

# Single Driver for GaAs FET Switches and Attenuators

**SWD-109  
V5**

## Features

- High Speed CMOS Technology
- Single Channel
- Positive Voltage Control
- Low Power Dissipation
- Low Cost Plastic SO-8 Package

## Description

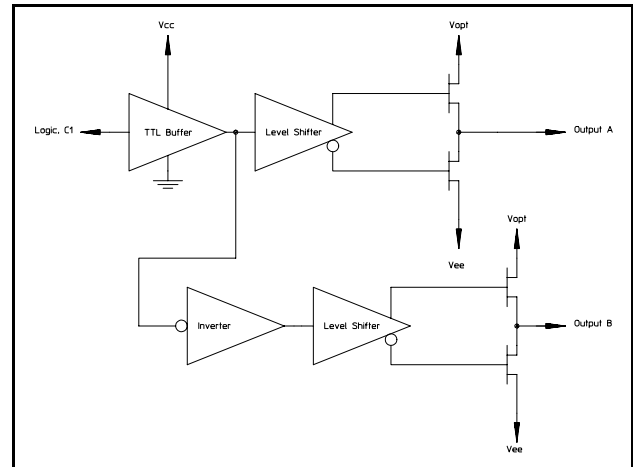
The SWD-109 is a single channel driver used to translate TTL control inputs into gate control voltages for GaAs FET microwave switches and attenuators. High speed analog CMOS technology is utilized to achieve low power dissipation at moderate to high speeds, encompassing most microwave switching applications. The output HIGH level is optionally 0 to +2.0V (relative to GND) to optimize the intermodulation products of the control devices at low frequencies.

## Ordering Information

Part Number	Package
SWD-109 PIN	Bulk Packaging
SWD-109TR	1000 piece reel

Note: Reference Application Note M513 for reel size information.

## Functional Schematic



## Pin Configuration

Pin No.	Function	Pin No.	Function
1	Output A	5	Vee
2	GND	6	Vopt
3	Vcc	7	GND
4	C1, Logic	8	Output B

## Truth Table

Input	Outputs	
	A	B
Logic "0"	$V_{EE}$	$V_{OPT}$
Logic "1"	$V_{OPT}$	$V_{EE}$

### Guaranteed Operating Ranges

Symbol	Parameter <sup>1</sup>	Unit	Min.	Typ.	Max.
V <sub>CC</sub>	Positive DC Supply Voltage	V	4.5	5.0	5.5
V <sub>EE</sub>	Negative DC Supply Voltage	V	-8.5	-5.0	-4.5
V <sub>OPT</sub> <sup>2</sup>	Optional DC Output Supply Voltage	V	0	1.0	2.0
V <sub>OPT</sub> -V <sub>EE</sub>	Negative Supply Voltage Range	V	4.5	6.5	11.0
V <sub>CC</sub> -V <sub>EE</sub>	Positive to negative Supply Range	V	9.0	10.0	14.0
T <sub>A</sub>	Operating Ambient temperature	°C	-40	+25	+85
I <sub>OH</sub>	DC Output Current - High	mA	—	—	-1.0
I <sub>OL</sub>	DC Output Current - Low	mA	—	—	1.0
T <sub>rise</sub> , T <sub>fall</sub>	Maximum Input Rise or Fall Time	ns	—	—	500

1. All voltages are relative to GND.
2. V<sub>OPT</sub> is grounded for most applications. To improve the intermodulation performance and the 1 dB compression point of GaAs control devices at low frequencies, V<sub>OPT</sub> can be increased to between 1.0 and 2.0V. The nonlinear characteristics of the GaAs control devices will approximate performance at 500 MHz. It should be noted that the control current is on the GaAs MMICs will increase when positive controls are applied.

### DC Characteristics over Guaranteed Operating Range

Symbol	Parameter	Test Conditions		Units	Min.	Typ.	Max.
V <sub>IH</sub>	Input High Voltage	Guaranteed High Input Voltage		V	2.0	—	—
V <sub>IL</sub>	Input Low Voltage	Guaranteed Low Input Voltage		V	—	—	0.8
V <sub>IH</sub>	Output High Voltage	I <sub>OH</sub> = -1 mA	V <sub>EE</sub> = Max	V	V <sub>OPT</sub> - 0.1	—	—
V <sub>OL</sub>	Output Low Voltage	I <sub>OL</sub> = 1 mA	V <sub>EE</sub> = Max	V	—	—	V <sub>EE</sub> + 0.1
I <sub>IN</sub>	Input Leakage Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	V <sub>EE</sub> = Min	μA	—	.01	10
I <sub>CC</sub>	Quiescent Supply Current	V <sub>CC</sub> = Max V <sub>OPT</sub> = Min or Max	V <sub>EE</sub> = Min V <sub>IN</sub> = V <sub>CC</sub> or GND	μA	—	—	100
Δ I <sub>CC</sub>	Additional Supply Current, per TTL Input pin	V <sub>CC</sub> = Max	V <sub>IN</sub> = V <sub>CC</sub> - 2.1V	mA	—	—	1.0



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