

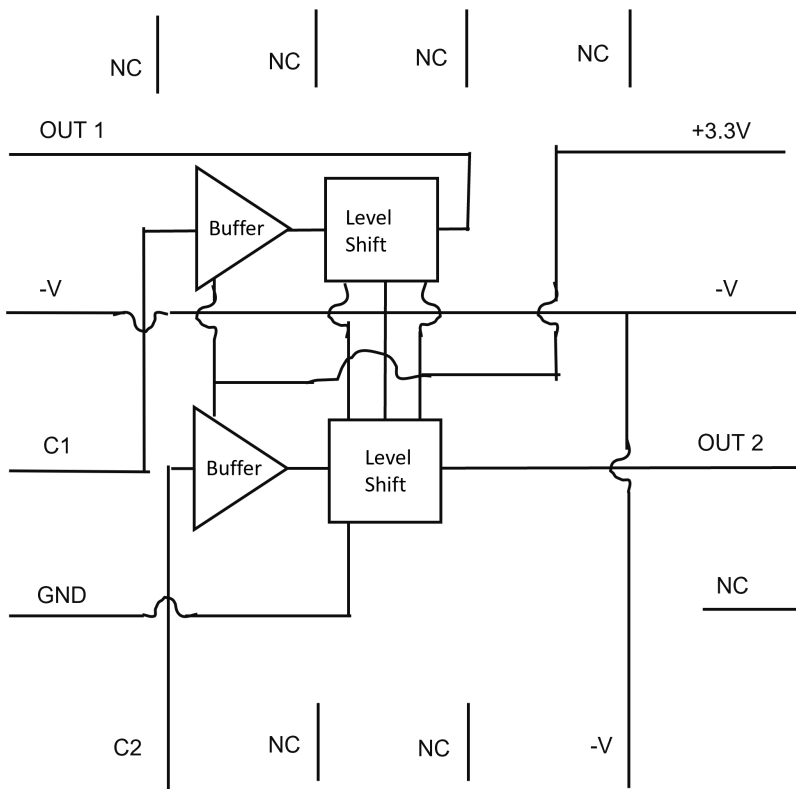
## GENERAL DESCRIPTION

The MDD000N400Q16B 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

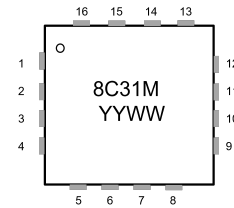


## MECHANICAL

The MDD000N400Q16B consists of multiple components mounted to a laminate substrate and encapsulated with an epoxy sealant 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

MDD000N400Q16B is RoHS compliant



## PIN CONNECTIONS

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

Pins 3 and 5 should be connected to logic or tied low or high, not floating

- |    |                  |
|----|------------------|
| 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)       |
| 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 +3.3V, GND GND, Vneg -40V, TEMP 25C, PRR 250KHz

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	3.3V CMOS LOGIC	2.0	3.3	4.1	V
VI_low	Logic Input Low	3.3V CMOS LOGIC	0	.2	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	-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
<b>SUPPLY</b>						
V+	Supply Voltage Positive		3.0	3.3	3.6	V
IQC_pos	Quiescent Current Positive	1 uS Pulse 10% duty			2	mA
IQC_neg	Quiescent Current Negative	1 uS Pulse 10% duty			-5	mA
<b>DYNAMIC</b>						
TSW_rise	Switching Speed Rise	10pF load			22	nS
TSW_fall	Switching Speed Fall	10pF load			22	nS
PRR	Pulse Repetition Rate	Max, 10pF load			250	KHz
<b>SUPPLY</b>						
V-	Supply Voltage Negative		-5		-40	V

ESD Sensitivity HBM Class1B

## MECHANICAL SPECIFICATIONS

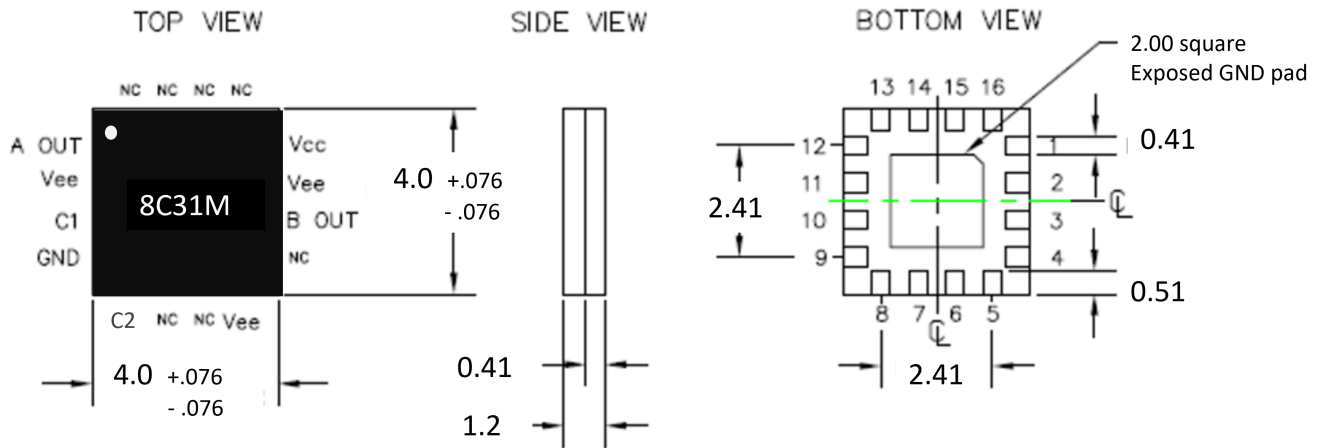
DRAWING NOT TO SCALE. DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.

MSL RATING 4 (refer to JEDEC STD 033B)

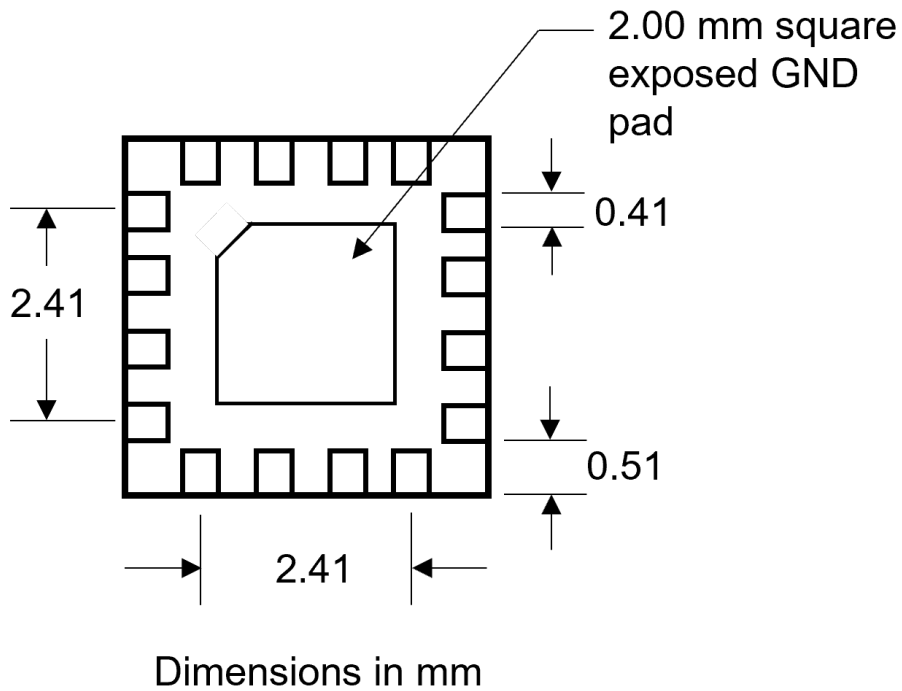
Shipping Packaging  
4" Waffle Packs/trays

## MARKING SPECIFICATIONS

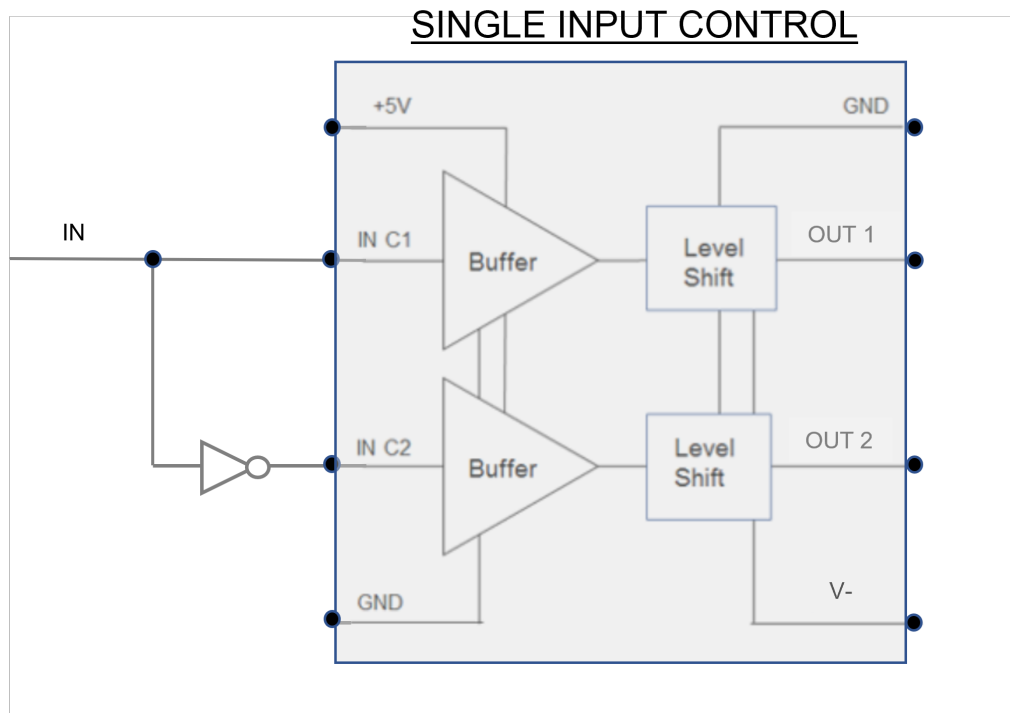
Part Number: 8C31M  
Date Code: YYWW



**FOOTPRINT**

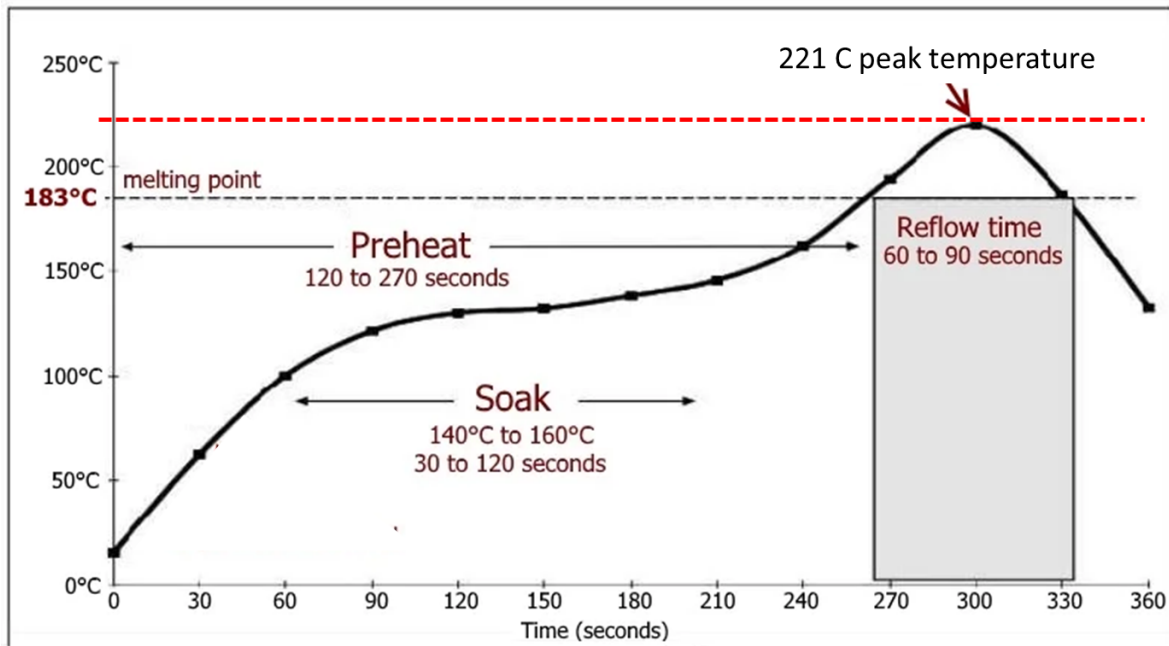


**TYPICAL APPLICATION**



**SOLDER PROFILE**

Sn63Pb37 reflow profile



**APPLICATIONS INFO**

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

