

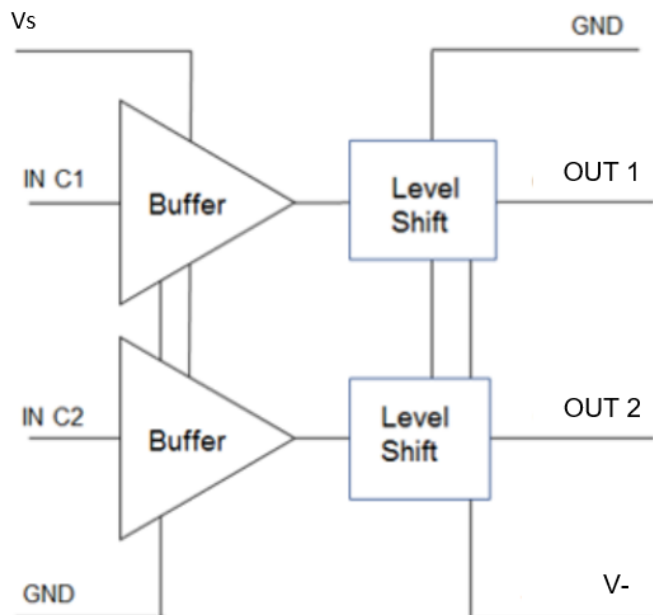
GENERAL DESCRIPTION

The MDD000N400Q16A is a driver featuring high speed and wide negative voltage range suited for driving SP2T GaN monolithic switch. The driver is compatible with 3.3V/5.0 V CMOS logic and has 2 independent channels to supply each bias line 0V and -5V to -40V 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 TGS2352-2, TGS2353-2, TGS2355, QPC1005, QPC1006

FUNCTION BLOCK DIAGRAM

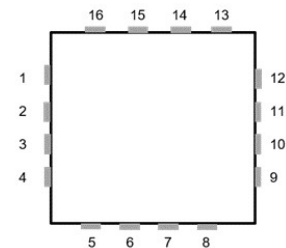


MECHANICAL

The MDD000N400Q16A consists of monolithic silicon BJT IC wire-bonded to a laminate substrate and encapsulated using a transfer mold process. This forms a 4 x 4 mm 16 lead QFN SMT assembly designed for integration into an integrated microwave assembly.

ECCN Code EAR99

MDD000N400Q16A is RoHS 3 (EU 2015/863) compliant.



PIN CONNECTIONS

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

- | | |
|----|------------------|
| 1 | OUT 1 |
| 2 | V- (-5V to -40V) |
| 3 | IN C1 |
| 4 | Ground |
| 5 | IN C2 |
| 6 | NC |
| 7 | NC |
| 8 | V- (-5V to -40V) |
| 9 | NC |
| 10 | OUT 2 |
| 11 | V- (-5V to -40V) |
| 12 | Vs (+3.3V/+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 -40V, TEMP 25C, PRR 250KHz

	SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT							
	VI_hi	Voltage Input High	TTL/CMOS	2.8	4	5.5	V
	VI_low	Voltage Input Low	TTL/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	-39.4	-39.5	-40	V
	IO_hi	Current Out High	steady state into 1V diode load			20	mA
	IO_low	Current Out Low	steady state into 1V diode load common arm resistor			-20	mA
	lopk	Current Peak Output	sink		-100		mA
SUPPLY							
	IQ_pos	Quiescent Current Positive	Steady State		1		mA
	IQ_neg	Quiescent Current Negative	Steady State		-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		20		nS
	TSW_fall	Switching Speed Fall	10pF load		20		nS
	PRR	Pulse Repetition Rate	Max, 10pF load			250	KHz

ESD Sensitivity HBM Class1B

MECHANICAL SPECIFICATIONS

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

MSL RATING 4 (refer to JEDEC STD 033B)

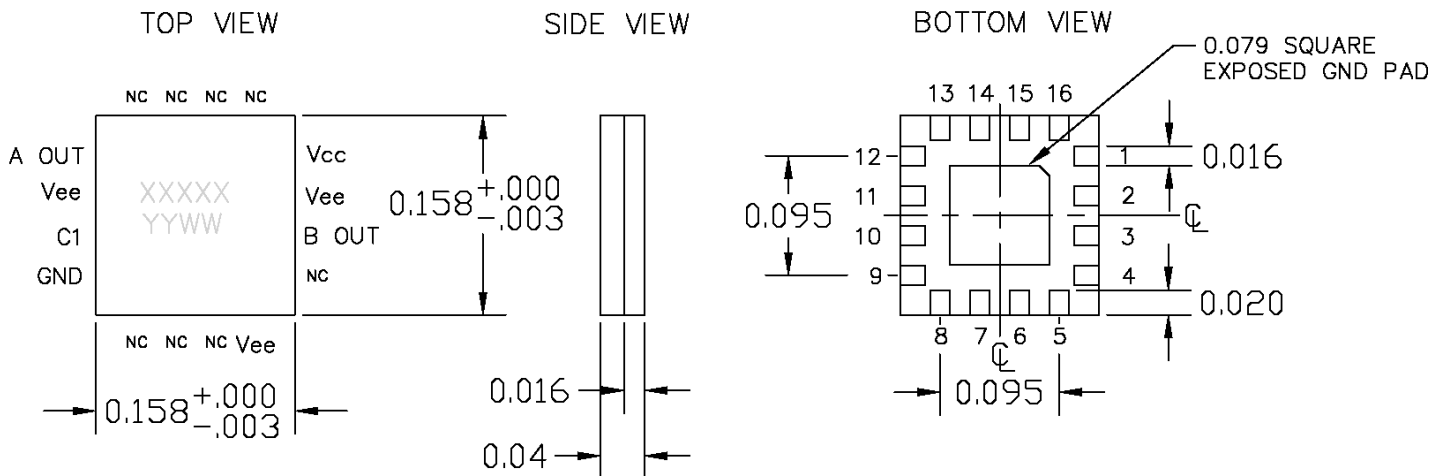
Shipping Packaging
4" Waffle Packs/trays

Type: Board; Lead Finish: ENIG
Length .158 in NOM; Width .158 in NOM; Height .040 in MAX

MARKING SPECIFICATIONS

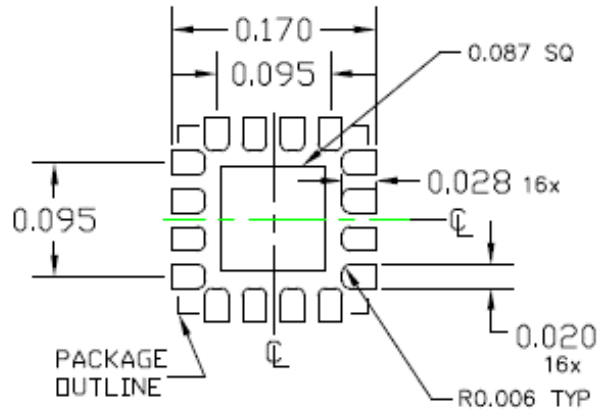
Part Number: E7A13

Date Code: YYWW



FOOTPRINT

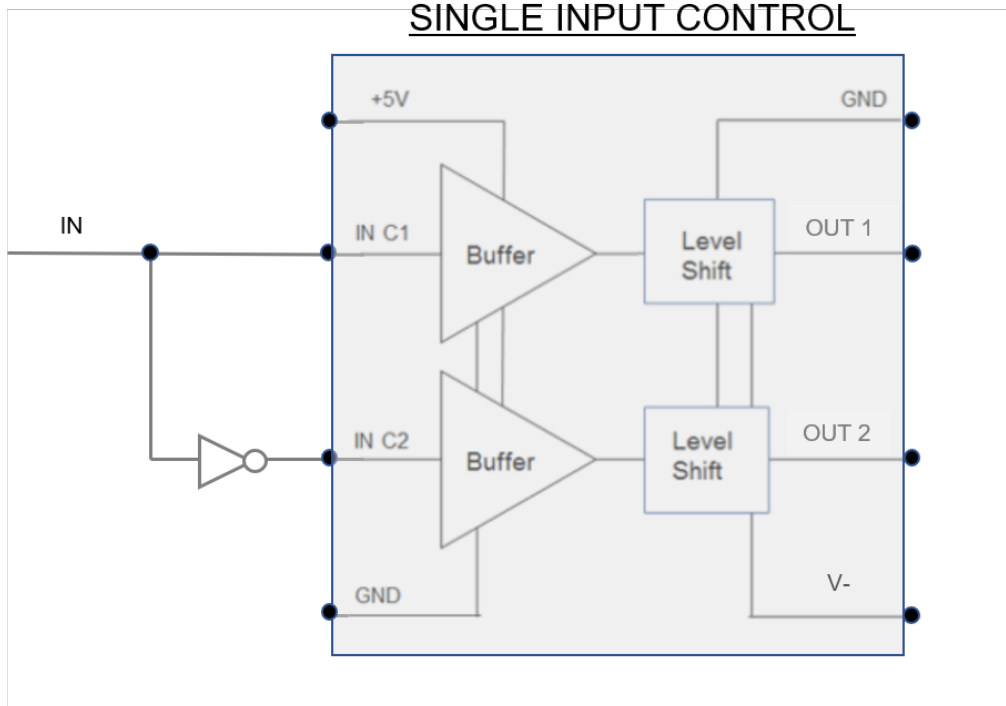
RECOMMENDED
MOUNTING FOOTPRINT



DIMENSIONS: INCHES

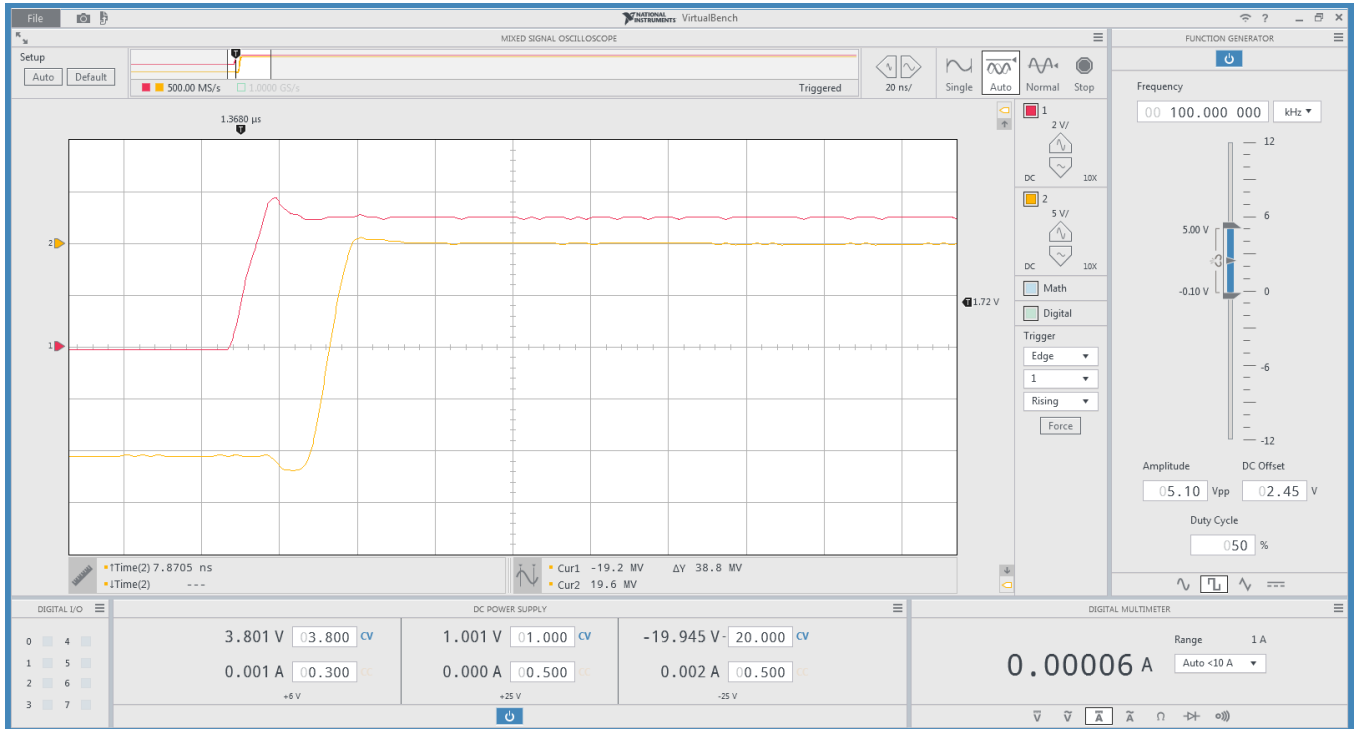
TYPICAL APPLICATION

SINGLE INPUT CONTROL



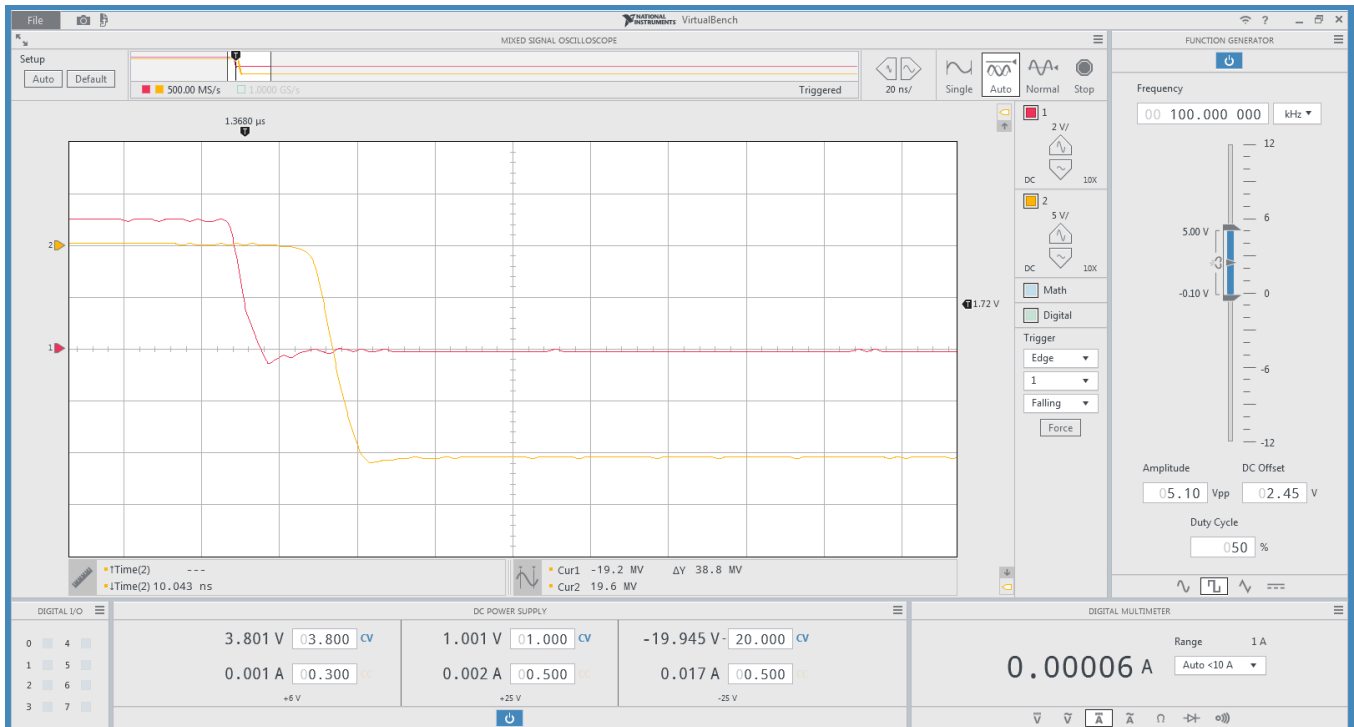
WAVEFORM

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



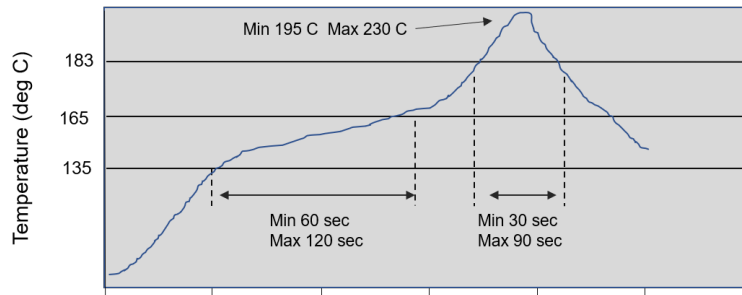
WAVEFORM

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

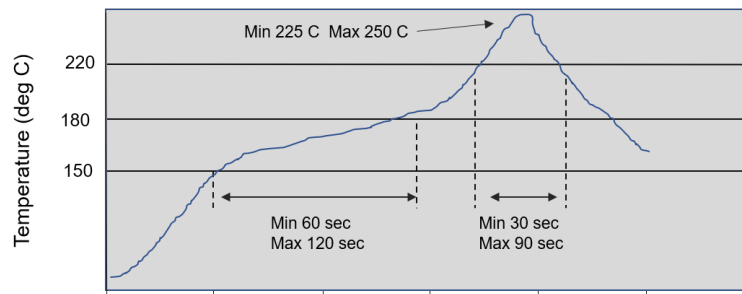


SOLDER PROFILE

SnPb Temperature Profile example



Pb-Free Temperature Profile example



APPLICATIONS INFO

Thermal Rise at 200kHz PRR continuous and 2% duty cycle. (21.5°C rise)

