# Ultra-Small, Low ON Resistance Load Switch with Auto-Discharge Path

## DESCRIPTION

The ETA7017/A is a small, low RDSON switch with controlled turn on. The device contains a PMOS that can operate over an input voltage range of 1.4V to 5.5V. The switch is controlled by an external logic pin, which is an active high enable.

The ETA7017/A contains a 65mohm on-chip resistor for quick discharge when the switch is turned off. Quiescent current and shutdown current are all less than 1uA at VIN=5.5V.

The ETA7017/A is available in a very small WLCSP 0.87x0.87-4 package.

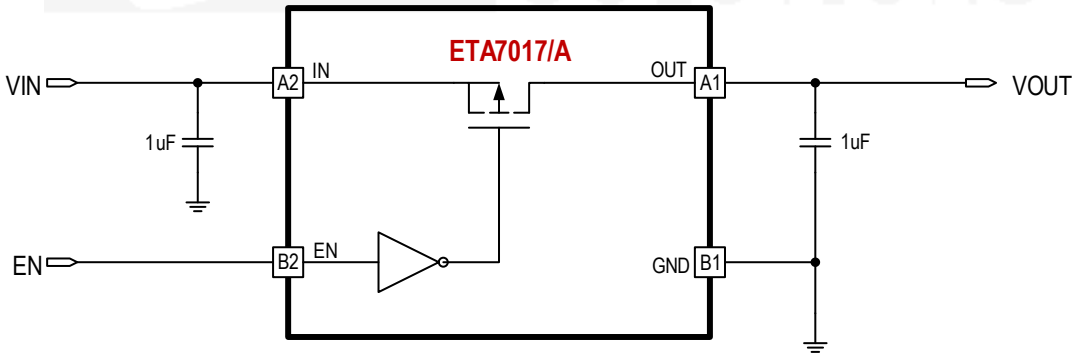
## FEATURES

- Less than 1uA Quiescent and Shutdown Current
- 1.4V-5.5V Operating Range
- Low On-Resistance, RDSON=65mohm@VIN=3.3V
- Up to 2A Continuous Output Current
- Output Auto Discharge
- Active high EN pin
- ESD Ratings: 4KV Human body mode

## APPLICATIONS

- NB-IOT module
- Wireless communication module

## TYPICAL APPLICATION




Typical Application Circuit

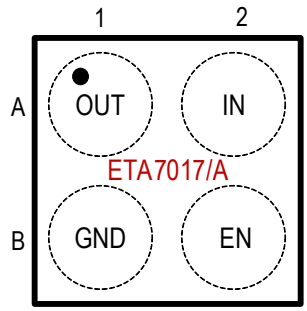
## ORDERING INFORMATION

| PART No. | PACKAGE | TOP MARK | Pcs/Reel |
|---|---|---|---|
| ETA7017CSE | WLCSP 0.87x0.87-4 | HFYW | 3000 |
| ETA7017ACSE | WLCSP 0.87x0.87-4 | HPYW | 3000 |



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## PIN CONFIGURATION




WLCSP0.87x0.87-4

## ABSOLUTE MAXIMUM RATINGS

*(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)*

IN, OUT, EN Voltage .....–0.3V to 7V
Operating Temperature Range.....–40°C to 85°C
Storage Temperature Range.....55°C to 150°C
Thermal Resistance $\Theta_{JA}$
WLCSP 0.87x0.87 .....100 ..... °C/W
Lead Temperature (Soldering, 10sec) .....260°C
ESD HBM (Human Body Mode) .....4KV
ESD CDM (Charged Device Mode) .....1KV
ESD MM (Machine Mode) .....300V

## ELECTRICAL CHARACTERISTICS

(VIN = 1.4V-5.5V, unless otherwise specified. Typical values are at $T_A$ = 25°C.)

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|
| Switch RDSON | VIN=5.5V, IOUT=0.2A | | 56 | | mohm |
| | VIN=5.0V, IOUT=0.2A | | 58 | | |
| | VIN=4.2V, IOUT=0.2A | | 60 | | |
| | VIN=3.3V, IOUT=0.2A | | 65 | | |
| | VIN=2.5V, IOUT=0.2A | | 73 | | |
| | VIN=1.8V, IOUT=0.2A | | 93 | | |
| | VIN=1.4V, IOUT=0.2A | | 128 | | |
| OUT Discharge Resistance | VIN=5.5V, VEN=0, VOUT=1V | | 42 | 65 | ohm |
| | VIN=3.3V, VEN=0, VOUT=1V | | 53 | | |
| | VIN=1.8V, VEN=0, VOUT=1V | | 130 | | |
| IN Quiescent Current | VIN=5V, VEN=VIN | | 200 | 400 | nA |
| | VIN =3.3V, VEN=VIN | | 100 | 200 | |
| IN Shutdown Current | VIN=5V, VEN=0 | | 50 | 100 | nA |
| | VIN=3.3V, VEN=0 | | 50 | 100 | |
| EN Input High Level | VIN=5.5V | 1.1 | | | V |
| | VIN=3.6V | 1.1 | | | |
| | VIN=1.4V | 1.1 | | | |
| EN Input Low Level | VIN=5.5V | | | 0.6 | V |
| | VIN=3.6V | | | 0.6 | |
| | VIN=1.4V | | | 0.4 | |
| EN Pull Down Resistance | | | 10 | | Mohm |



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| | | | |
|---|---|---|---|
| OUT Rising Time | VIN=5.5V, COUT=1uF, ROUT=22Ω @ETA7017 | 314 | µS |
| | VIN=5.5V, COUT=1uF, ROUT=22Ω @ETA7017A | 44 | |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω @ETA7017 | 238 | |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω @ETA7017A | 40 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω @ETA7017 | 85 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω @ETA7017A | 25 | |
| OUT Falling Time | VIN=5.5V, COUT=1uF, ROUT=22Ω | 35 | µS |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω | 44 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω | 50 | |
| Turn On Time | VIN=5.5V, COUT=1uF, ROUT=22Ω @ETA7017 | 450 | µS |
| | VIN=5.5V, COUT=1uF, ROUT=22Ω @ETA7017A | 56 | |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω @ETA7017 | 410 | |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω @ETA7017A | 66 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω @ETA7017 | 320 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω @ETA7017A | 78 | |
| Turn Off Time | VIN=5.5V, COUT=1uF, ROUT=22Ω | 10 | µS |
| | VIN=3.6V, COUT=1uF, ROUT=22Ω | 12 | |
| | VIN=1.4V, COUT=1uF, ROUT=22Ω | 18 | |
| OUT Short Hiccup On Time | VIN=3.3V@ETA7017 | 4 | mS |
| | VIN=3.3V@ETA7017A | 0.35 | |
| OUT Short Hiccup Off Time | VIN=3.3V@ETA7017 | 4 | mS |
| | VIN=3.3V@ETA7017A | 2 | |
| OUT Short Current at Hiccup On Time | VIN=3.3V@ETA7017 | 1.5 2 | A |
| | VIN=3.3V@ETA7017A | 2 2.5 | |
| Maximum Load Current | VIN=5.5V | 3.5 | A |
| | VIN=3.6V | 3.5 | |
| | VIN=1.4V | 2 | |



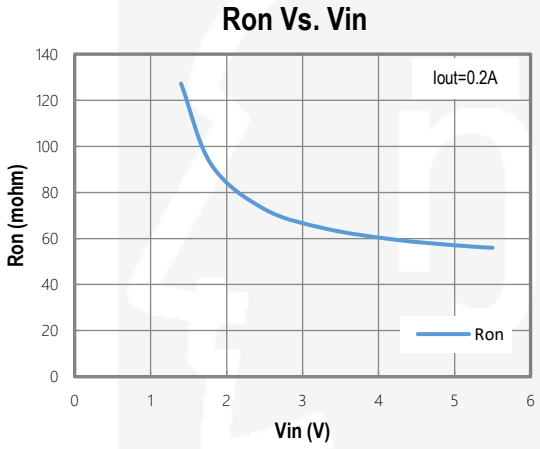
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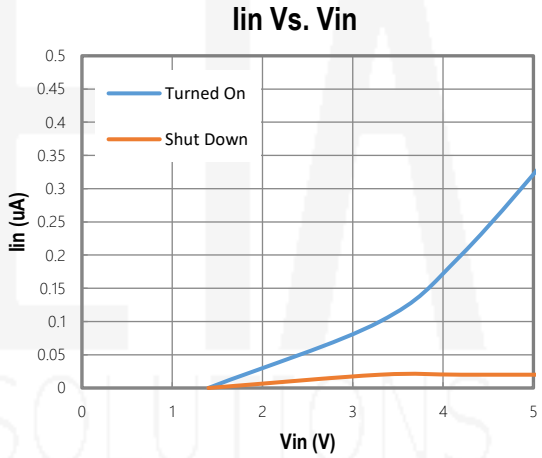
## PIN DESCRIPTION

| PIN # | NAME | DESCRIPTION |
|---|---|---|
| A1 | OUT | Switch output, connect 1uF ceramic capacitor from OUT to GND as close as possible to the IC. |
| B1 | GND | IC Ground |
| A2 | IN | Switch input, connect 1uF ceramic capacitor from IN to GND as close as possible to the IC. |
| B2 | EN | Enable input, Logic high turns on the power switch. |

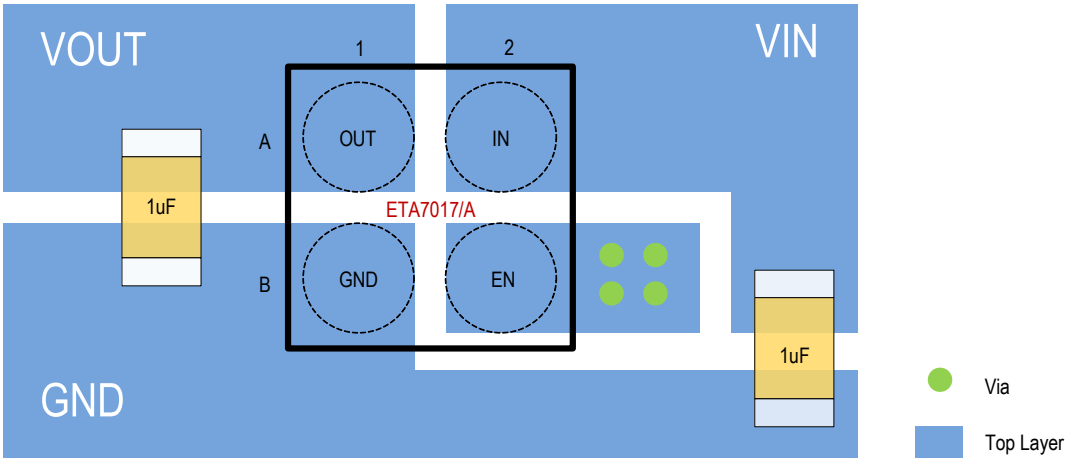
## TYPICAL CHARACTERISTICS

(Typical values are at $T_A$ = 25°C unless otherwise specified.)



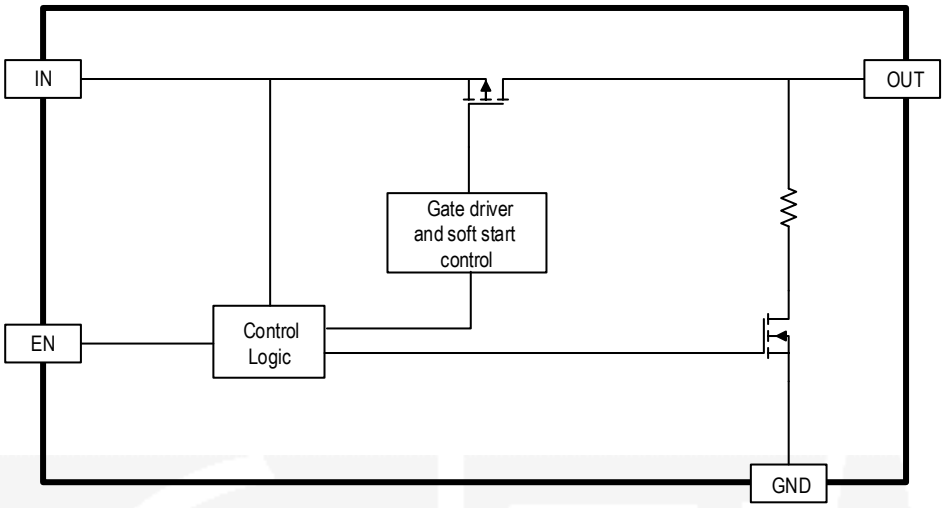

## PCB GUIDELINES





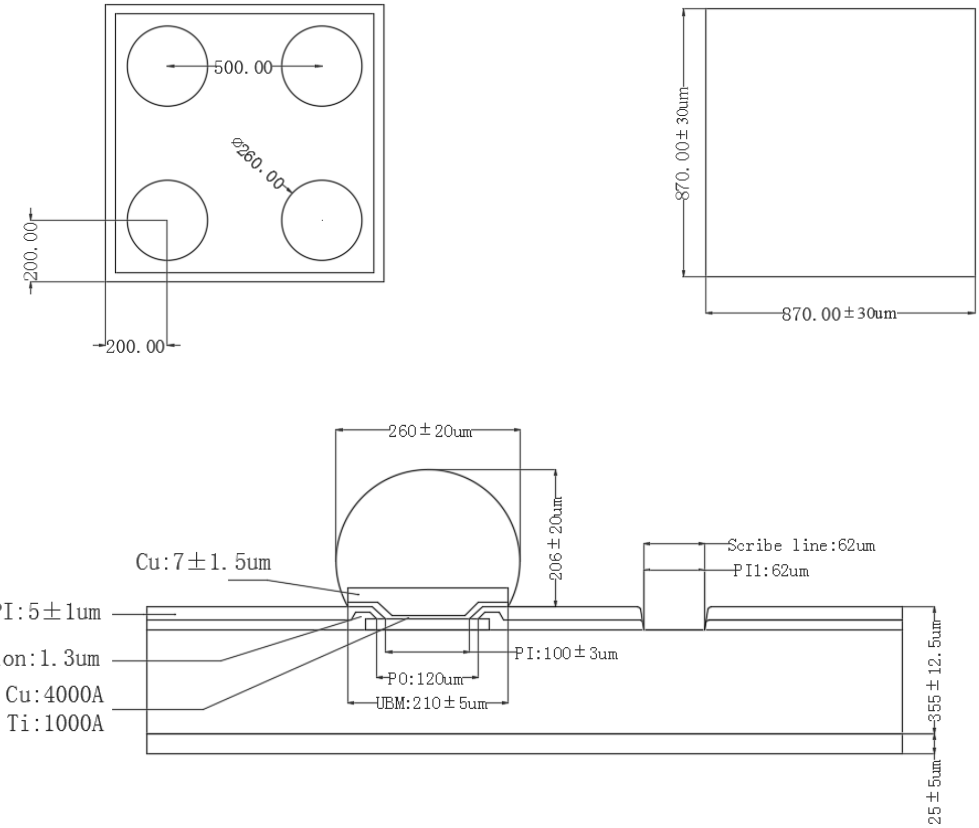

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## BLOCK DIAGRAM




## PACKAGE OUTLINE

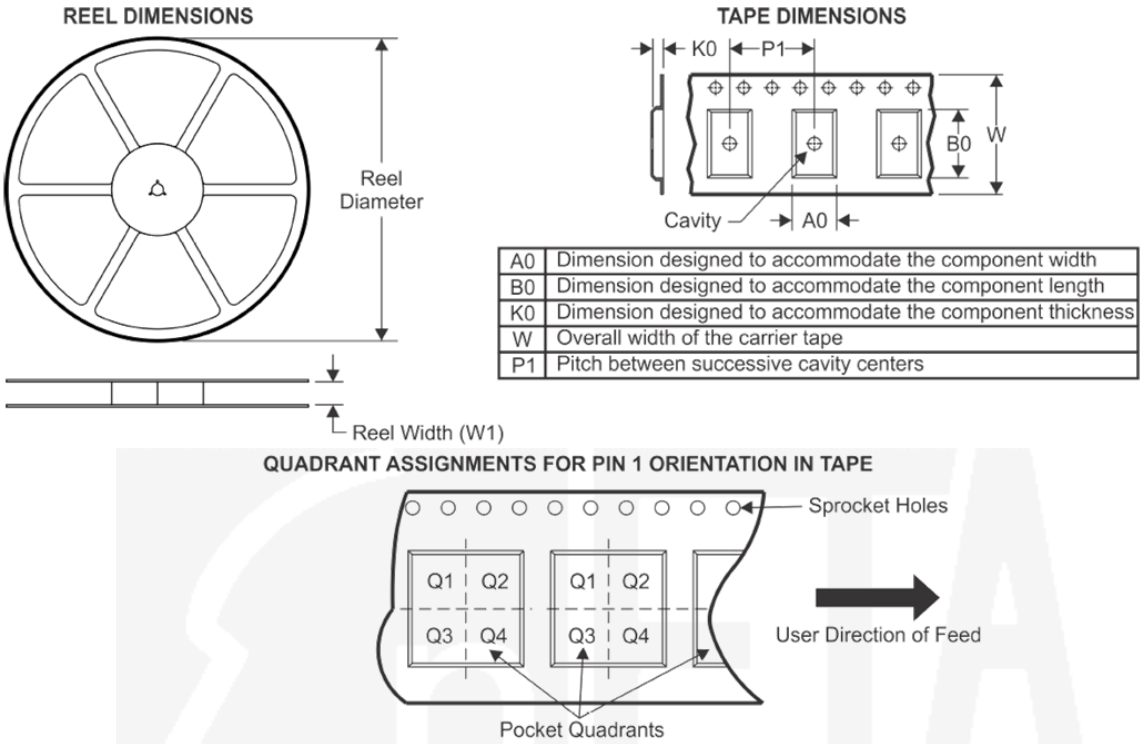
WLCSP 0.87x0.87-4






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# TAPE AND REEL INFORMATION




| | |
|---|---|
| A0 | Dimension designed to accommodate the component width |
| B0 | Dimension designed to accommodate the component length |
| K0 | Dimension designed to accommodate the component thickness |
| W | Overall width of the carrier tape |
| P1 | Pitch between successive cavity centers |

| Device | Package Type | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ETA7017CSE | WLCSP0.87x0.87-4 | 4 | 3000 | 178 | 9.5 | 0.96 | 0.96 | 0.68 | 2 | 8 | Q1 |
| ETA7017ACSE | WLCSP0.87x0.87-4 | 4 | 3000 | 178 | 9.5 | 0.96 | 0.96 | 0.68 | 2 | 8 | Q1 |



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单击下面可查看定价，库存，交付和生命周期等信息

>>ETA

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