

Description

The TPG619C6 is a GaAs SPDT switch operating at DC-3 GHz in a low cost SOT-363 plastic lead (Pb) free package. The TPG619C6 features low insertion loss with very low DC power consumption. This

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.

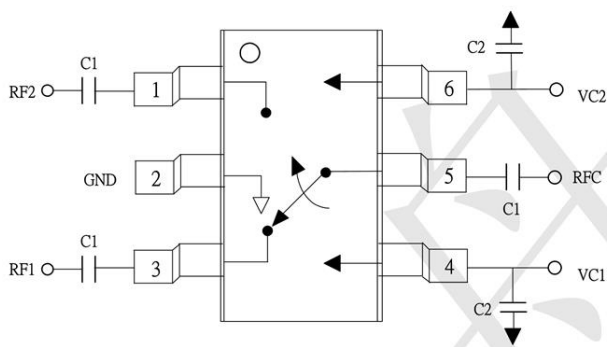
Features

- 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

Absolute Maximum Ratings

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

Note | VC1-VC2 | ≤ 6.0V

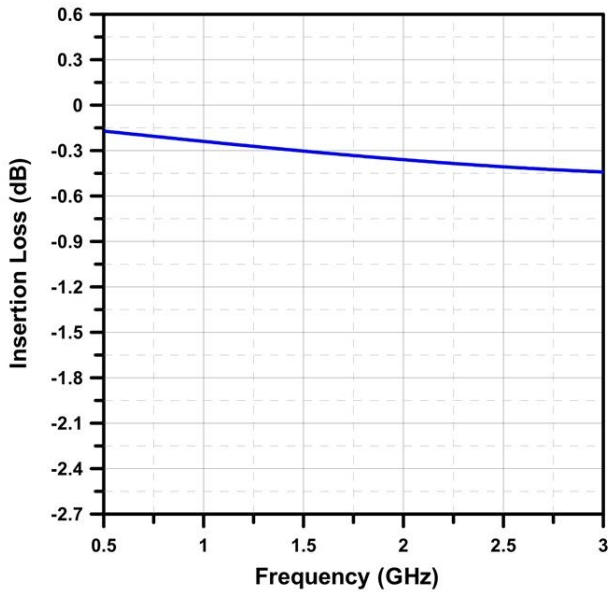
Electrical Specifications at 25°C with 0, +3V Control Voltages

| 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 _m =25dBm | - | -75 | - | dBc |
| Third Harmonics | f=2.5GHz, P _m =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 |

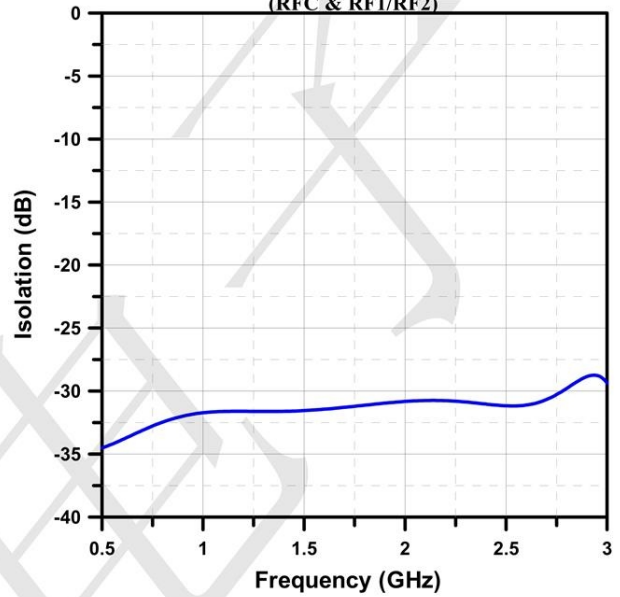
Notes: All measurements made in 50 Ω system, unless otherwise specified.
DC=500MHz

PROTECTION PRODUCTS
 Typical characteristics

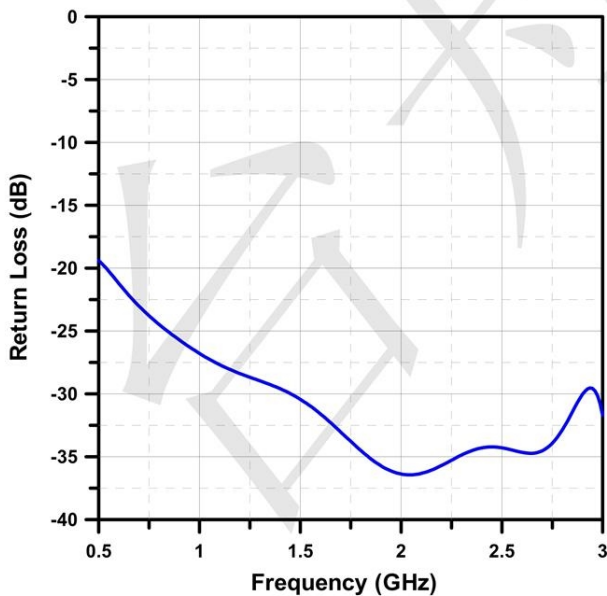
($V_{cc}=0V/3.0V$, 0.5~3GHz @+25°C)
Insertion Loss vs. Frequency



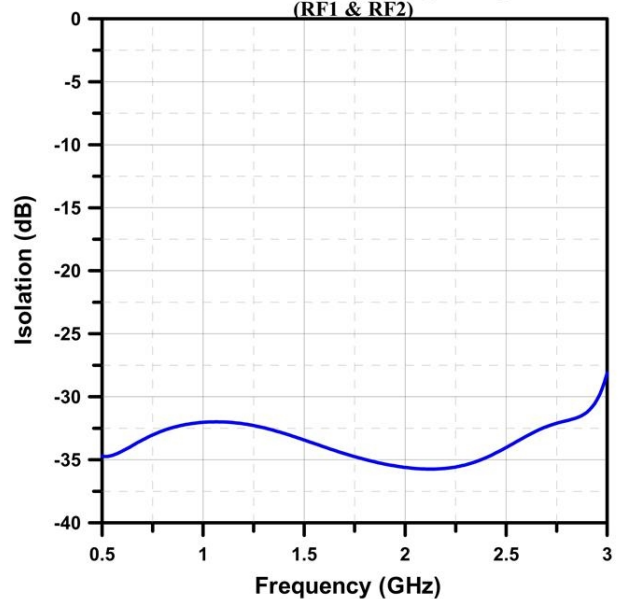
($V_{cc}=0V/3.0V$, 0.5~3GHz @+25°C)
Isolation vs. Frequency
 (RFC & RF1/RF2)



($V_{cc}=0V/3.0V$, 0.5~3GHz @+25°C)
Return Loss vs. Frequency

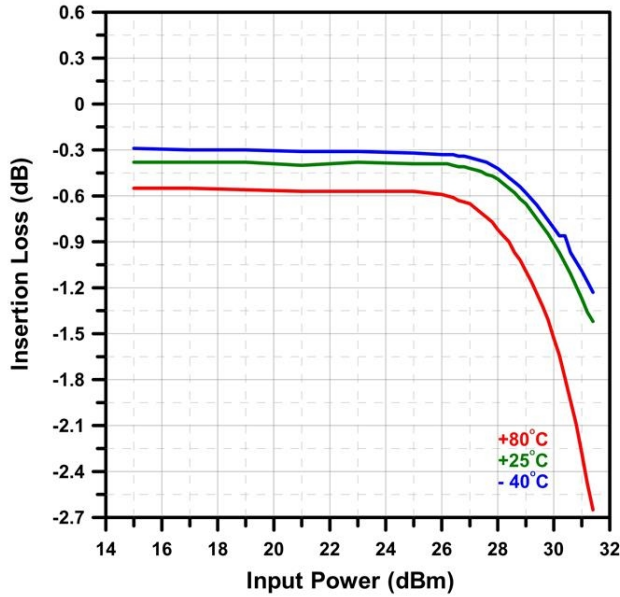


($V_{cc}=0V/3.0V$, 0.5~3GHz @+25°C)
Isolation vs. Frequency
 (RF1 & RF2)



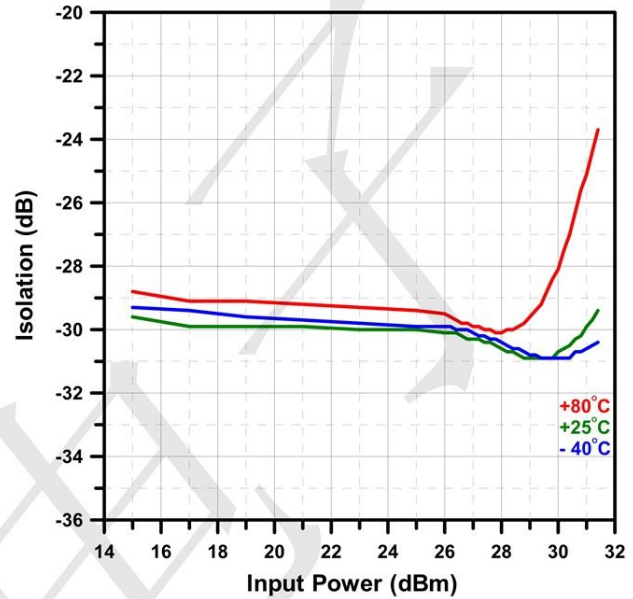
($V_{cc}=0V/3.0V$, 2.5GHz@-40°C,+25°C,+80°C)

Insertion Loss vs. Input Power



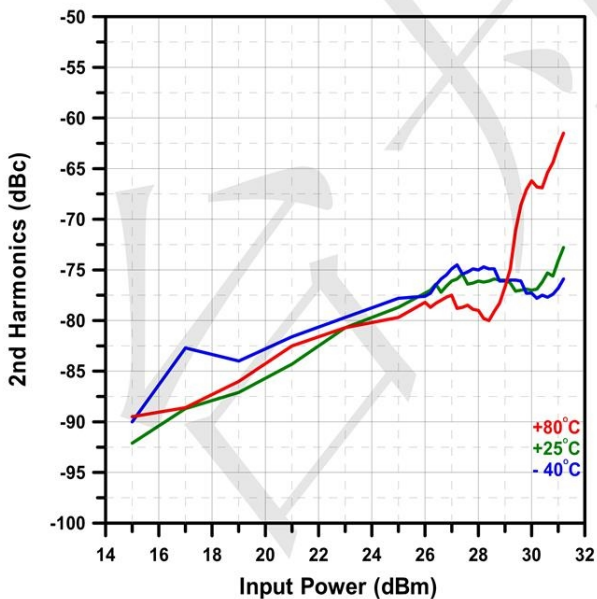
($V_{cc}=0V/3.0V$, 2.5GHz@-40°C,+25°C,+80°C)

Isolation vs. Input Power



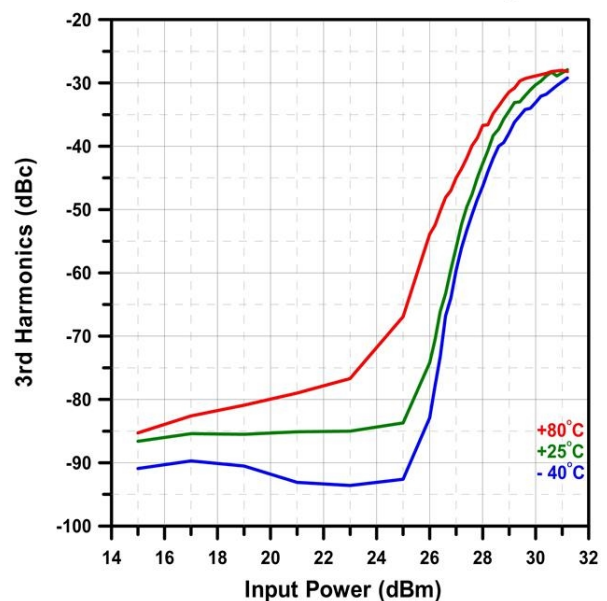
($V_{cc}=0V/3.0V$, 2.5GHz@-40°C,+25°C,+80°C)

2nd Harmonics vs. Ambient Temperature



($V_{cc}=0V/3.0V$, 2.5GHz@-40°C,+25°C,+80°C)

3rd Harmonics vs. Ambient Temperature



Outline Drawing - SOT363

