

## GENERAL DESCRIPTION

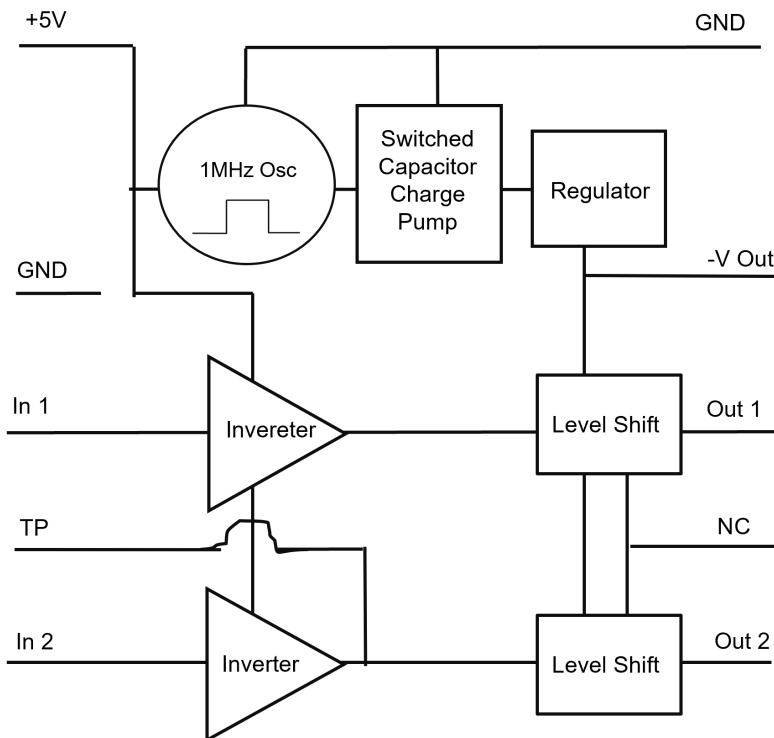
The MDD000N400D10A is a driver featuring high speed and outputs suited for driving SP2T GaN monolithic switch. The driver has integrated charge pump to generate -40V from +5V supply.

The driver is compatible with 3.3V/5.0 V CMOS logic and has 2 independent channels to supply each bias line 0V and -40V to bias the GaN FET on and off.

## FEATURES

- Ultra high speed <20nS
- Independent control for all OFF switch conditions
- single +5V supply required
- Integrated -40V charge pump
- Compatible with TGS2352-2, TGS2353-2, QPC2040, QPC1005, QPC2511

## FUNCTION BLOCK DIAGRAM

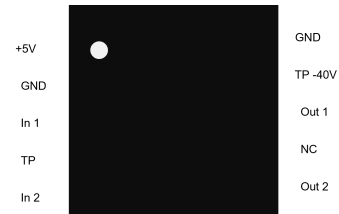


## MECHANICAL

The MDD000N400D10A consists of multiple components mounted to a laminate substrate and encapsulated with a low moisture epoxy compound using a transfer mold process. This forms a .275 square 10 lead DFN SMT assembly designed for easy integration into an integrated microwave assembly.

ECCN Code EAR99

MDD000N400D10A is RoHS 3 (EU 2015/863) compliant.



## PIN CONNECTIONS

Connect 1 uF capacitor from PIN 9 to ground for minimize ripple

For single input mode connect control logic to pin 5 and connect Pin 3 to Pin 4.

- |    |                 |
|----|-----------------|
| 1  | +5V             |
| 2  | Ground          |
| 3  | IN 1            |
| 4  | Logic Testpoint |
| 5  | IN 2            |
| 6  | OUT 2           |
| 7  | NC              |
| 8  | OUT 1           |
| 9  | Testpoint -40V  |
| 10 | Ground          |

## 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, TEMP 25C, PRR 200KHz

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>ENVIRONMENTAL</b>						
Enviro	Operating Temperature		-45		115	Deg C
Enviro	Storage Temperature		-55		150	Deg C
<b>INPUT</b>						
VI_hi	Logic Input High	TTL/CMOS	2.8	4	5.0	V
VI_low	Logic Input Low	TTL/CMOS	0	.8	1.2	V
<b>OUTPUT</b>						
VO_hi	Voltage Out High	open load	-0.1	0	0.2	V
VO_low	Voltage Out Low	open load	-39.4	-40	-41.8	V
IO_hi	Current Out High	steady state into GaN switch			4	mA
IO_low	Current Out Low	steady state into GaN switch			-4	mA
lopk	Current Peak Output	sink		-100		mA
<b>SUPPLY</b>						
V pos	Voltage Positive		4.75	5	5.25	
IQC_pos	Quiescent Current Positive	Steady State		25		mA
<b>DYNAMIC</b>						
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			200	KHz

ESD Sensitivity HBM Class1B

**MECHANICAL SPECIFICATIONS**

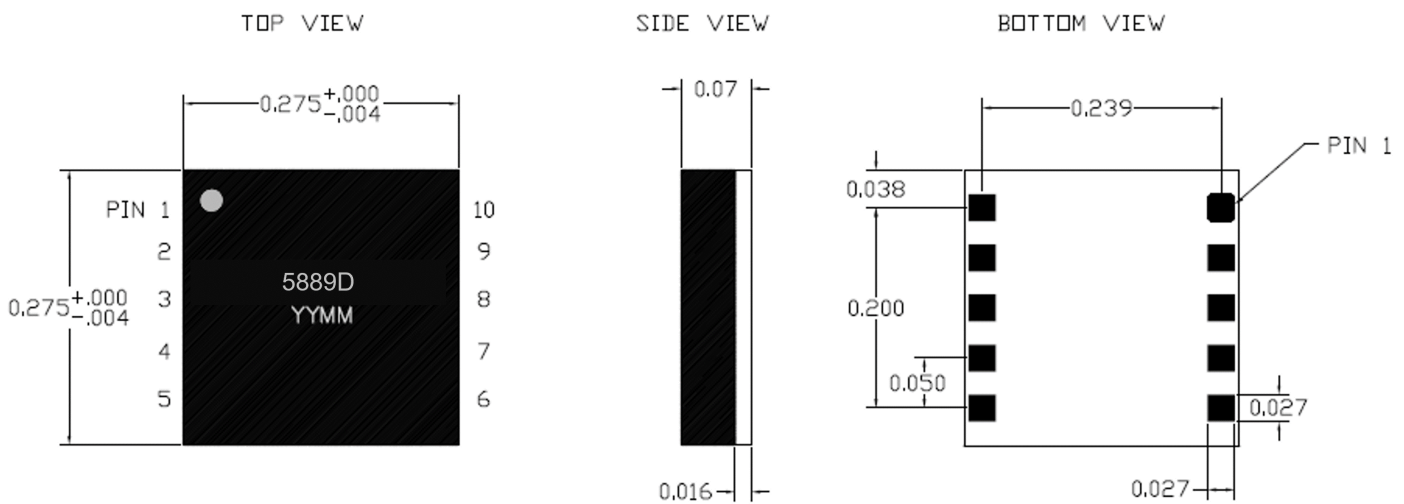
DRAWING NOT TO SCALE. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE NOTED.

MSL RATING 4 (refer to JEDEC STD 033B)

Shipping Packaging  
4" Waffle Packs/trays

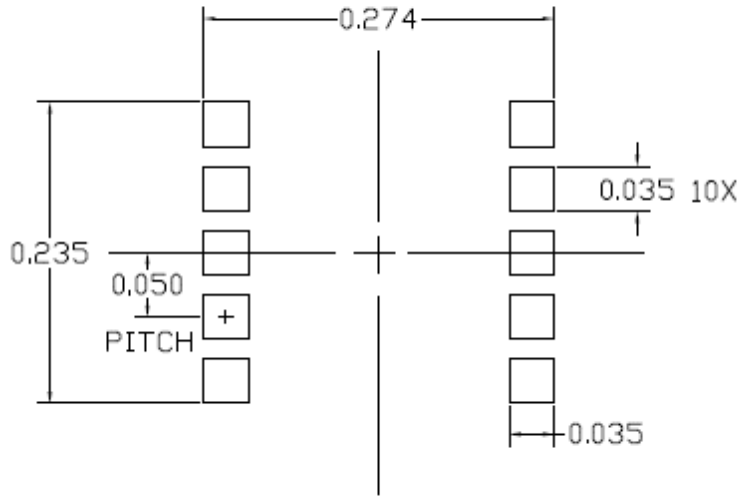
**MARKING SPECIFICATIONS**

Part Number: 5889D  
Date Code: YYWW



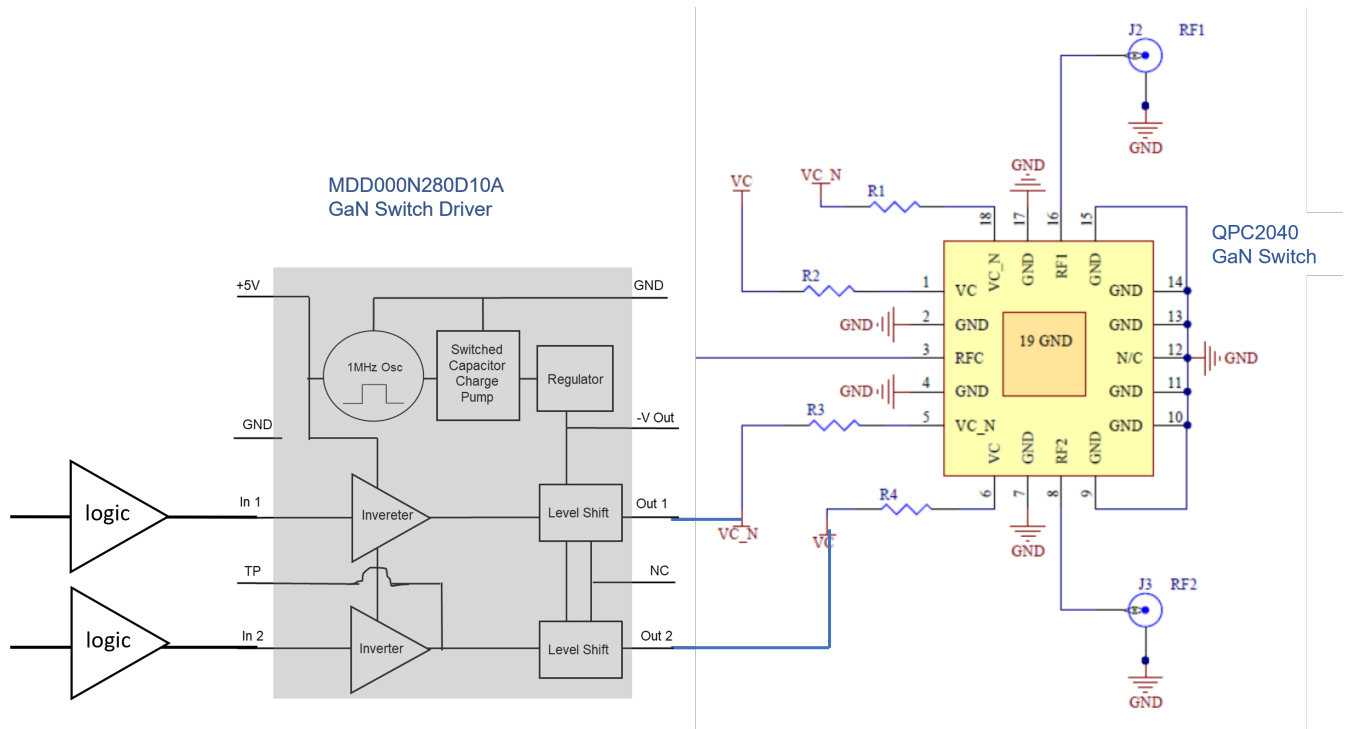
FOOTPRINT

RECOMMENDED  
MOUNTING FOOTPRINT



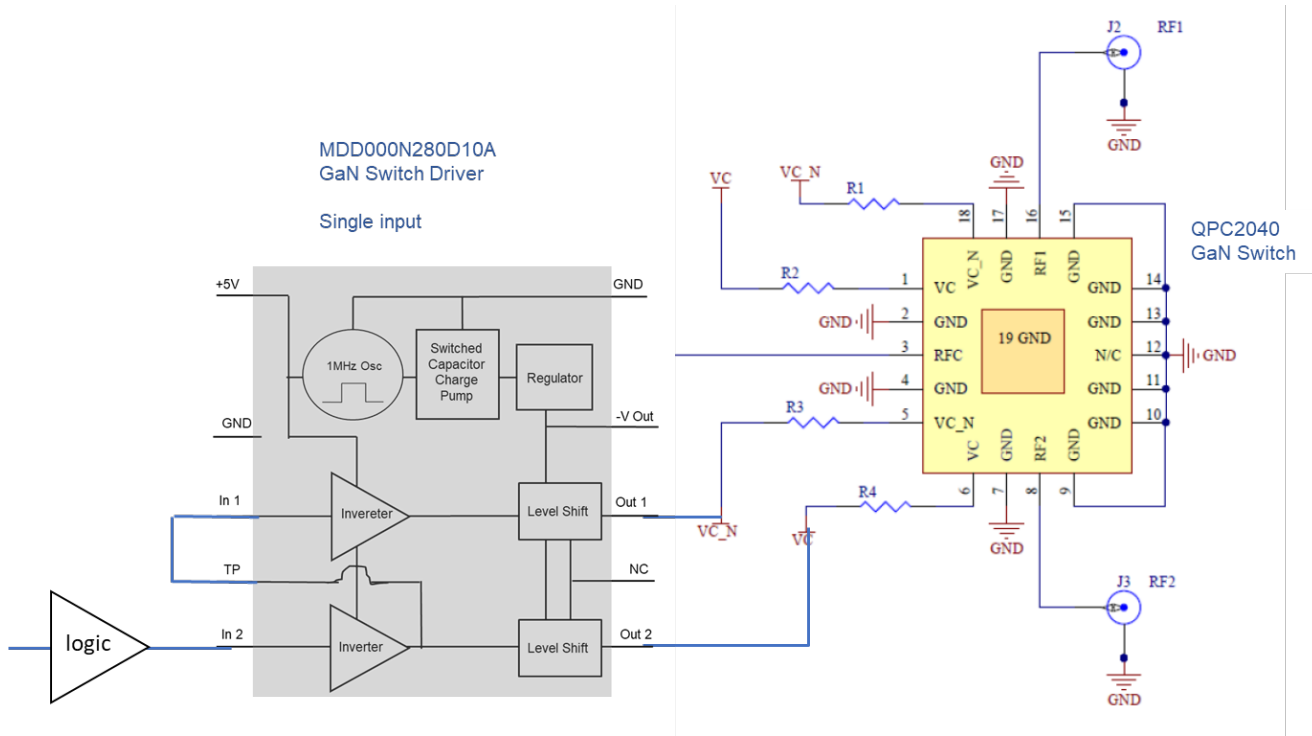
DIMENSIONS: INCHES

TYPICAL APPLICATION



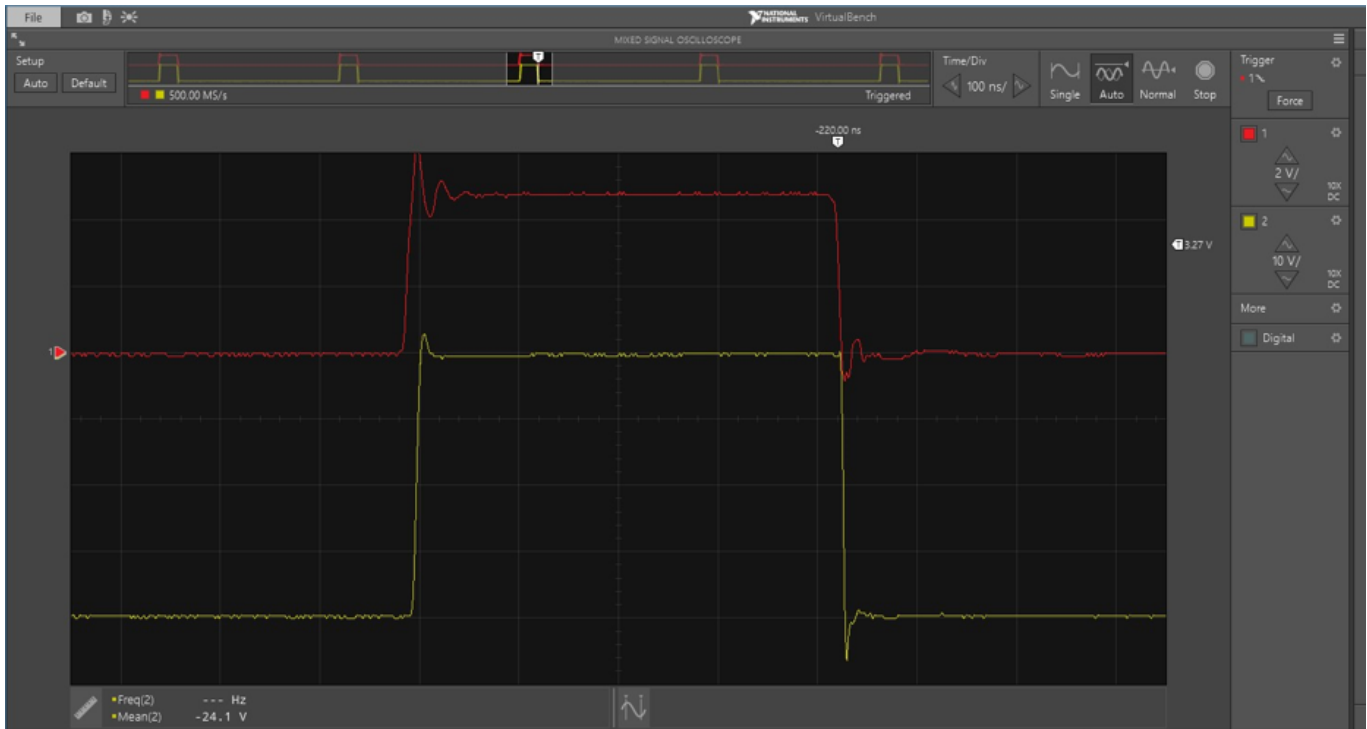
## TYPICAL APPLICATION

single input



## WAVEFORM

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



**SOLDER PROFILE**

Sn63Pb37 reflow profile

