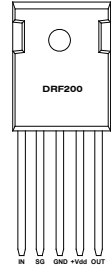



MOSFET Driver

The DRF200 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 15MHz. It can produce output currents $\geq 8\text{A}$ RMS, while dissipating 60W.



FEATURES

- Switching Frequency: DC TO 30MHz 50 Ω Load
- Switching Frequency: DC TO 15MHz 3nF Load
- Switching Speeds 10ns 50 Ω , 15ns 3NF Load
- Low Pulse Width Distortion, $\leq 2\%$
- Single Power Supply
- 1V CMOS Schmitt Trigger Input $\sim 1\text{V}$ Hysteresis
- Current Output Pk 8A RMS
- Power Dissipation Capability 60W
- RoHS compliant 

TYPICAL APPLICATIONS

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

Driver Absolute Maximum Ratings

Symbol	Parameter	Ratings	Unit
V_{DD}	Supply Voltage	18	V
IN	Input Single Voltage	- .7 to +5.5	
$I_{O\text{PK}}$	Output Current Peak	8	A
$T_{J\text{MAX}}$	Operating Temperature	175	$^{\circ}\text{C}$

Driver Specifications

Symbol	Parameter	Min	Typ	Max	Unit
V_{DD}	Supply Voltage	8	15	18	V
IN	Input Voltage	3		5.5	
$IN_{(R)}$	Input Voltage Rising Edge		3		ns
$IN_{(F)}$	Input Voltage Falling Edge		3		
I_{DDQ}	Quiescent Current		2		mA
I_O	Output Current		8		A
C_{OSS}	Output Capacitance		2500		pF
C_{ISS}	Input Capacitance		3		
R_{IN}	Input Parallel Resistance		1		m Ω
$V_{T(ON)}$	Input, Low to High Out	0.8		1.1	V
$V_{T(OFF)}$	Input, High to Low Out	1.9		2.2	
T_D	Prop. Delay		35		ns
t_r	Rise Time		10		
t_f	Fall Time		10		

Output Characteristics

DRF200G

Symbol	Parameter	Min	Typ	Max	Unit
R_{out}	Output Resistance		1		Ω
F_{MAX}	Operating Frequency CL=3nF + 50 Ω	15			MHz
F_{MAX}	Operating Frequency RL=50 Ω	30			

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.4	$^{\circ}\text{C}/\text{W}$
$R_{\theta JHS}$	Thermal Resistance Junction to Heat Sink	2.2	
T_{JSTG}	Storage Temperature	-55 to 150	$^{\circ}\text{C}$
T_{JMAX}	Maximum Junction Temperature	175	
P_D	Maximum Power Dissipation @ $T_{SINK} = 25^{\circ}\text{C}$	>60	W
P_{DC}	Total Power Dissipation @ $T_C = 25^{\circ}\text{C}$	>100	

Microsemi reserves the right to change, without notice, the specifications and information contained herein.

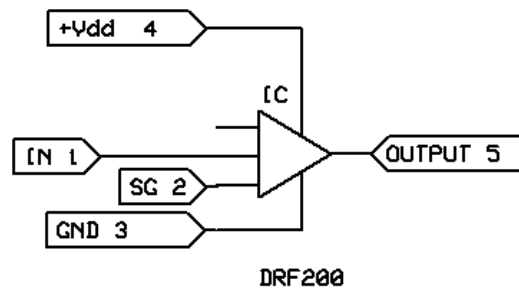


Figure 1, DRF100 Simplified Circuit Diagram

The Simplified DRF100 Circuit Diagram is illustrated above. The Schmitt trigger input (pin 1), Kelvin signal ground (pin 2) and the Anti-Ring Function, provide improved stability and control. The IN pin (1) is applied to a Schmitt Trigger. The signal is then applied to the intermediate drivers and level shifters; this section contains proprietary circuitry designed specifically for ring abatement. The P channel and N channel power drivers provide the high current to the OUTPUT (pin 5.)

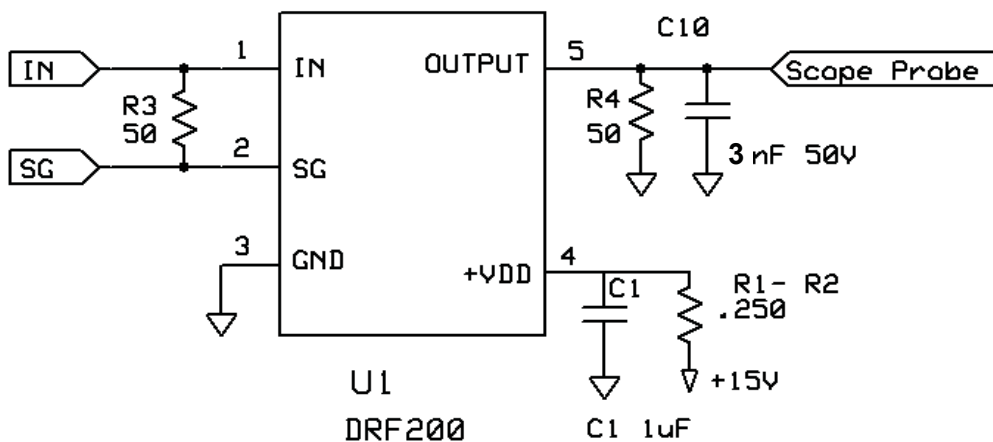
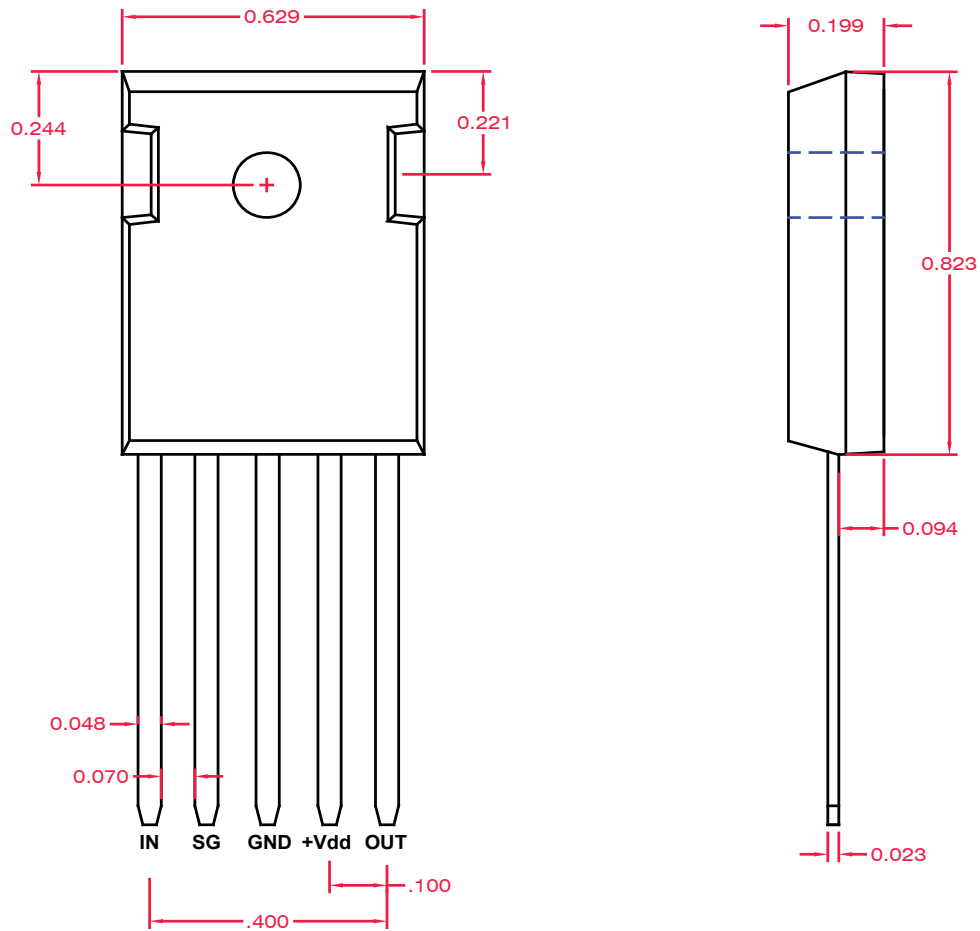


Figure 2, DRF200 Test Circuit

The Test Circuit illustrated above was used to evaluate the DRF200 (available as an evaluation Board DRF2XX / EVALSW.) The input control signal is applied to the DRF200 via IN(1) and SG(2) pins using RG188. This provides excellent noise immunity and control of the signal ground currents.

The +V_{DD} input (4) is by-passed by C1. The capacitor used for this function must be capable of supporting the RMS currents and frequency of the gate load.

Pin Assignments	
Pin 1	IN
Pin 2	SG
Pin 3	Ground
Pin 4	+Vdd
Pin 5	Out



All dimensions are $\pm .005$

Figure 3, DRF200 Mechanical Outline