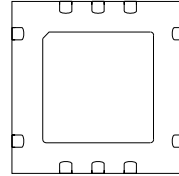



High Speed MOSFET Driver

The DRF101 is a High-Speed Power MOSFET driver with a unique anti-ringing function. It is intended to drive the gate of a power MOSFET with $\geq 3\text{nF}$ gate capacitance to 15V at frequencies up to 60MHz.



FEATURES

- Switching Frequency: DC TO 60MHz
- Low Pulse Width Distortion
- Single Power Supply
- 1V CMOS Schmitt Trigger Input 1V Hysteresis
- RoHS Compliant 
- Output Capable of $\geq 15\text{A RMS}$
- Power Dissipation 80W

TYPICAL APPLICATIONS

- MOSFET Drivers
- Switch Mode Power Amplifiers
- Digital Output Amplifiers
- Pulse Generators
- Laser Diode Drivers
- Ultrasound Transducer Drivers
- Acoustic Optical Modulators

Driver Absolute Maximum Ratings

Symbol	Parameter	Min	Typ	Max	Unit
V_{dd}	Supply Voltage			15	V
IN	Input Single Voltages			-5-V _{dd} to +0.3	
$I_{O\text{PK}}$	Output Current Peak			15	A
$T_{J\text{MAX}}$	Operating Temperature			150	°C

Driver Specifications

Symbol	Parameter	Min	Typ	Max	Unit
V_{dd}	Supply Voltage	8		15	V
IN	Input Voltage	-5		V _{dd} +0.3	
$IN_{(R)}$	Input Voltage Rising Edge		2.5		ns
$IN_{(F)}$	Input Voltage Falling Edge		2.5		
I_{DDQ}	Quiescent Current @ $V_{dd} = 12\text{V}$		15	25	mA
I_O	Output Current		15		A
C_{oss}	Output Capacitance		2500		pF
C_{iss}	Input Capacitance		35		
R_{IN}	Input Parallel Resistance, $V_{in} = 5\text{V}$, $V_{dd} = 12\text{V}$		1		MΩ
V_{thon}	V threshold On, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V Ramp	2.2		3.2	V
V_{thoff}	V threshold Off, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V Ramp	1.0		1.9	
t_r	Rise Time 10% to 90%, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V, $R_L = 1.0\Omega$, $C_L = 3\text{nF}$	1.5	2.5	3.0	ns
t_f	Fall Time 90% to 10%, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V, $R_L = 1.0\Omega$, $C_L = 3\text{nF}$	1.5	2.5	3.0	
$T_{D(ON)}$	On Delay Time, 50% to 50%, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V, $R_L = 1.0\Omega$, $C_L = 3\text{nF}$		18		
$T_{D(OFF)}$	Off Delay Time, 50% to 50%, $V_{dd} = 12\text{V}$, $V_{in} = 0$ to 5V, $R_L = 1.0\Omega$, $C_L = 3\text{nF}$		18		

Output Characteristics

DRF101

Symbol	Parameter	Min	Typ	Max	Unit
C_{out}	Output Capacitance		2500		pF
R_{out}	Output Resistance		0.5	1	Ω
L_{out}	Output Inductance	2	3	4	nH
F_{MAX}	Operating Frequency @ $CL=3nF, RL = 50\Omega$			60	MHz

MOSFET Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{gs} = 0$ $V_{DS} = 50V$ $f = 1 \text{ MHz}$		35		pF
C_{oss}	Output Capacitance			2500		

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance Junction to Case		1.5		$^{\circ}C/W$
T_j, T_{STG}	Operating and Storage Temperature		-55 to 150		$^{\circ}C$
P_{DC}	Maximum Power Dissipation @ $T_C = 25^{\circ}C$		80		W

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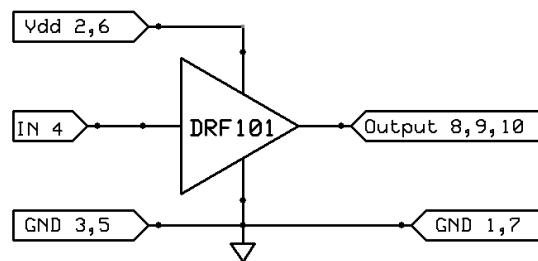


Figure 1, DRF101 Simplified Circuit Diagram

The Simplified DRF101 Circuit diagram is illustrated in Figure 1. DRF101 Anti-ring function is always on and V_{in} is the control input signal and it is paired with SG, the signal GND DRF101 has internal ESD protection and Schmitt Trigger circuit,

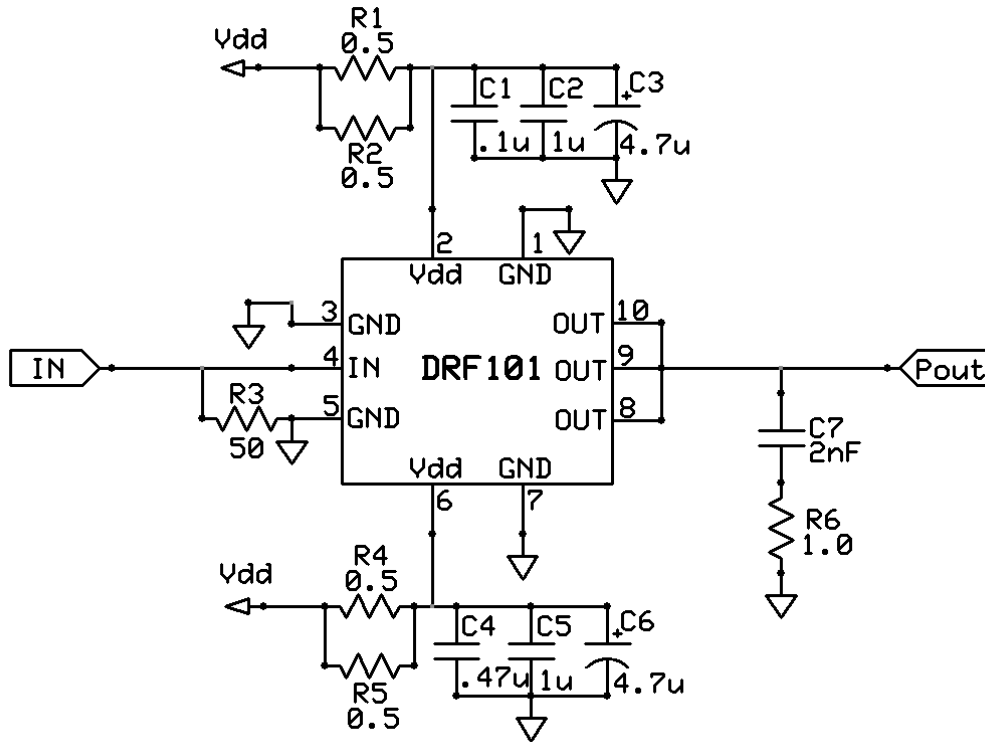
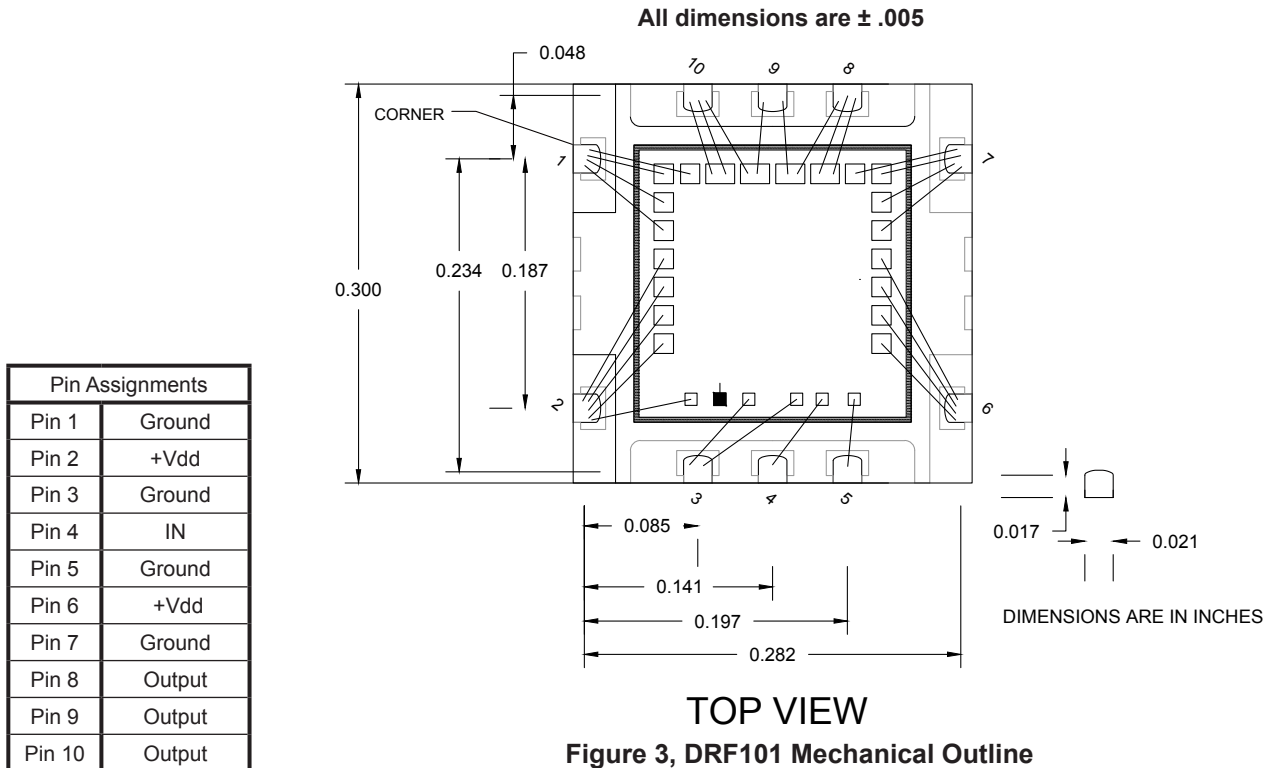


Figure 2, DRF101 Test Circuit

The Test Circuit illustrated in Figure 2 is used to evaluate the DRF101. The input control signal is applied to the DRF101 via IN(4) and SG. Vdd is applied to pin 2/6(+Vdd) and GND. Output is measured at pin 8/9/10 (output) across the RL and the CL.



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