

SPDT PIN Diode Driver

**MADR-007097-000100
V2**

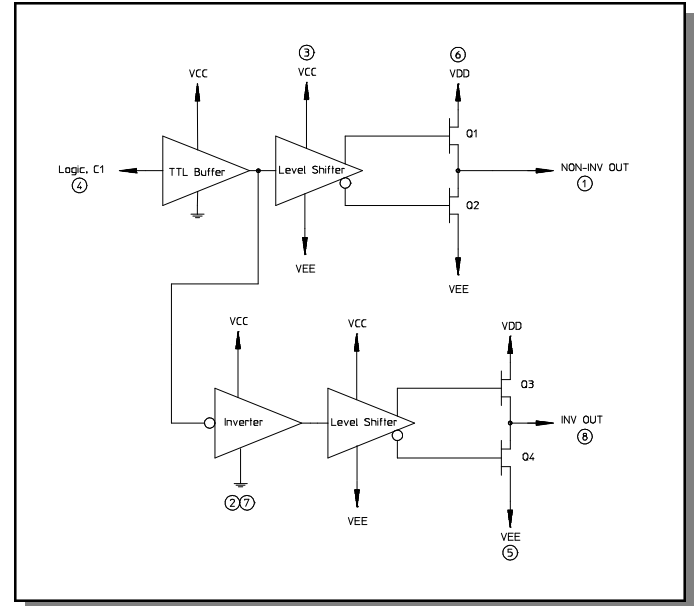
Features

- Moderate Speed, CMOS Technology (25 nS)
- Complementary Outputs
- High Drive Current Capability (± 50 mA)
- Low Current Consumption
- Plastic SOIC Body 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 DR65-0003

Description

M/A-COM's MADR-007097-000100 is a SPDT driver used to interface between TTL logic signals and PIN diode based microwave switches. High-speed analog CMOS technology is used to achieve low power consumption at moderate speeds. Low output resistances allow it to develop high output current spikes to ensure fast switching speeds. The complementary output stages are structured so it can be used as an inverting or non-inverting driver for SPST switches, or as a single input, complementary driver for SPDT switches. The monolithic die is packaged in a SO-8, plastic surface mount package and is available in tape and reel packaging for high volume applications. The MADR-007097-000100 driver is ideally suited for driving M/A-COM's line of HMIC switches.

Functional Block Diagram



Ordering Information

| Part Number | Package |
|--------------------|-----------------|
| MADR-007097-000100 | Bulk Packaging |
| MADR-007097-0001TR | 1000 piece reel |

Note: Reference Application Note M513 for reel size information.
Note: Die quantity varies.

Pin Configuration

| Pin No. | Function | Pin No. | Function |
|---------|-------------------|---------|----------|
| 1 | NON-INV OUT | 5 | VEE |
| 2 | GND | 6 | VDD |
| 3 | VCC | 7 | GND |
| 4 | C1 (TTL Logic) | 8 | INV OUT |

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

Electrical Specifications: $T_A = +25^\circ\text{C}$, $+V_{CC} = +V_{DD} = +5.0\text{V} \pm 5\%$, $V_{EE} = -5.0\text{V} \pm 5\%$, $Z_0 = 50\Omega$

| Parameter | Test Conditions | Units | Min | Typ | Max |
|--|--|----------|-----|------|------|
| Switching Speed ¹ Delay Rt/Ft | Spike current into 10 ohm load 50 % TTL to 90% 10%-90%; 90%-10% | ns | — | 25 | 35 |
| | | ns | — | 2 | 5 |
| PRF | 50% duty cycle | MHz | DC | — | 5 |
| Output Voltage Drop, No Load | With reference to supply voltage | V | — | — | 0.25 |
| DC Output Current Peak Spike Output Current | Load Dependant Spiking Capacitor in Circuit | mA | — | ±30 | ±50 |
| | | mA | — | ±150 | ±200 |
| Output Stage on Resistance | Positive Output FET, Qp Negative Output FET, Qn | Ω | — | 15 | 20 |
| | | Ω | — | 10 | 15 |
| Quiescent Supply Currents | +5V -5V | mA | — | — | 1.5 |
| | | mA | — | — | .2 |
| TTL Levels | Logic "0" @ 20 μA sink current Logic "1" @ 20 μA source current | V | 0 | — | .8 |
| | | V | 2.0 | — | 5.0 |
| Package Dissipation | — | mW | — | — | 200 |

1. Decoupling capacitors (.01 μF) are required on power supply lines.

Absolute Maximum Ratings ^{2,3}

| Parameter | Absolute Maximum |
|------------------------|--|
| VCC | $-0.5\text{V} \leq V_{CC} \leq +7.0\text{V}$ |
| VDD | $-0.5\text{V} \leq V_{DD} \leq V_{CC}$ |
| VEE | $-7.0\text{V} \leq V_{EE} \leq +0.5\text{V}$ |
| C1 (TTL Input Voltage) | -0.5V to $V_{CC} + 0.5\text{V}$ |
| Operating Temperature | -40°C to $+85^\circ\text{C}$ |
| Storage Temperature | -65°C to $+125^\circ\text{C}$ |

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.

Handling Procedures

Please observe the following precautions to avoid damage:

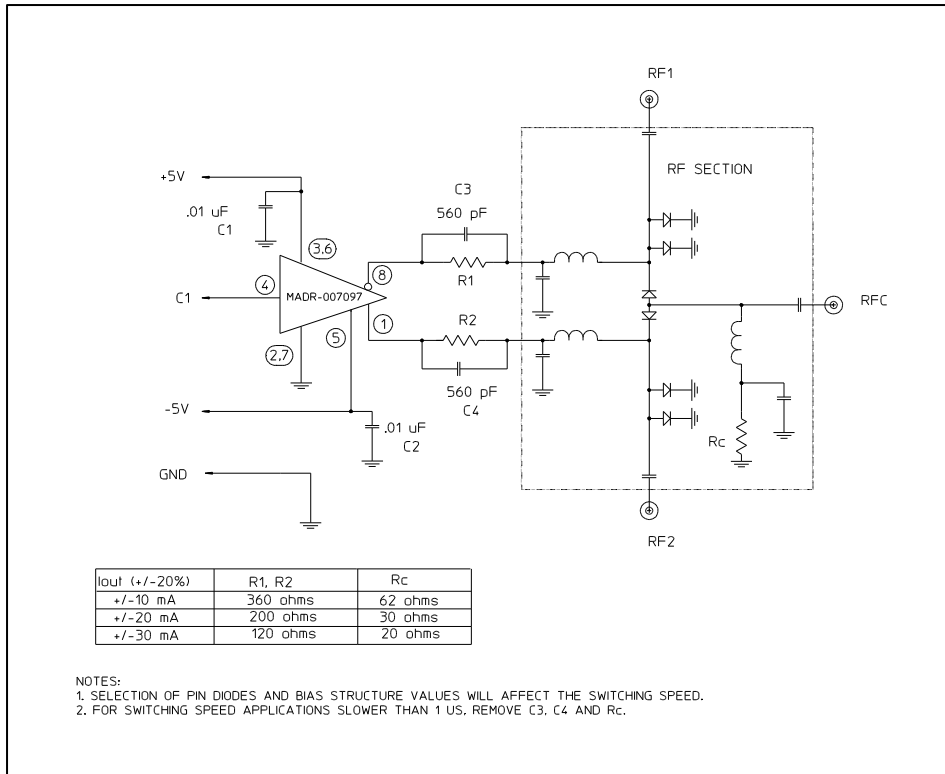
Static Sensitivity

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.

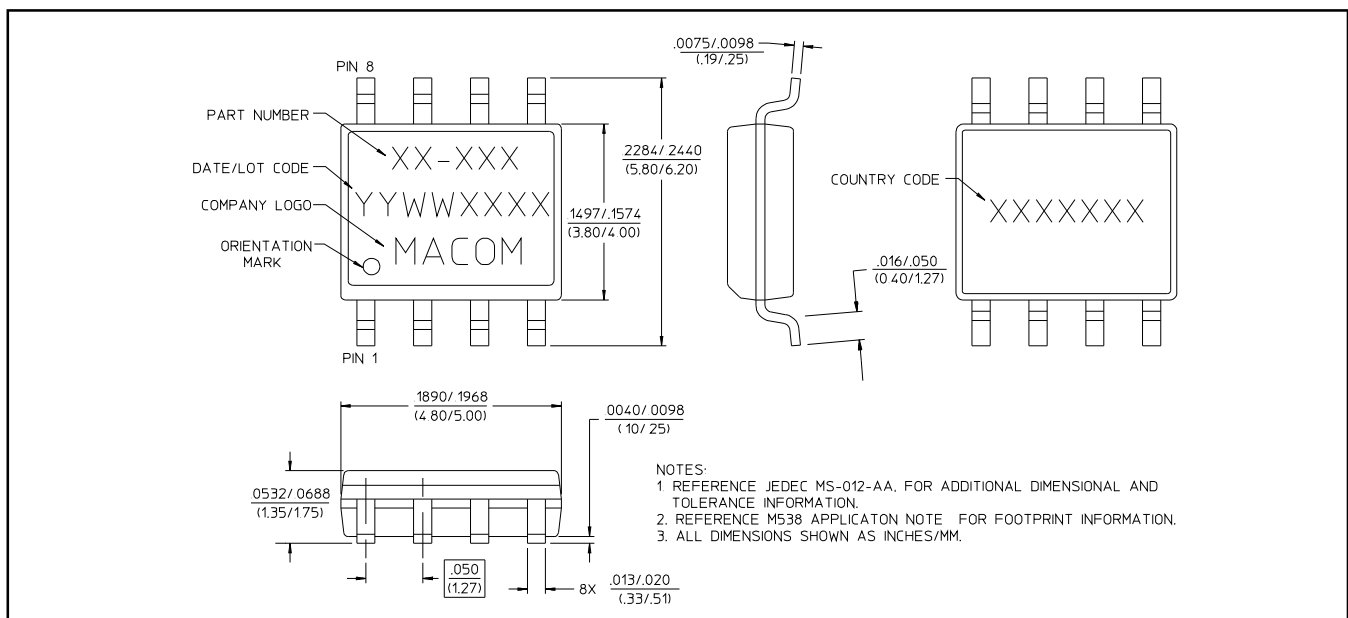
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SPDT Microwave Switch with Driver



Lead-Free, SOIC-8†



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