

# Single Positive Control PHEMT GaAs IC SPDT Switch 0.5–3 GHz



AS215-92

## Applications

- T/R Switch for Blue Tooth and General Purpose Telecommunication Applications

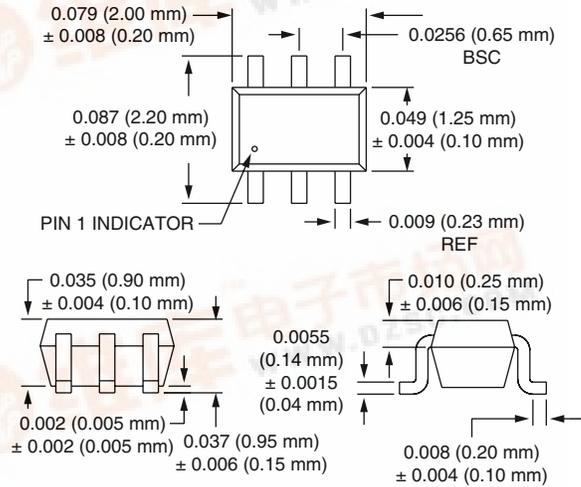
## Features

- Single Bias Control
- Operates with 1.8 V Control Voltage
- Low DC Power Consumption
- PHEMT Process

## Description

The AS215-92 is a medium power IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS215-92 features low insertion loss and positive voltage operation with very low DC power consumption. This general purpose switch can be used in a variety of telecommunications applications.

## SC-70 6 Lead



## Electrical Specifications at 25°C (0, +3 V)

Parameter <sup>1</sup>	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss <sup>2</sup>	0.5–1.0 GHz		0.75	1.0	dB
	1.0–2.0 GHz		0.60	0.8	dB
	2.0–3.0 GHz		0.50	0.7	dB
Isolation	0.5–1.0 GHz	25	28		dB
	1.0–2.0 GHz	21	24		dB
	2.0–3.0 GHz	17	20		dB
VSWR <sup>3</sup>	0.5–1.0 GHz		1.1:1		
	1.0–2.0 GHz		1.4:1		
	2.0–3.0 GHz		1.2:1		

## Operating Characteristics at 25°C (0, +3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>4</sup>	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			20		ns
	Video Feedthru			25		mV
Input Power for 1 dB Compression	0/+1.8 V	0.5–3.0 GHz		+20		dBm
	0/+3.0 V	0.5–3.0 GHz		+27		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm 0/+3 V	0.5–3.0 GHz		+40		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \text{ } \mu\text{A Max.}$ $V_{High} = +2.7 \text{ V @ } 100 \text{ } \mu\text{A Max. to } +5 \text{ V @ } 200 \text{ } \mu\text{A Max.}$					

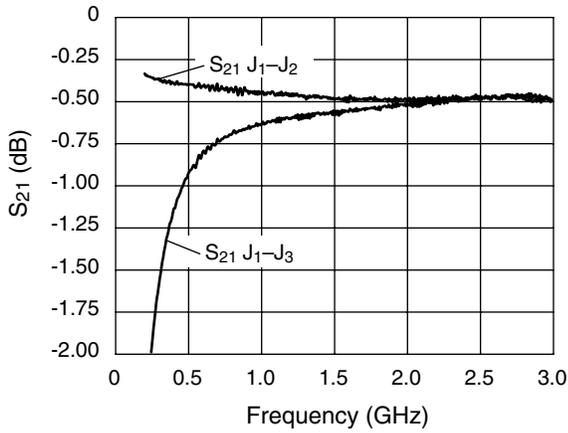
1. All measurements made in a 50 Ω system, unless otherwise specified.

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

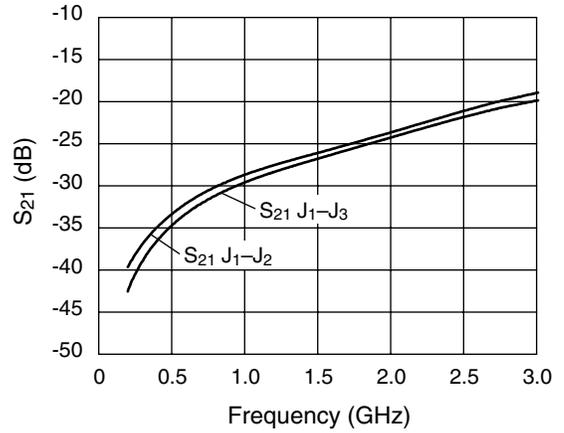
3. Insertion loss state.

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

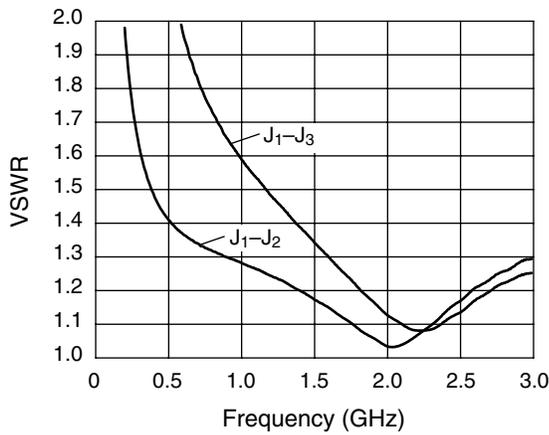
### Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency

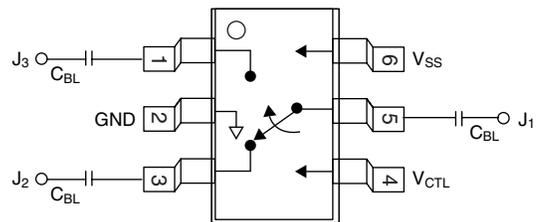


Isolation vs. Frequency



VSWR vs. Frequency

### Pin Out



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

### Truth Table

$V_1$	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
0	Isolation	Insertion Loss
$V_{High}$	Insertion Loss	Isolation

$V_{SS} = +2.7 \text{ to } +5 \text{ V}$ .  
 $V_{High} = V_S \pm 0.2 \text{ V}$ .