

GaAs IC Transfer Switch DC–2 GHz



AS127-59

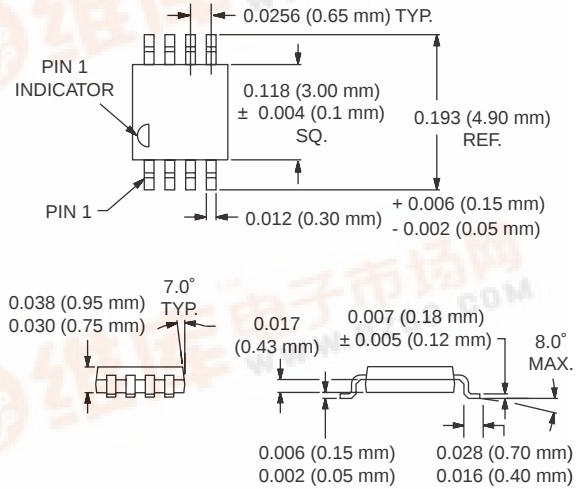
Features

- High Linearity (+45 dBm IP3 @ 0.9 GHz)
- Small MSOP-8 Plastic Package
- Low Insertion Loss (0.4 dB @ 0.9 GHz)
- Simultaneous T/R Switching

Description

The AS127-59 is a 4 port switch designed to combine T/R and antenna changeover switching capability within one device. This switch has two 5 V controls and is ideal for applications requiring low power consumption. The AS127-59 has excellent performance to 2 GHz making it suitable for dual-band handset designs.

MSOP-8



Electrical Specifications at 25°C (0, -5 V)

Parameter ¹	Frequency ²	T _X -J ₁ or R _X -J ₁			T _X -J ₂ or R _X -J ₂			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Insertion Loss ³	DC–0.5 GHz		0.35	0.5		0.5	0.7	dB
	DC–1.0 GHz		0.45	0.7		0.6	0.9	dB
	DC–2.0 GHz		0.7	1.0		0.85	1.3	dB
Isolation	DC–0.5 GHz	20	25		25	28		dB
	DC–1.0 GHz	13	15		17	20		dB
	DC–2.0 GHz	10	13		14	16		dB
VSWR ⁴	DC–1.0 GHz		1.2:1	1.5:1		1.2:1	1.5:1	
	DC–2.0 GHz		1.3:1	1.8:1		1.3:1	1.8:1	

Operating Characteristics at 25°C (0, -5 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			20		ns
	On, Off (50% CTL to 90/10% RF)			40		ns
	Video Feedthru			50		mV
Input Power for 1 dB Compression (T _X)		0.5–2.0 GHz		+33		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +0 dBm	0.5–2.0 GHz		+45		dBm
Control Voltages	V _{Low} = 0 to -0.2 V @ 20 μA Max. V _{High} = -5 V @ 25 μA to -8 V @ 100 μA Max.					

1. All measurements made in a 50 Ω system, unless otherwise specified.

2. DC = 300 kHz.

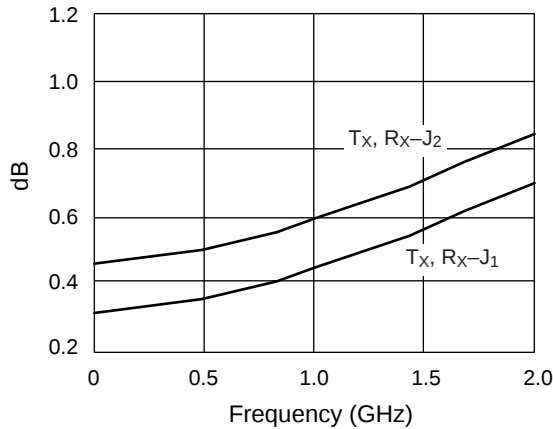
3. Insertion loss changes by 0.003 dB/°C.

4. Insertion loss state.

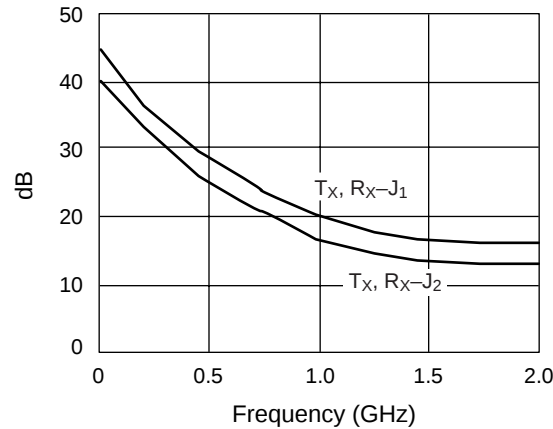
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.



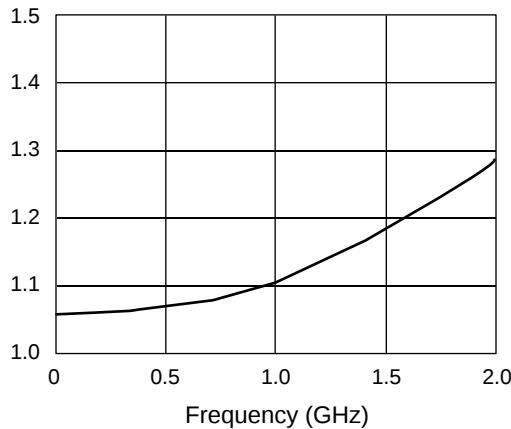
Typical Performance Data (0, -5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

Negative Operation

V ₁	V ₂	T _X -J ₂ , R _X -J ₁	T _X -J ₁ , R _X -J ₂
0	-5	Insertion Loss	Isolation
-5	0	Isolation	Insertion Loss

Positive Operation

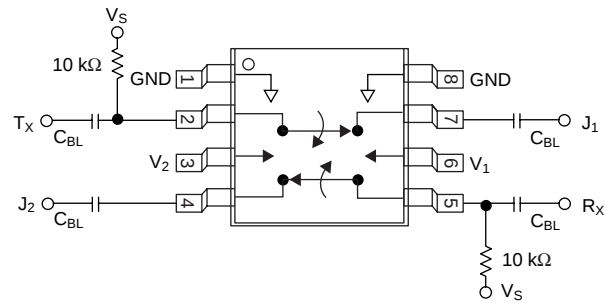
V ₁	V ₂	T _X -J ₂ , R _X -J ₁	T _X -J ₁ , R _X -J ₂
V _{High}	0	Insertion Loss	Isolation
0	V _{High}	Isolation	Insertion Loss

V_{High} = +5 to +8 V (V_S = V_{High} ± 0.2 V).

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	4 W > 0.5 GHz, 0/-5 V Control
Control Voltage	+0.2 V, -8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ _{JC}	25°C/W

Pin Out



External components shown are for positive voltage operation only.
C_{BL} = 100 pF for operation >500 MHz.