MADRCC0005

Single Driver for GaAs FET Switches and Attenuators

Rev. V3

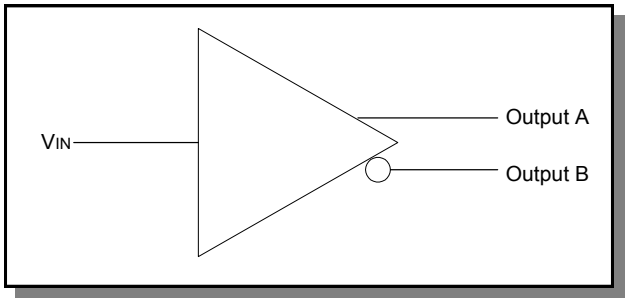
Features

- High Speed CMOS Technology
- Complementary Outputs
- Positive Voltage Control
- Low Power Dissipation
- Plastic SOIC Package for SMT Applications
- Tape and Reel Packaging Available
- Lead-Free SOIC-8 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free “Green” Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of DR65-0109

Description

M/A-COM's MADRCC0005 is a Single channel driver used to translate TTL control inputs into complementary gate 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.

Logic Diagram



Pin Configuration

Pin No.	Function
1	V_{CC}
2	V_{IN}
3	GND
4	GND
5	GND
6	Output A
7	Output B
8	V_{EE}

Ordering Information

Part Number	Package
MADRCC0005	Bulk Packaging
MADRCC0005TR	1000 piece reel

Note: Reference Application Note M513 for reel size information.

Guaranteed Operating Ranges

Symbol	Parameter[1]	Unit	Min	Typical	Max
VCC	Positive DC Supply Voltage	V	4.5	5.0	5.5
V_{EE}	Negative DC Supply Voltage	V	-5.5	-5.0	-4.5
V_{CC}-V_{EE}	Positive to Negative Supply Range	V	9.0	10.0	11.0
T_A	Operating Ambient Temperature	°C	-40	+25	+85
I_{OH}	DC Output Current - HIGH	mA	—	—	-1.0
I_{OL}	DC Output Current - LOW	mA	—	—	1.0
T_{rise}, T_{fall}	Maximum Input Rise or Fall Time	nS	—	—	500

1. All voltages are relative to GND

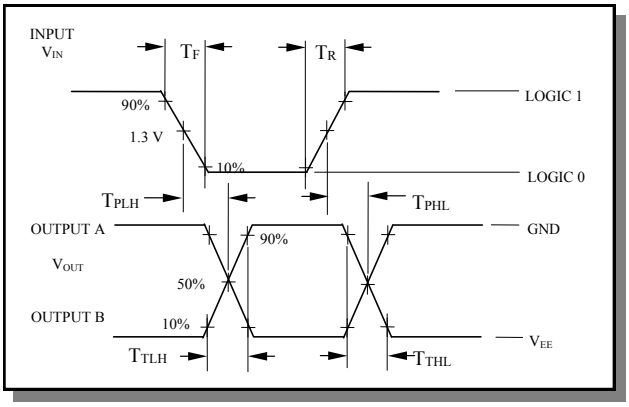
* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

AC & DC Characteristics Over Guaranteed Operating Range

Symbol	Parameter	Test Conditions		Units	Min	Typ	Max
VIH	Input HIGH Voltage	Guaranteed HIGH Input Voltage		V	2.0	—	-
V_{IL}	Input LOW Voltage	Guaranteed LOW Input Voltage		V	-	—	0.8
V_{OH}	Output HIGH Voltage	I_{OH} = -1 mA	V_{EE} = Max	V	- 0.1	—	-
V_{OL}	Output LOW Voltage	I_{OL} = 1 mA	V_{EE} = Max	V	—	—	V_{EE} + 0.1
I_{IN}	Input Leakage Current	V_{IN} = V_{CC} or GND	V_{EE} = Min	µA	-1.0	0	1.0
I_{CC}	Quiescent Supply Current	V_{CC} = Max	V_{EE} = Min V_{IN} = V_{CC} or GND	µA	—	—	400
T_{PHL}, T_{PLH}	Propagation Delay	Guaranteed -40° C to + 85° C		nS	—	—	50
T_{THL}, T_{TLH}	Output Transition Time	Guaranteed -40° C to + 85° C		nS	—	—	25
	Delay Skew, Output A to Output B	Guaranteed -40° C to + 85° C		nS	—	—	8

See Switching Wave Forms for the definition of the switching terms.
Supplies must be by-passed with .01 µF Capacitors.

Switching Waveforms



Absolute Maximum Ratings[2,3]

Parameter	Absolute Maximum
V_{CC}	- .5V to + 6.0 V
V_{EE}	- 6.0 V to - .5 V
V_{CC} - V_{EE}	12 V
V_{IN} [4]	V_{CC} + .5 V
V_{OUT}	V_{EE} - .5 V
Storage Temperature	-65°C to +150°C

2. Exceeding any one or combination of these limits may cause permanent damage to this device.
3. M/A-COM does not recommend sustained operation near these survivability limits.
4. Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

Handling Procedures

Please observe the following precautions to avoid damage:

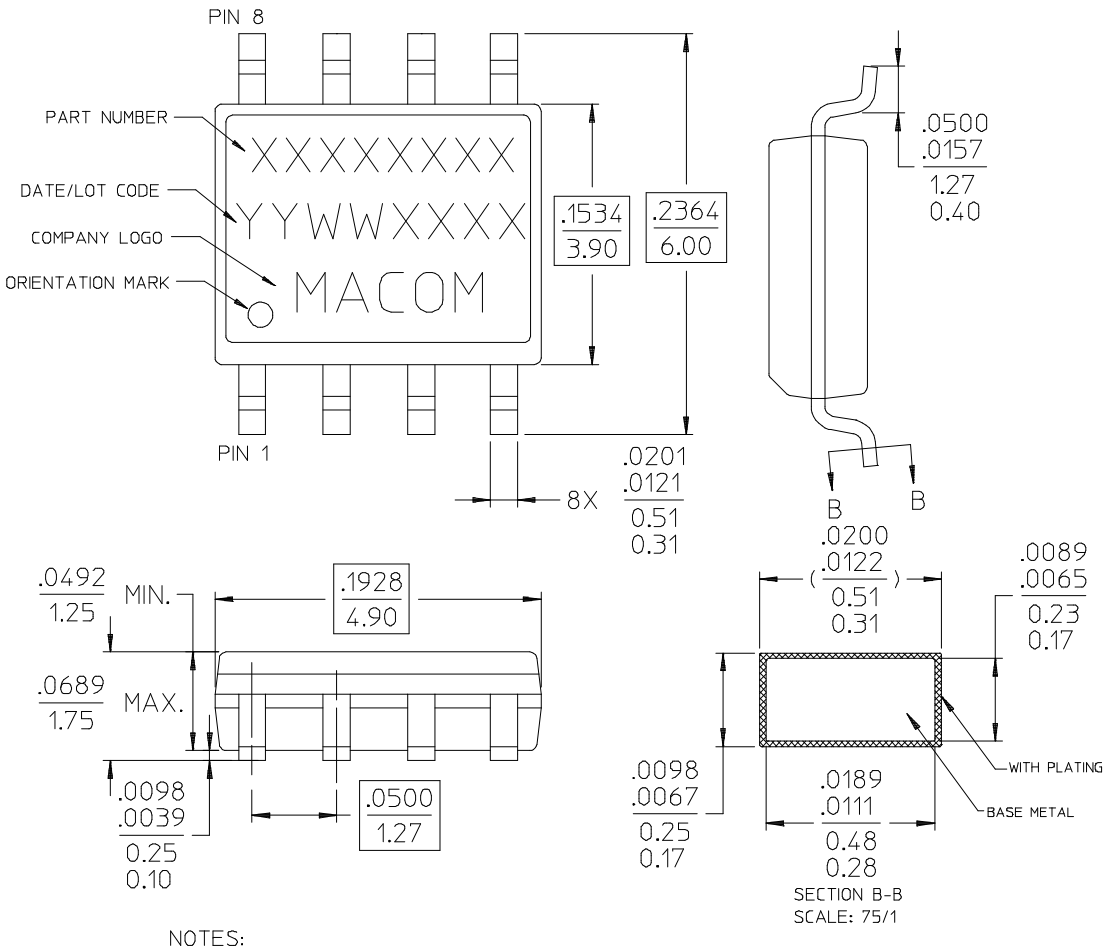
Static Sensitivity

Silicon 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.

Truth Table

Input	Outputs	
V_{IN}	A	B
0	V_{EE}	GND
1	GND	V_{EE}

Lead-Free, SOIC-8†



NOTES:
1. REFERENCE JEDEC MS-012-AA, FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. REFERENCE M538 APPLICATON NOTE FOR FOOTPRINT INFORMATION.
3. ALL DIMENSIONS SHOWN AS INCHES/MM.

† Reference Application Note M538 for lead-free solder reflow recommendations.