Dual +5V/GND/-30V GaN FET Switch Driver

DATASHEET
MDD000N300Q16A

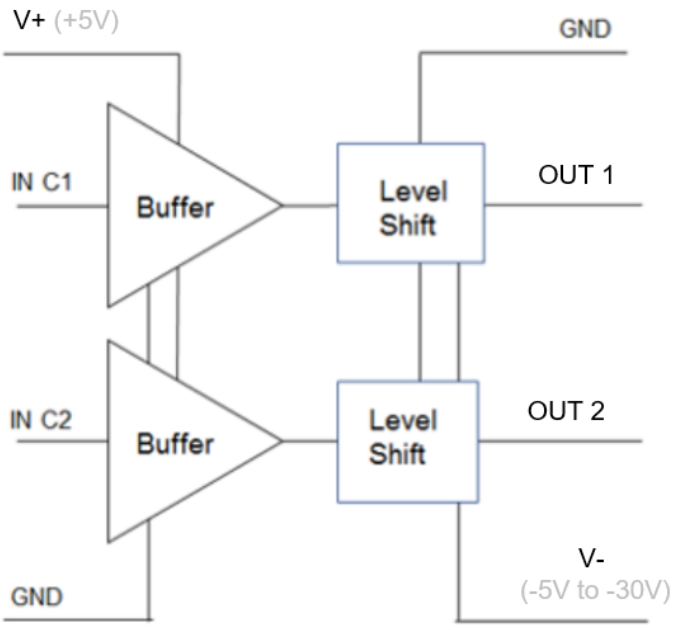
GENERAL DESCRIPTION

The MDD000N300Q16A is a driver featuring high speed and wide negative voltage range suited for driving SP2T GaN monolithic switch. The driver is compatible with 3.3/5.0 V CMOS logic and has 2 independent channels to supply each bias line 0V and -5 to -30V to bias the GaN FET on and off.

FEATURES

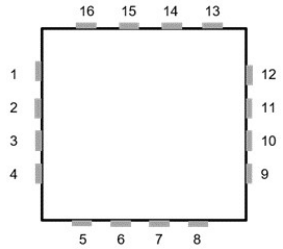
- Ultra high speed <20nS
- Independent control for all OFF switch condition
- Drives capacitive loads fast
- Compatible with CMOS FPGA outputs
- Compatible with TGS2353-2

FUNCTION BLOCK DIAGRAM



MECHANICAL

The MDD000N300Q16A consists of monolithic silicon BJT IC wire-bonded to a laminate substrate and sealed with a dam and fill process. This forms a 4 x 4 mm 16 lead QFN SMT assembly designed for integration into an integrated microwave assembly.



PIN CONNECTIONS

Pins 2, 8, 11 (Vneg) are not internally connected, need connection

1	OUT A
2	-5V to-30V
3	C1
4	Ground
5	C2
6	NC
7	NC
8	-5V to-30V
9	NC
10	Output B
11	-5V to-30V
12	+5V
13	NC
14	NC
15	NC
16	NC

TRUTH TABLE

IN C1	IN C2	OUT 1	OUT 2
0	0	-V	-V
0	1	-V	0V
1	0	0V	-V
1	1	0V	0V

ELECTRICAL SPECIFICATIONS

Vpos +5V, GND GND, Vneg -30V, TEMP 25C, PRR 0.5MHz

	SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT							
	VI_hi	Voltage Input High	CMOS	2.8	4	5.5	V
	VI_low	Voltage Input Low	CMOS	0	.8	1.2	V
OUTPUT							
	VO_hi	Voltage Out High	open load	-0.1	0	0.2	V
	VO_low	Voltage Out Low	open load	-29.4	-29.5	-30	V
	IO_hi	Current Out High	steady state into 1V diode load		5		mA
	IO_low	Current Out Low	steady state into 1V diode load common arm resistor		-5		mA
	Iopk	Current Peak Output	sink		-100		mA
SUPPLY							
	IQC_pos	Quiescent Current Positive	0.5MHz 50% duty cycle		1		mA
	IQC_neg	Quiescent Current Negative	0.5MHz 50% duty cycle		-1		mA
DYNAMIC							
	Trise	Time Rise			3		nS
	Tfall	Time Fall			3		nS
	Td_rise	Delay Rise			10		nS
	Td_fall	Delay Fall			10		nS
	TSW_rise	Switching Speed Rise	10pF load		15		nS
	TSW_fall	Switching Speed Fall	10pF load		15		nS
	PRR	Pulse Repetition Rate	Max, 10pF load		0.5		MHz

MECHANICAL SPECIFICATIONS

DRAWING NOT TO SCALE. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE NOTED.

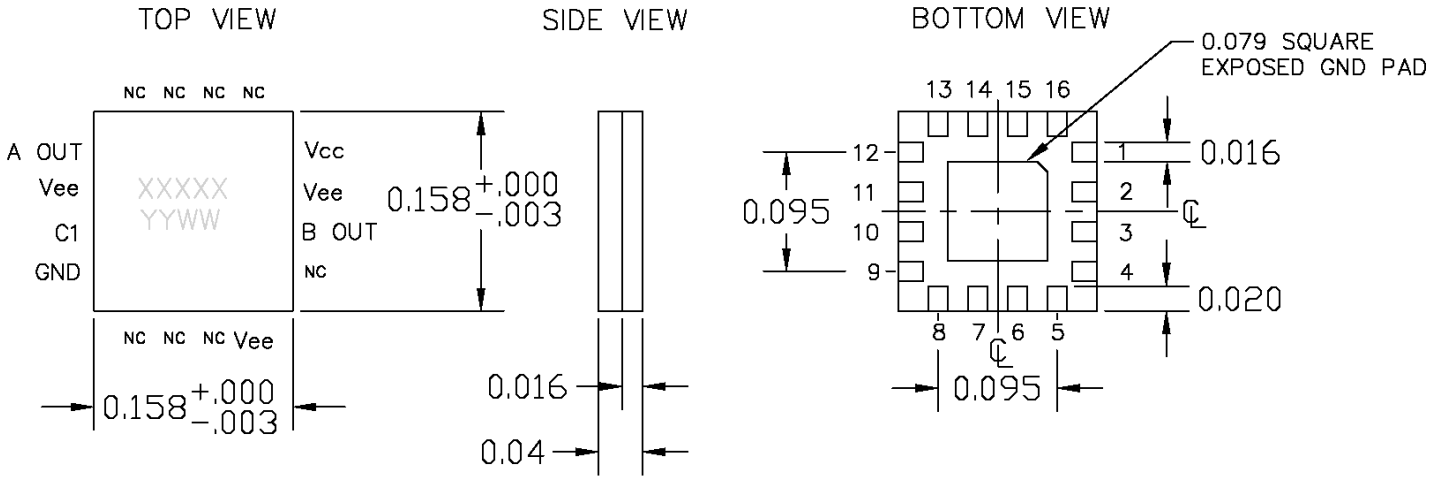
Type: Board

Length .158 in NOM; Width .158 in NOM; Height .040 in MAX

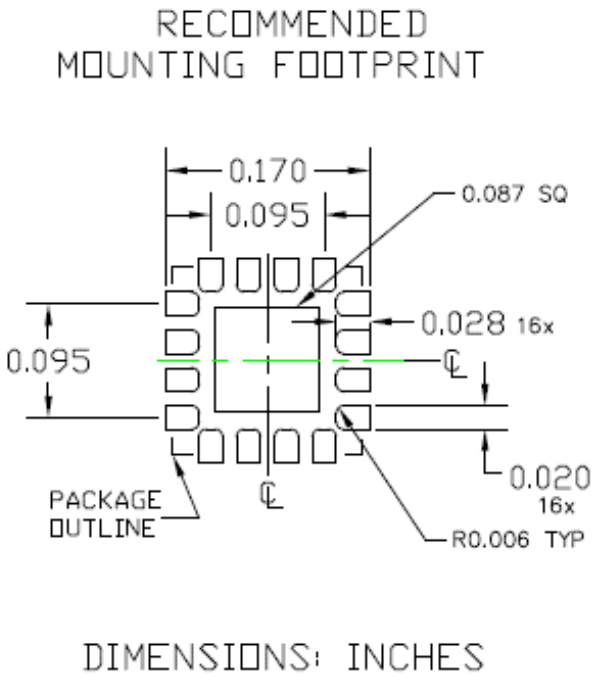
MARKING SPECIFICATIONS

Part Number: E7A13

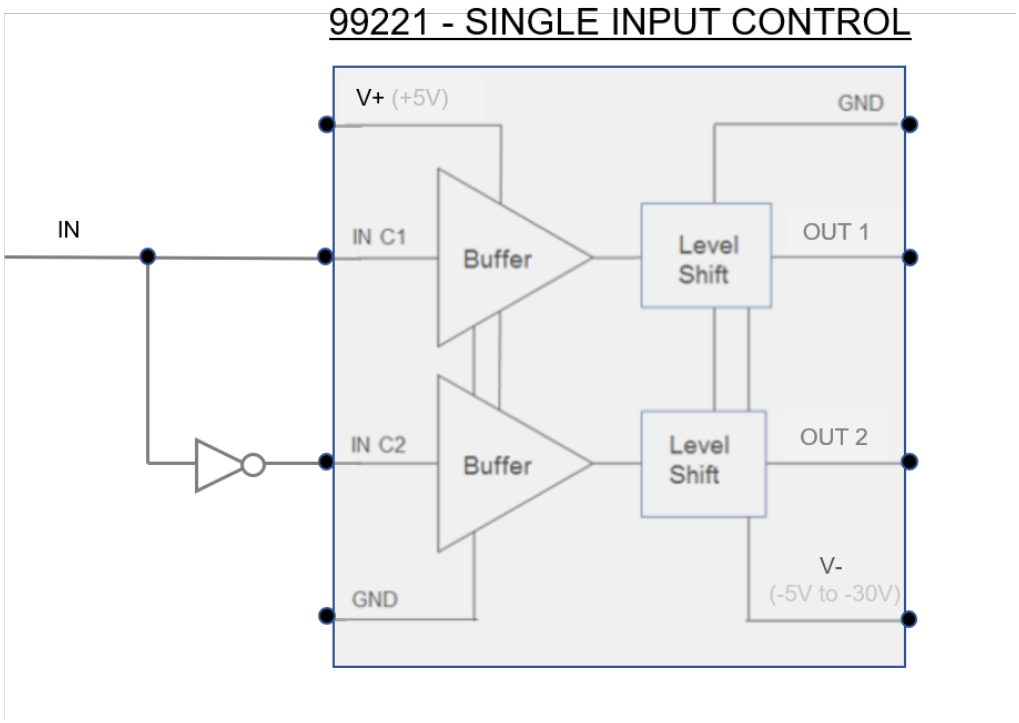
Date Code: YYWW



FOOTPRINT

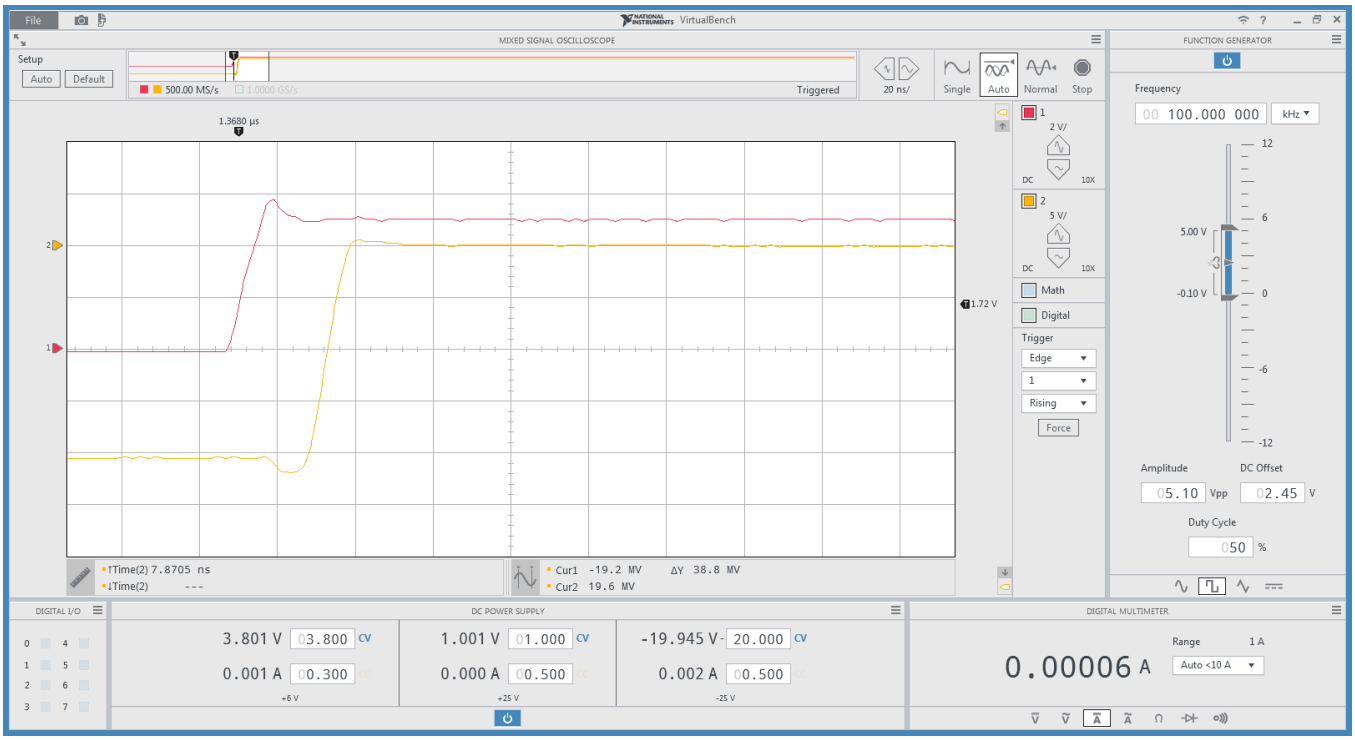


TYPICAL APPLICATION



WAVEFORM

20V Rise Time graph. X=5V/div, Y=20nS/div



WAVEFORM

20V Fall Time graph. X=5V/div, Y=20nS/div