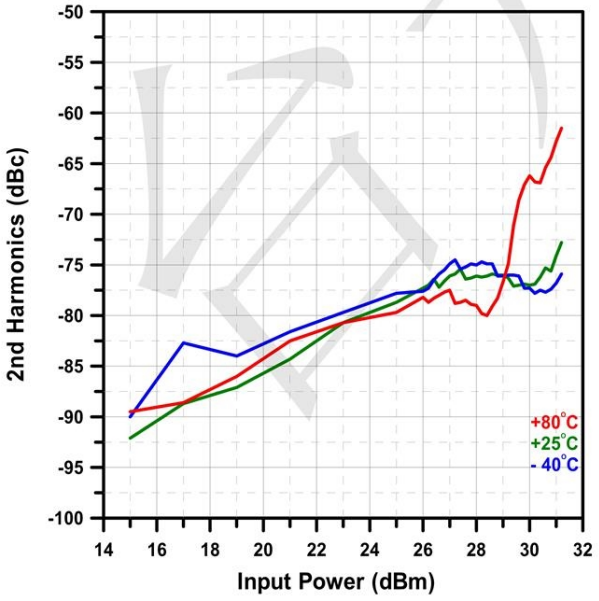
(Vcc=0V/3.0V , 2.5GHz@-40℃,+25℃,+80℃)

Isolation vs. Input Power



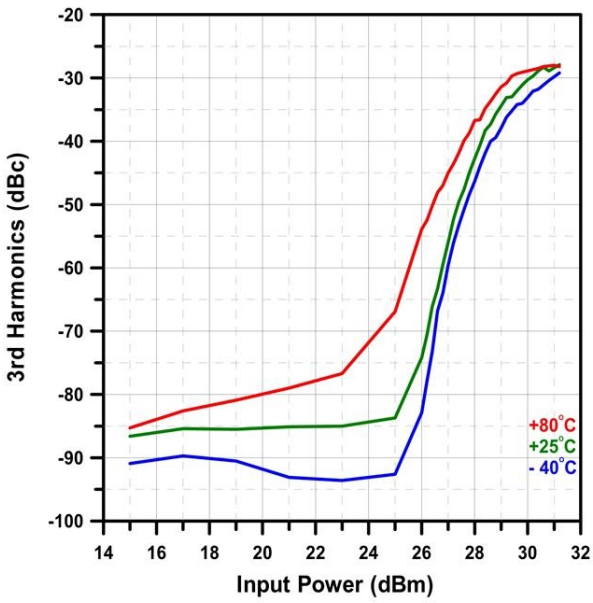
(Vcc=0V/3.0V , 2.5GHz@-40℃,+25℃,+80℃)

2nd Harmonics vs. Ambient Temperature



(Vcc=0V/3.0V , 2.5GHz@-40℃,+25℃,+80℃)

3rd Harmonics vs. Ambient Temperature



Outline Drawing - SOT363

