

# Surface Mount Switch GaAs

# GSWA-4-30DR

50Ω SP4T, TTL Driver, Absorptive DC to 3 GHz

## Maximum Ratings

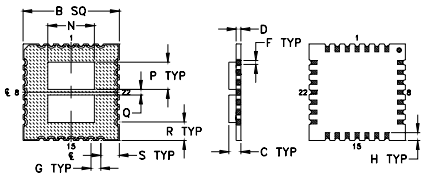
Operating Temperature	-30°C to 85°C
Storage Temperature	-55°C to 100°C
Input Power	see table
Vcontrol	(V+) +0.4V

Permanent damage may occur if any of these limits are exceeded.

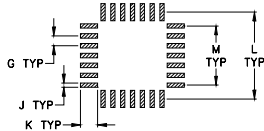
## Pin Connections

RF IN	1
RF OUT 1	25
RF OUT 2	21
RF OUT 3	9
RF OUT 4	5
CONTROL 1	15
CONTROL 2	16
CONTROL 3	13
CONTROL 4	14
+5V (V+)	12
-5V (V-)	18
GROUND	all other pins

## Outline Drawing



### PCB Land Pattern

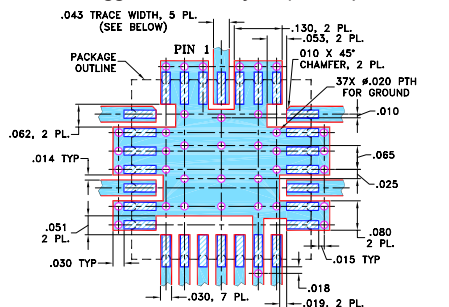


Suggested L layout,  
Tolerance to be within ±002

## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
—	.487	.06	.025	—	.020	.050	.040	.022
—	12.37	1.55	0.64	—	0.51	1.27	1.02	0.56
K	L	M	N	P	Q	R	S	wt
.087	.441	.300	.236	.138	.03	.094	.094	grams
2.21	11.20	7.62	5.99	3.51	0.76	2.39	2.39	0.71

## Demo Board MCL PIN: TB-91 Suggested PCB Layout (PL-221)



- NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
  - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Features

- wideband, DC to 3 GHz
- high isolation, 37 dB typ.
- low video leakage, 30 mVp-p typ.
- integral TTL driver
- aqueous washable

## Applications

- cellular, PCN
- satellite communication
- receiver antenna switching



CASE STYLE: AN1102  
PRICE: \$19.95 ea. QTY (1-9)

## Electrical Specifications

FREQ. (GHz)	INSERTION LOSS (dB)						1dB COMPR. (dBm)			IN-OUT ISOLATION (dB)						
	DC-500 MHz		500-2000 MHz		2000-3000 MHz		DC-500 MHz	500-2000 MHz	2000-3000 MHz	DC-500 MHz		500-2000 MHz		2000-3000 MHz		
f <sub>i</sub>	f <sub>u</sub>	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Min.
DC	3	1.25	1.8	2.0	3.0	2.75	3.9	23*	25	25	50	40	37	32	31	26

\*1dB compression gradually decreases to 10 dBm @ 1 MHz

## Additional Specifications

*Control Voltage	0/V+
Low Threshold	0.8 max.
High Threshold	3.5 min.
Control Current, mA	High V: 0.2 max.; Low V: 0.02 max.
Positive Supply V. (V+)	+5±0.5
Negative Supply V. (V-)	-5±0.25
Positive Supply Current, mA	4 max.
Negative Supply Current, mA	20 max.
VSWR(:1)	1.28 typ., ON DC-2 GHz 1.24 typ., OFF DC-2 GHz
Rise/Fall time (10%-90%), ns	25 typ.
Switching time, 50% of Control to 90% RF (Turn-on), ns	45 typ.
10% RF (Turn-off), ns	30 typ.
**Video Leakage, mVp-p	0/+5V Control
MTBF, hrs @85°C case	30X10 <sup>6</sup>
Max. Input Power, dBm	DC-100 MHz 100-500 MHz 500-3000 MHz
Steady state control	+20 +8
As modulator	+24 +14

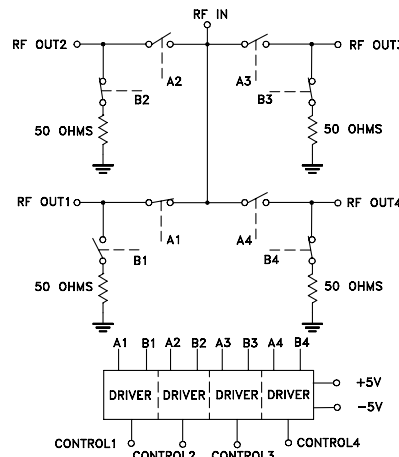
\* Do not apply control voltage high prior to applying V+

\*\* Video leakage or break through is defined as leakage of TTL switching signal to RF output ports. All RF pins must be DC blocked or held at 0V DC.

## CONTROL LOGIC

Control Ports				RF outputs			
1	2	3	4	1	2	3	4
Low	High	High	High	On	Off	Off	Off
High	Low	High	High	Off	On	Off	Off
High	High	Low	High	Off	Off	On	Off
High	High	High	Low	Off	Off	Off	On

## Electrical Schematic



**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuit's standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

## Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB) TTL Low @ 0V IN-OUT		OFF ISOLATION (dB) TTL High @ 5V IN-OUT		VSWR		
	$\bar{x}$	$\sigma$	$\bar{x}$	$\sigma$	IN	ON	OUT
					$\bar{x}$	$\bar{x}$	$\bar{x}$
10	0.58	0.025	81.27	4.21	1.04	1.05	1.09
28	0.66	0.018	73.11	4.37	1.06	1.04	1.08
64	0.77	0.017	72.78	6.25	1.05	1.05	1.08
100	0.82	0.015	75.11	4.71	1.05	1.06	1.07
260	0.97	0.010	68.08	5.57	1.14	1.11	1.07
420	1.10	0.012	60.51	1.69	1.21	1.16	1.08
600	1.23	0.014	56.91	1.13	1.25	1.21	1.06
800	1.31	0.011	53.59	1.34	1.30	1.28	1.08
1000	1.44	0.018	50.26	0.95	1.39	1.32	1.09
1200	1.49	0.019	48.06	0.56	1.43	1.35	1.10
1400	1.61	0.023	45.78	0.44	1.44	1.36	1.12
1600	1.70	0.025	43.73	0.35	1.50	1.39	1.12
1800	1.76	0.018	41.79	0.33	1.57	1.42	1.12
2000	1.92	0.025	40.34	0.40	1.49	1.40	1.15
2200	2.05	0.025	39.17	0.37	1.64	1.48	1.12
2400	2.18	0.026	38.05	0.41	1.69	1.50	1.14
2600	2.36	0.030	37.08	0.32	1.65	1.68	1.13
2800	2.57	0.037	36.32	0.30	1.65	1.75	1.11
3000	2.88	0.048	35.55	0.34	1.84	2.00	1.13

