SW-283-PIN

GaAs Transfer Switch, DC-3.0 GHz



Rev. V5

Features

- Small Ceramic Package, 0.250" Sq.
- Fast Switching Speed, 4 ns Typical
- Ultra Low DC Power Consumption
- 50 Ohm Nominal Impedance
- MIL-STD-883 screening available
- Lead-Free CR-4 Package
- 260°C Reflow Compatible
- RoHS* Compliant

Description

M/A-COM's SW-283-PIN is a GaAs MMIC transfer switch packaged in lead-free, surface mount CR-4 ceramic style packages. SW-283-PIN offers low insertion loss, high isolation, and fast switching. This ceramic switch platform has a common footprint for all three designs. The CR-4 package is hermetically sealed, making this switch ideal for space, military radios, and other environmentally harsh applications.

Typical applications include synthesizer switching, transmit/receive switching, switch matrices and filter banks in systems such as radio and cellular equipment, PCM, GPS, and fiber optic modules.

The SW-283-PIN transfer switch contains a monolithic GaAs MMIC which is fabricated using a 1.0 micron MESFET process.

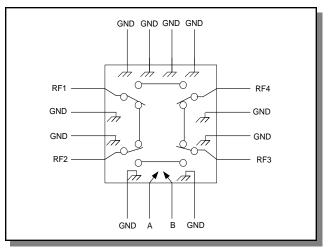
Ordering Information

Commitment to produce in volume is not guaranteed.

Part Number	Package
SW-283-PIN	Bulk Packaging

Note: Reference Application Note M513 for reel size information.

Functional Block Diagram



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF1	9	RF3
2	GND	10	GND
3	GND	11	GND
4	RF2	12	RF4
5	GND	13	GND
6	A	14	GND
7	В	15	GND
8	GND	16	GND

The metal bottom of the case must be connected to RF and DC ground.

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available.

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Electrical Specifications: $T_A = 25^{\circ}C$, $Z_0 = 50\Omega^{-1,2}$

Parameter	Test Conditions	Frequency	Units	Min	Тур	Max
Insertion Loss	_	DC - 3 GHzdBDC - 2 GHzdBDC - 1 GHzdBDC - 0.5 GHzdB		 	 	2.1 1.8 1.3 1.0
VSWR	_	DC - 3 GHz Ratio DC - 2 GHz Ratio DC - 1 GHz Ratio DC - 0.5 GHz Ratio		 	 	1.9:1 1.7:1 1.3:1 1.25:1
Isolation	_	DC - 3 GHz DC - 2 GHz DC - 1 GHz DC - 0.5 GHz	dB dB dB dB	20 25 40 45	 	
Trise, Tfall Ton, Toff Transients	10/90% or 90/10% RF 50% CTL to 90/10% RF In-Band		nS nS mV		2 4 30	
1 dB Compression	Control Voltage 0/-5 VDC Control Voltage 0/-8 VDC	0.5 - 3 GHz 0.05 GHz 0.5 - 3 GHz 0.05 GHz	dBm dBm dBm dBm	 	+27 +21 +33 +26	
IP ₂	For two-tone Input power up to +13 dBm	0.5 - 3 GHz 0.05 GHz	dBm dBm	_	+68 +62	_
IP ₃	For two-tone Input power up to +13 dBm	0.5 - 3 GHz 0.05 GHz	dBm dBm	_	+50 +45	
Control Voltages	V _{IN} Low: 0 to −0.2V V _{IN} High: -5V @ 10 µA Typ to −8V	Ξ		—	—	5 μΑ 200 μΑ

1. All specifications apply with 50 ohm impedance connected to all RF ports with 0 and -5 VDC control voltages.

2. Faster switching speed can be achieved with enhanced driver waveform.

Absolute Maximum Ratings ^{3,4}

Parameter	Absolute Maximum	
Input Power 0.05 GHz 0.5 - 3.0 GHz	+27 dBm +34 dBm	
Control Voltage	-8.5 V <u><</u> Vc <u><</u> +5 V	
Operating Temperature	-55°C to +125°C	
Storage Temperature	-65°C to +150°C	

3. Exceeding any one or combination of these limits may cause permanent damage to this device.

4. M/A-COM does not recommend sustained operation near these survivability limits.

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Handling Procedures

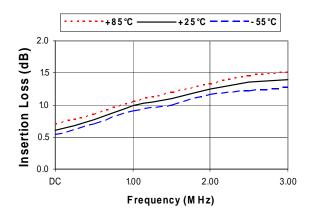
Please observe the following precautions to avoid damage:

Static Sensitivity

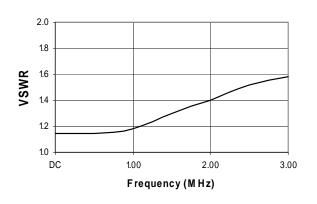
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves

Insertion Loss vs. Frequency



VSWR vs. Frequency



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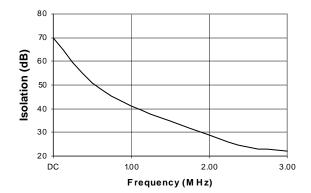
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Truth Table (Switch)

Control Input		Condition of Switch			h
Α	В	RF1- RF2	RF2- RF3	RF1- RF4	RF3- RF4
HI	LOW	OFF	ON	ON	OFF
LOW	н	ON	OFF	OFF	ON

Low = 0.0V, High = -5.0V

Isolation vs. Frequency



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