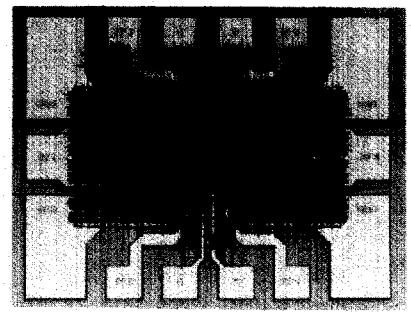
NEW

MODEL SW-280

GaAs DPDT SWITCH CHIP
DC - 6 GHz

Low Insertion Loss, 0.5 dB Typical
Fast Switching Speed, 4ns Typical
Ultra Low DC Power Consumption



Guaranteed Specifications*
(From –55°C to +85°C)

Frequency Range		DC - 6 GHz
Insertion Loss	DC - 6 GHz	1.5dB Max
	DC - 4 GHz	1.0dB Max
	DC - 2 GHz	0.8dB Max
	DC - 1 GHz	0.6dB Max
VSWR	DC - 6 GHz	1.8:1 Max
	DC - 4 GHz	1.5:1 Max
	DC - 2 GHz	1.4:1 Max
	DC - 1 GHz	1.2:1 Max
Isolation	DC - 6 GHz	20dB Min
	DC - 4 GHz	25dB Min
	DC - 2 GHz	35dB Min
	DC - 1 GHz	40dB Min

Operating Characteristics

Impedance			50 Ohms Nominal
Switching Characteristics†			
t_{RISE}, t_{FALL} (10/90% or 90/10% RF)			2ns Typ
t_{ON}, t_{OFF} (50% control to 90/10% RF)			4ns Typ
Transients (In-Band)			15mV Typ
Input Power for 1dB Compression			
Control Voltages (Vdc)	0/–5	0/–8	
0.5 to 6 GHz	+27	+33	dBm Typ
0.05 GHz	+21	+26	dBm Typ
Intermodulation Intercept Point			
(for two-tone input power up to +5dBm)			
Intercept Points	IP_2	IP_3	
0.5 to 6 GHz	+68	+40	dBm Typ
0.05 GHz	+62	+45	dBm Typ
Control Voltages (Complementary Logic)			
V_{IN} Low			0 to –0.2V @ 5 μA Max
V_{IN} Hi			–5V @ 10 μA Typ to –8V @ 100 μA Max
Die Size	0.036"x0.046"x0.010" (0.91mm x 1.17mm x 0.25mm)		

Environmental

These units are designed to meet or exceed the following: Electrical, 100% probing at 25°C for selected parameters. Visual, 100% per MIL-STD-883 Method 2010 Condition B. Lot traceability supplied on request.

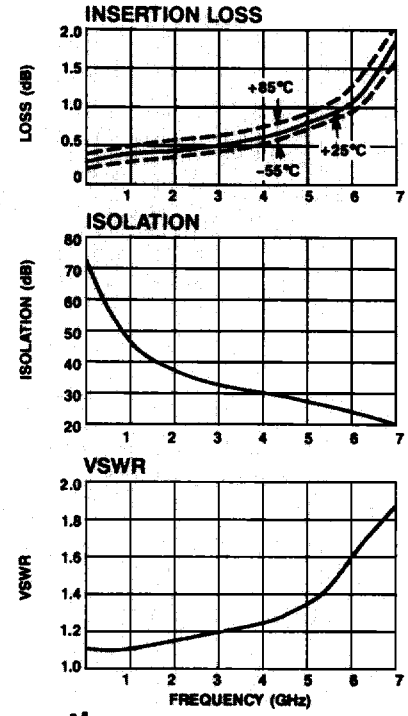
*All specifications apply with 50 ohm impedance connected to all RF ports, 0 and –5 Vdc control voltages, and chip interconnections made with 0.001" Dia. wirebonds.
†Faster switching speed can be achieved with enhanced driver waveform.
**When an RF output port is "off" it is shorted to ground through an "on" shunt MESFET.

Ordering Information

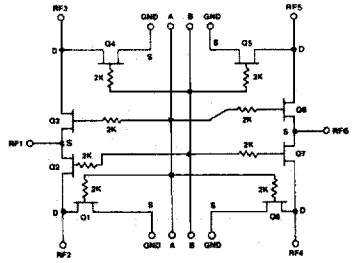
Model No.	Connectors	Unit Price (1-9 Units)
SW-280	CHIP	$45

Delivery is from stock.

Typical Performance



Schematic



Truth Table**

Control Input		Condition of Switch			
		RF1 to		RF6 to	
A	B	RF2	RF3	RF4	RF5
Hi	Low	ON	OFF	ON	OFF
Low	Hi	OFF	ON	OFF	ON

SW-280 Handling, Mounting, Bonding Procedure

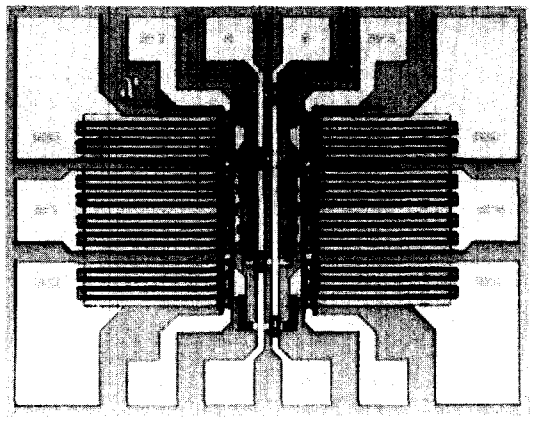
Maximum Ratings

A. Control Voltage (A or B): -8.5 Vdc

B. Max Input RF Power: +34dBm (0.5 - 6.0 GHz with 0/-8V CTL)

C. Storage Temperature: -65°C to +175°C

D. Maximum Operating Temperature: +175°C



BondPad Dimensions Inches (mm)

RF1, RF6: (.005 x .006)
(.130 x .150)

RF2-RF5: (.004 x .004)
(.100 x .100)

GND: (.005 x .013)
(.130 x .320)

Die Size Inches (mm)

0.036 x 0.046 x 0.010
(0.91 x 1.17 x 0.25)

Handling Precautions

Permanent damage to the SW-280 may occur if the following precautions are not adhered to:

A. Cleanliness — The SW-280 should be handled in a clean environment. DO NOT attempt to clean unit after the SW-280 is installed.

B. Static Sensitivity — All chip handling equipment and personnel should be DC grounded.

C. Transients — Avoid instrument and power supply transients while bias is applied to the SW-280. Use shielded signal and bias cables to minimize inductive pick-up.

D. Bias — Apply voltage to either control port A or B only when the other is grounded. Neither A nor B should be allowed to "float".

E. General Handling — It is recommended that the SW-280 chip be handled along the long side of the die with a sharp pair of bent tweezers. DO NOT touch the surface of the chip with fingers or tweezers.

Mounting

The SW-280 is back-metallized with TiPtAu (300/1000/5000Å) metallization. It can be die-mounted with AuSn eutectic preforms or with thermally conductive epoxy. The package surface should be clean and flat before attachment.

Eutectic Die Attach:

A. A 80/20 gold/tin preform is recommended with a work surface temperature of approximately 255°C and a tool temperature of 265°C. When hot 90/10 nitrogen/hydrogen gas is applied, tool tip temperature should be approximately 290°C.

B. DO NOT expose the SW-280 to a temperature greater than 320°C for more than 20 seconds. No more than 3 seconds of scrubbing should be required for attachment.

Epoxy Die Attach:

A. Apply a minimum amount of epoxy and place the SW-280 into position. A thin epoxy fillet should be visible around the perimeter of the chip.

B. Cure epoxy per manufacturer's recommended schedule.

C. Electrically conductive epoxy may be used but is not required.

Wire Bonding

A. Ball or wedge bond with 1.0 Mil diameter pure gold wire. Thermosonic wirebonding with a nominal stage temperature of 150°C and a ball bonding force of 40 to 50 grams or wedge bonding force of 18 to 22 grams is recommended. Ultrasonic energy and time should be adjusted to the minimum levels required to achieve reliable wirebonds.

B. Wirebonds should be started on the chip and terminated on the package. RF bonds should be as short as possible; at least three and no more than four bond wires from ground pads to package are recommended.