

## GENERAL DESCRIPTION

The MDQ050N450Q16A is a driver featuring high speed and wide negative voltage range suited for driving high speed PIN diode switches.

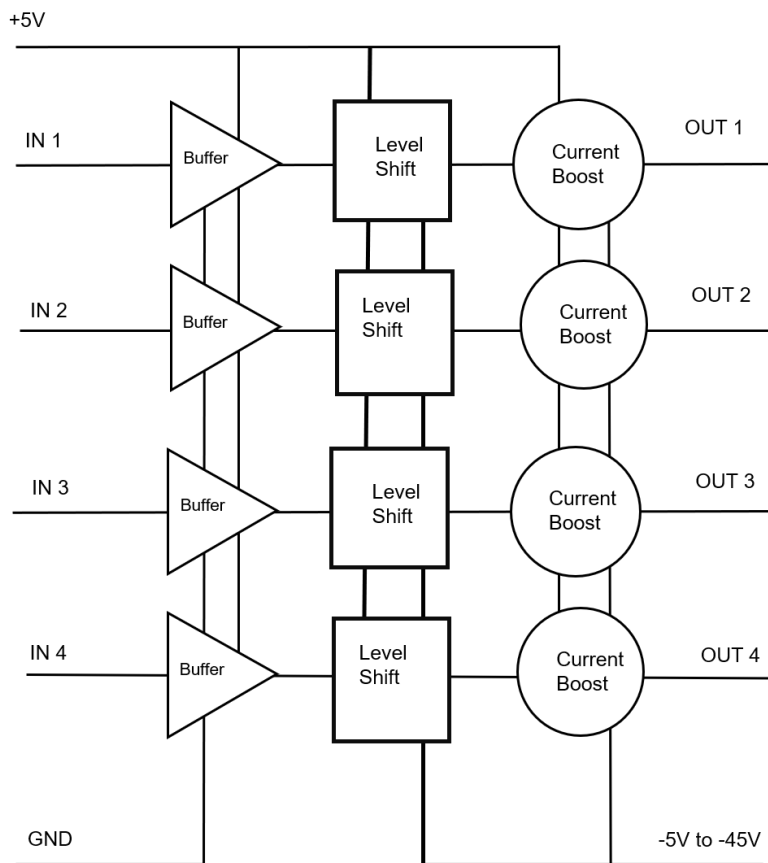
The driver is compatible with 3.3V/5V CMOS logic and has 4 independent channels outputs to supply output high and low up to +/-125 mA operating at +5V and -45V.

External current limiting resistors are required to set current.

## FEATURES

- High speed <50 nS
- Operates -5 to -45V - supply

## FUNCTION BLOCK DIAGRAM

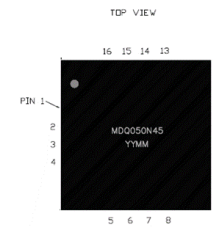


## MECHANICAL

The MDQ050N450Q16A consists of silicon BJT and MOSFET array mounted to a laminate substrate and sealed with a dam and fill process. This forms a 10mm x 10mm 16 pos QFN SMT assembly designed for integration into an integrated microwave assembly.

ECCN Code EAR99

MDQ050N450Q16A is RoHS 3 (EU 2015/863) compliant.



## PIN CONNECTIONS

Recommend bypassing +5V and Vneg with .1 uF capacitor or .01 uF minimum.

Inputs must always be connected to logic level H or L never leave floating.

- 1 Input 1
- 2 Input 2
- 3 Input 3
- 4 Input 4
- 5 Ground
- 6 Ground
- 7 NC
- 8 NC
- 9 Output 4
- 10 Output 3
- 11 Output 2
- 12 Output 1
- 13 +5V
- 14 NC
- 15 NC
- 16 -5 to -45

## TRUTH TABLE

IN1	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4
1	1	1	1	+V	+V	+V	+V
0	1	1	1	-V	+V	+V	+V
1	0	1	1	+V	-V	+V	+V
1	1	0	1	+V	+V	-V	+V
1	1	1	0	+V	+V	+V	-V
0	0	0	0	-V	-V	-V	-V

## ELECTRICAL SPECIFICATIONS

Vpos +5V, Vneg -45V, TEMP 25C, PRR 50KHz

NOTE: Tie all unused inputs high or low, but not floating.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>ABSOLUTE MAXIMUMS</b>						
Vpos	Supply Voltage Positive				6.5	V
Vneg	Supply Voltage Negative		-48			V
Vpos to Vneg	Positive to Negative Supply Voltage				54	V
<b>ENVIRONMENTAL</b>						
Enviro	Operating Temperature		-45		115	Deg C
Enviro	Storage Temperature		-55		150	Deg C
<b>INPUT</b>						
VI_hi	Voltage Input High	3.3V LOGIC	2.3	3.0	3.3	V
VI_low	Voltage Input Low	3.3V LOGIC	0	.2	.4	V
<b>OUTPUT</b>						
VO_hi	Voltage Out High	open load	4.8	4.9	5.0	V
VO_low	Voltage Out Low	open load	-44.8	-44.9	-45	V
VO_hi		cathode grounded PIN diode load at 100 mA	4.3	4.4	4.5	V
VO_low		cathode grounded PIN diode load back bias	-44.8	-44.9	-45	V
IO_hi	Current Out High	steady state into 1V diode load		125		mA
IO_low	Current Out Low	steady state into 1V diode load common arm resistor		-125		mA
lopk	Current Peak Output	sink and source		1		A
<b>SUPPLY</b>						
IQC_pos	Quiescent Current Positive	5KHz 50% duty cycle		15		mA
IQC_neg	Quiescent Current Negative	5KHz 50% duty cycle		10		mA
<b>DYNAMIC</b>						
Trise	Time Rise			10		nS
Tfall	Time Fall			10		nS
Td_rise	Delay Rise			20		nS
Td_fall	Delay Fall			20		nS
TSW_rise	Switching Speed Rise	100pF load		50		nS
TSW_fall	Switching Speed Fall	100pF load		50		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.

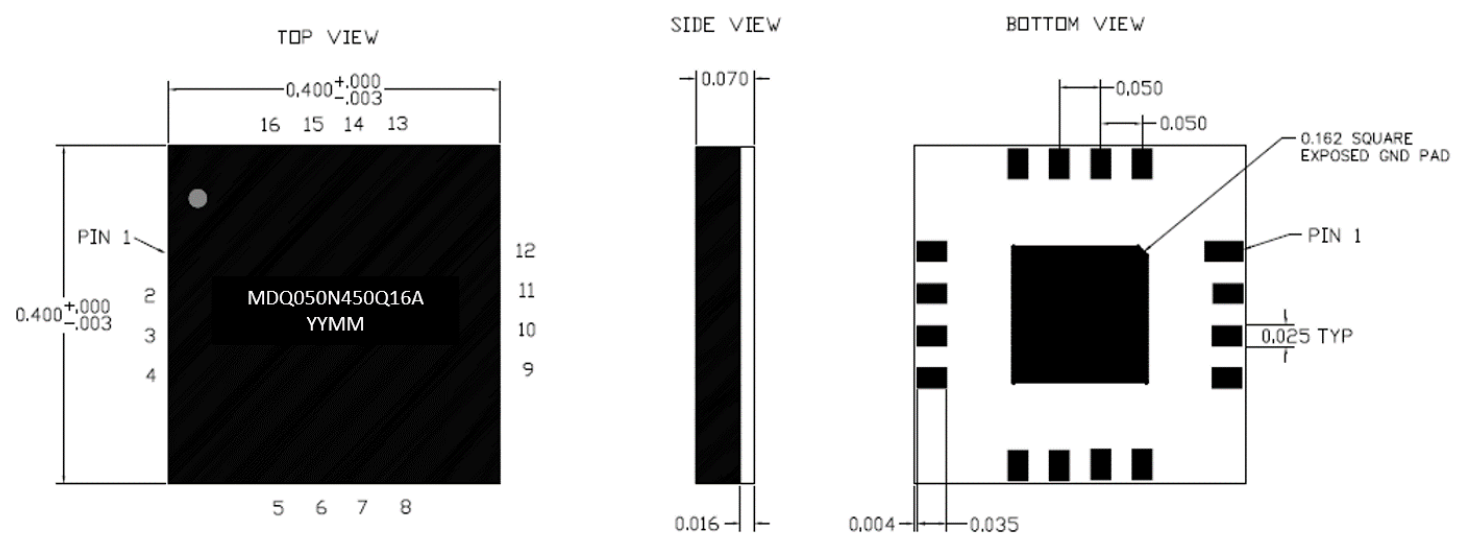
MSL RATING 4 (refer to JEDEC STD 033B)

Shipping Packaging  
Waffle Packs/trays

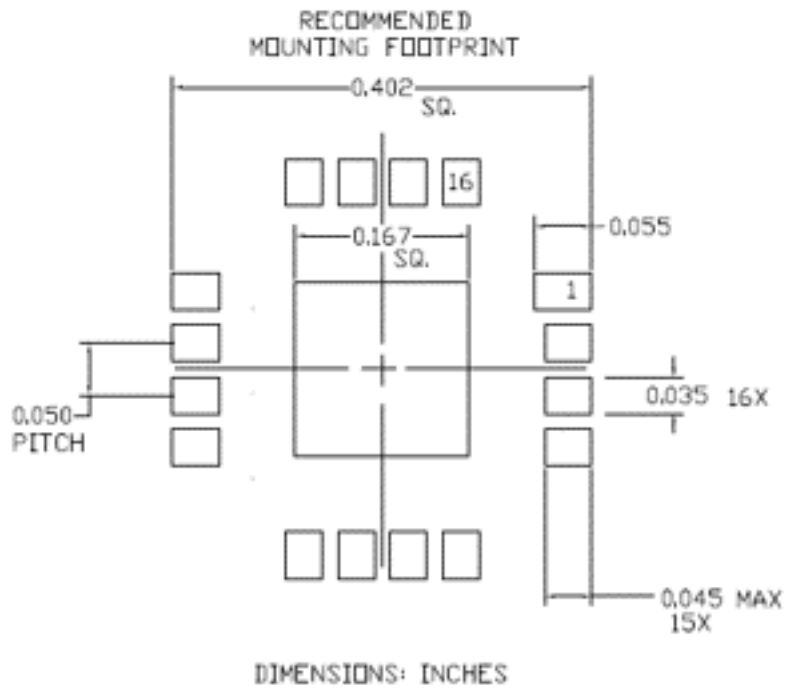
Lead Finish: ENIG  
Length .400; Width .400; Height .06

**MARKING SPECIFICATIONS**

Part Number: MDQ050N450Q16A  
Date Code: YYWW

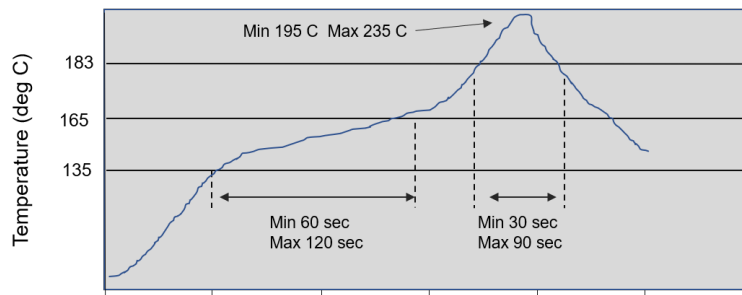


**FOOTPRINT**



**SOLDER PROFILE**

SnPb Temperature Profile example



Pb-Free Temperature Profile example

