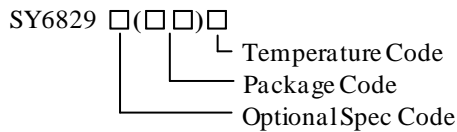


### General Description

SY6829A integrates an ultra-low  $R_{DS(ON)}$  switch with a dedicated ON pin. It makes SY6829A supporting independent ON/OFF control.

SY6829A features low to 300nA quiescent current at ON state and low to 100nA at shutdown mode. The ultra low current consumption significantly extends battery life time. It makes SY6829A the best selection for IoT application.

### Ordering Information



Ordering Number	Package Type	Note
SY6829APRC	CSP0.79×0.79-4	

### Features

- Low  $R_{DS(ON)}$ : 80mΩ
- 1.5A Continuous Load Current Capability
- 300nA Quiescent Current
- 100nA Shutdown Current
- Independent ON/OFF Control Input
- Ultra Compact CSP0.79×0.79-4 0.3mm Thick Package
- RoHS Compliant and Halogen Free

### Applications

- Smart Phone, Tablet PCs
- MID, E-Book
- Storage, DSLR, and Portable Devices

### Typical Applications

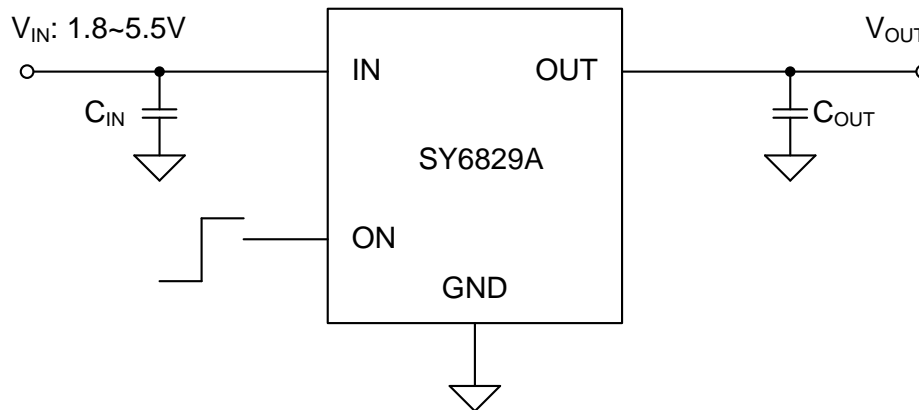
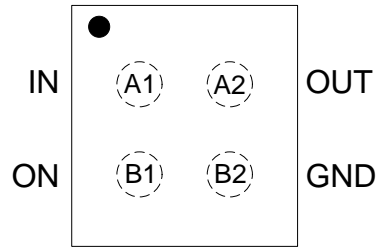


Figure1. Schematic Diagram

## Pinout (top view)



(CSP0.79×0.79-4)

Top Mark: **eRxyz**, (Device code: eR; *x*=year code, *y*=week code, *z*=lot number code)

Pin Name	Pin Number	Pin Description
IN	A1	Input pin. Decouple this pin to GND with at least 4.7μF ceramic cap.
OUT	A2	Output pin. Decouple this pin to GND with at least 4.7μF ceramic cap.
GND	B2	Ground pin.
ON	B1	ON/OFF control. Active high. Do not leave it floating.

## Block Diagram

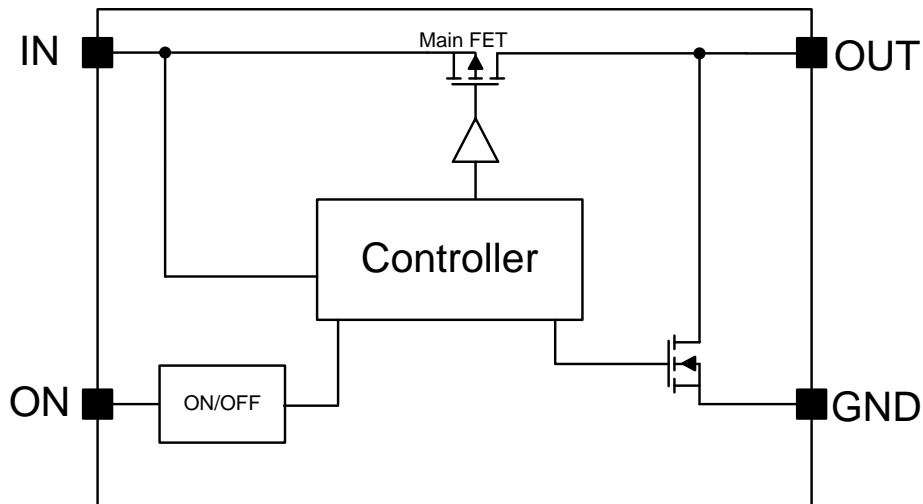


Figure2. Block Diagram



## Absolute Maximum Ratings (Note 1)

IN, OUT, ON	6.0V
Power Dissipation, P <sub>D</sub> @ T <sub>A</sub> = 25°C	0.66W
Package Thermal Resistance (Note 2)	
θ <sub>JA</sub>	188°C/W
θ <sub>JC</sub>	2°C/W
Junction Temperature Range	-40°C to 150°C
Lead Temperature (Soldering, 10 sec.)	260°C
Storage Temperature Range	-65°C to 150°C

## Recommended Operating Conditions (Note 3)

IN	1.8V to 5.5V
ON, OUT	0V to 5.5V
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C

## Electrical Characteristics

(V<sub>IN</sub> = 3.3V, T<sub>A</sub> = 25°C unless otherwise specified)

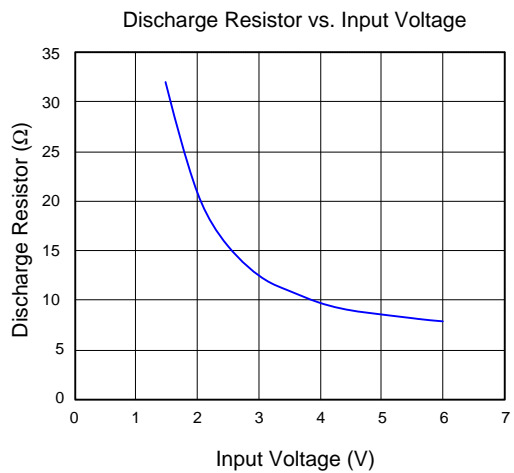
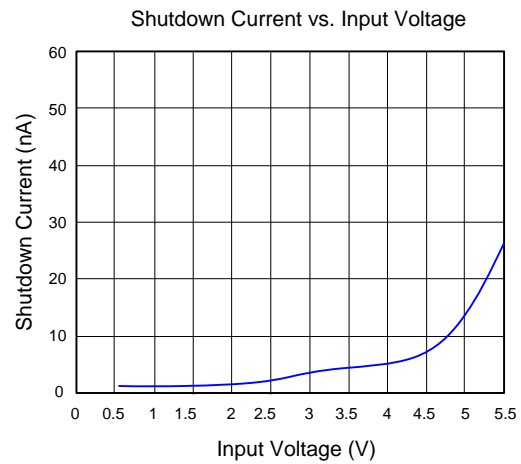
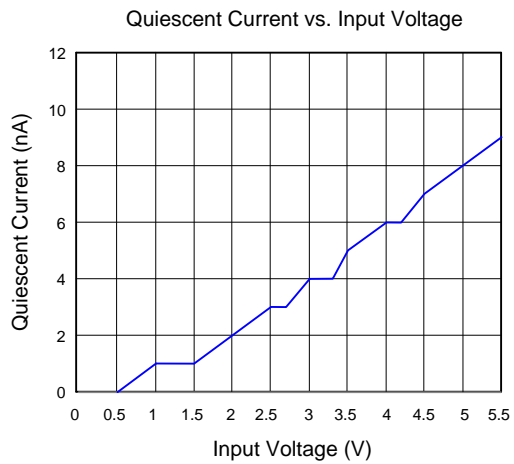
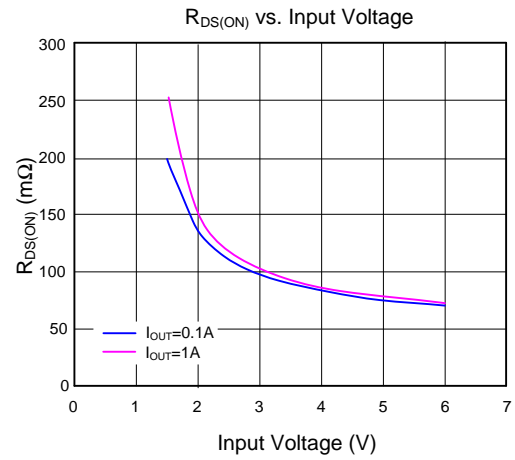
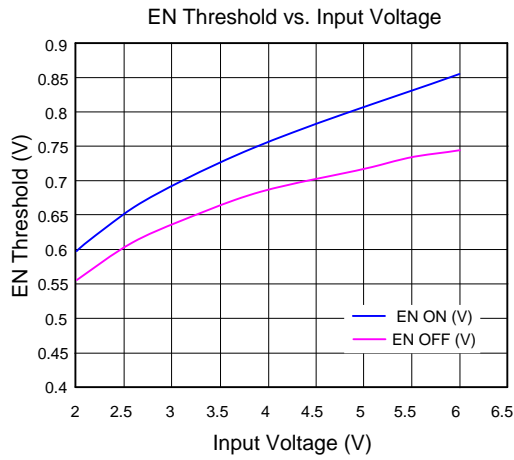
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	V <sub>IN</sub>		1.8		5.5	V
Shutdown Current	I <sub>SHDN</sub>	ON=low			100	nA
Quiescent Current	I <sub>Q</sub>	I <sub>OUT</sub> =0			300	nA
FET R <sub>ON</sub>	R <sub>DS(ON)</sub>	V <sub>IN</sub> =5V		80		mΩ
		V <sub>IN</sub> =3.3V		95		mΩ
		V <sub>IN</sub> =1.8V		155		mΩ
Output Voltage Rise Time	t <sub>RISE</sub>	V <sub>IN</sub> =3.3V, measure time V <sub>OUT</sub> rise from 10% of V <sub>IN</sub> to 90% of V <sub>IN</sub>	55	85	115	μs
Turn On Delay Time	t <sub>DELAY</sub>	V <sub>IN</sub> =3.3V, measure time from EN rise edge to 10% of V <sub>IN</sub>	45	75	105	μs
ON Input Logic High	V <sub>IH</sub>		1.0			V
ON Input Logic Low	V <sub>IL</sub>				0.4	V
Output Discharge Resister	R <sub>DIS</sub>	V <sub>IN</sub> =5V, ON=Low		8.5		Ω

**Note 1:** Stresses beyond the “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**Note 2:** θ<sub>JA</sub> is measured in the natural convection at T<sub>A</sub> = 25°C on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard.

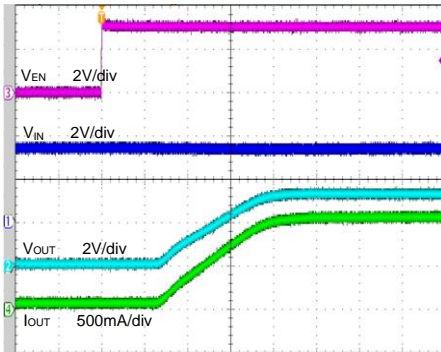
**Note 3:** The device is not guaranteed to function outside its operating conditions.

## Typical Operating Characteristics



Startup from Enable

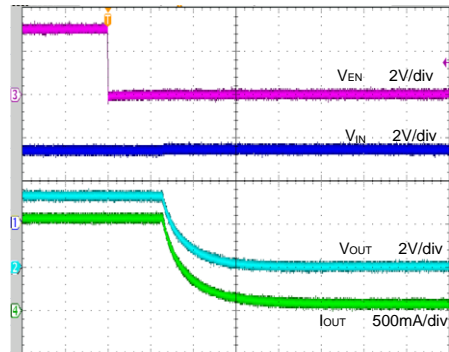
( $V_{IN}=3.3V$ ,  $C_{IN}=C_{OUT}=4.7\mu F$ ,  $I_{OUT}=1A$ )



Time (40µs/div)

Shutdown from Enable

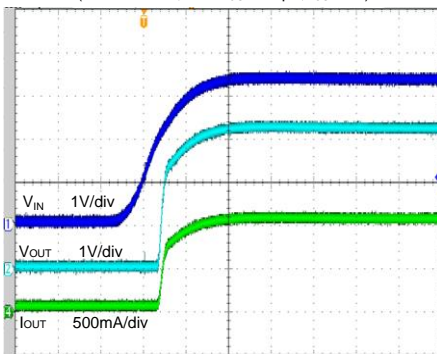
( $V_{IN}=3.3V$ ,  $C_{IN}=C_{OUT}=4.7\mu F$ ,  $I_{OUT}=1A$ )



Time (20µs/div)

Startup from  $V_{IN}$

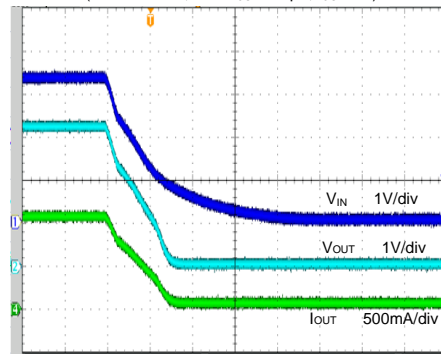
( $V_{IN}=EN=3.3V$ ,  $C_{IN}=C_{OUT}=4.7\mu F$ ,  $I_{OUT}=1A$ )



Time (400µs/div)

Shutdown from  $V_{IN}$

( $V_{IN}=EN=3.3V$ ,  $C_{IN}=C_{OUT}=4.7\mu F$ ,  $I_{OUT}=1A$ )



Time (4ms/div)

## Operation Information

SY6829A integrates an ultra-low  $R_{DS(ON)}$  switch with a dedicated ON pin. It makes SY6829A supporting independent ON/OFF control. SY6829A features low to 300nA quiescent current at ON state and low to 100nA at shutdown mode. The ultra low current consumption significantly extends battery life time. It makes SY6829A the best selection for IoT application.

### Input Capacitor $C_{IN}$

To reduce device inrush current, a 4.7 $\mu$ F ceramic capacitor,  $C_{IN}$ , is recommended. A higher value of  $C_{IN}$  can be used to reduce the voltage drop experienced as the switch is turned on into large capacitive load. To minimize the potential noise problem, it is recommended to place  $C_{IN}$  really close to the IN and GND pins.

### Output Capacitor $C_{OUT}$

A 4.7 $\mu$ F ceramic output cap is recommended to prevent

parasitic board inductance from forcing  $V_{OUT}$  below GND when switching off.

### Output Discharge

SY6829A integrates a 8.5 $\Omega$  pull down resistor for quick output discharge. The resistor is activated when the switch is turned off.

### PCB Layout Design

For best performance of the SY6829A, the following guidelines must be strictly followed:

1. Keep all power trace as short and wide as possible. And it is desirable to use 2-layer or 4-layer board for thermal performance and better capability of current flow. These power pins include IN and OUT.
2. Place input capacitor and output capacitor close to the IC for better transient performance.

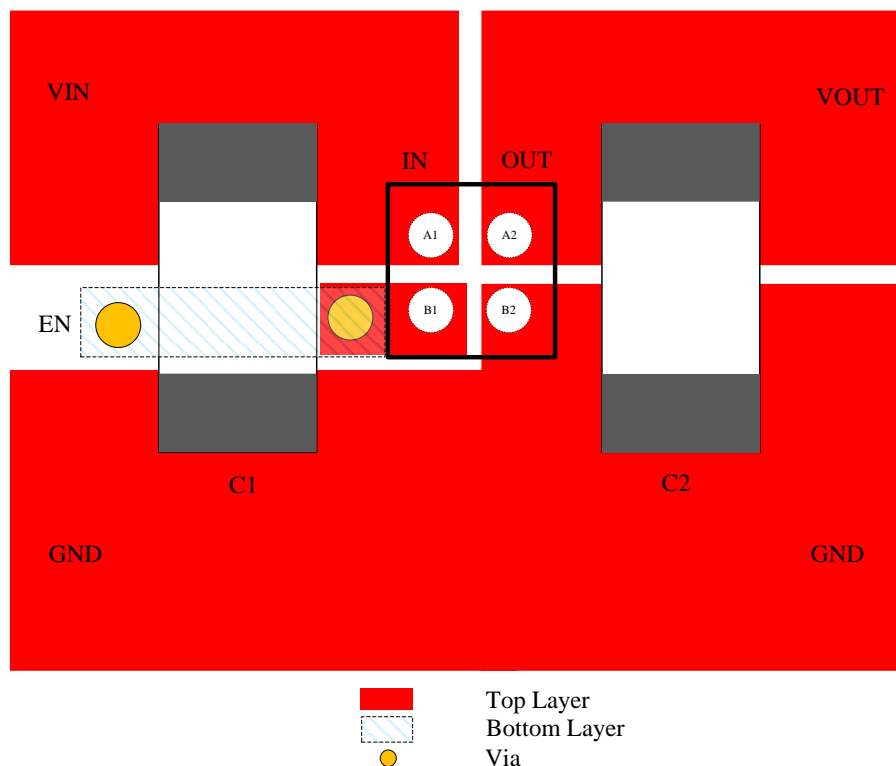
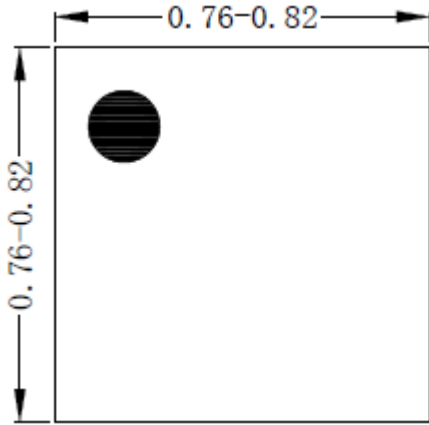
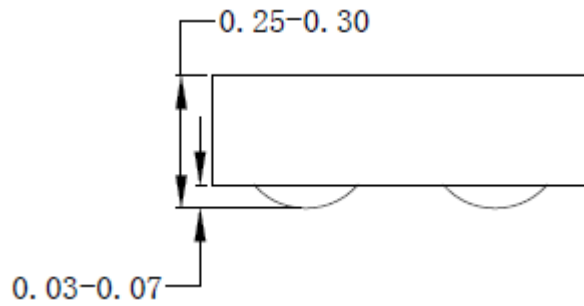


Figure3. PCB Layout Suggestion

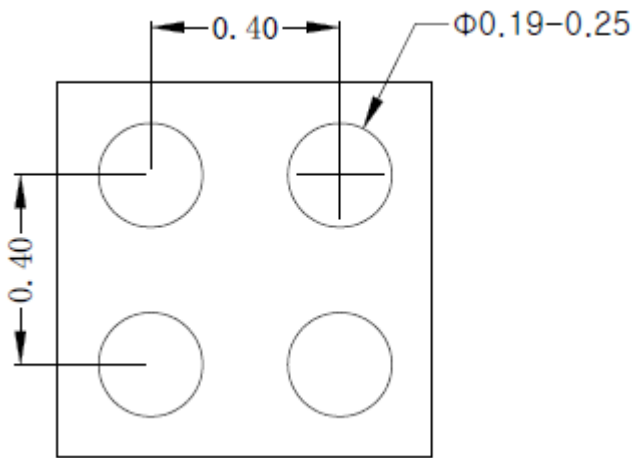
**CSP0.79×0.79-4 Package Outline Drawing**



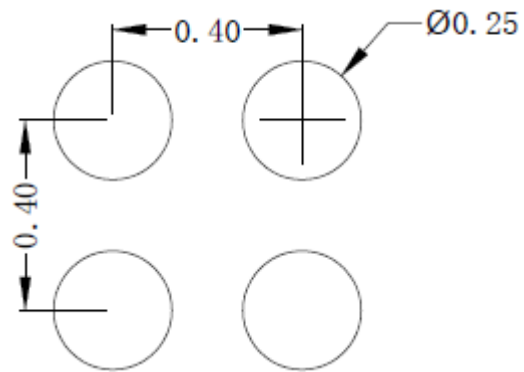
**Top view**



**Side view**



**Bottom view**

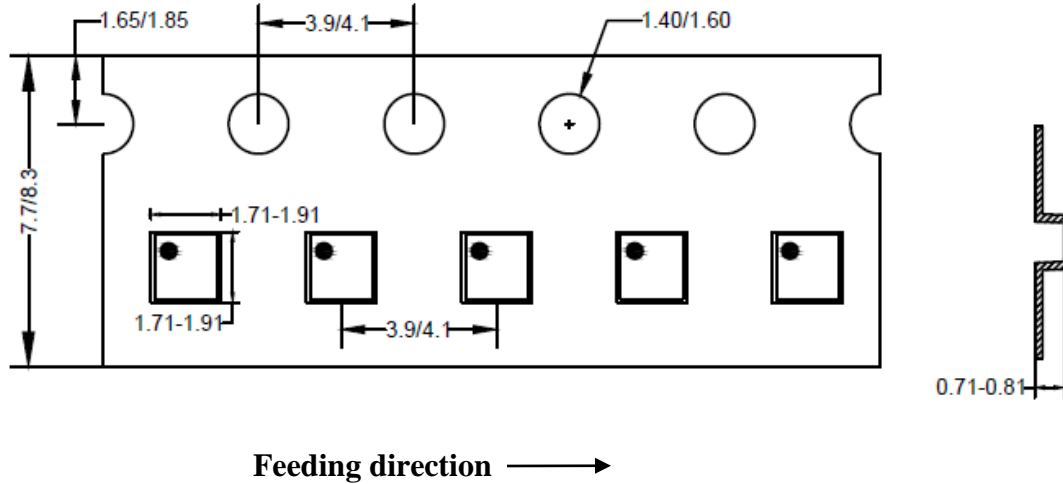


**Recommended PCB layout  
(Reference only)**

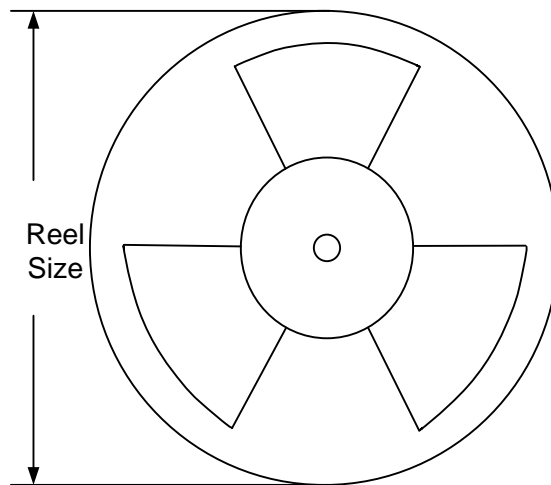
**Notes: All dimension in millimeter and exclude mold flash & metal burr**

**Taping & Reel Specification**

**1. CSP0.79×0.79 taping orientation**



**2. Carrier Tape & Reel specification for packages**



Package type	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer length(mm)	Leader length (mm)	Qty per reel
CSP0.79×0.79	8	4	7"	400	160	10000

**3. Others: NA**



## Revision History

The revision history provided is for informational purpose only and is believed to be accurate, however, not warranted. Please make sure that you have the latest revision.

<b>Date</b>	<b>Revision</b>	<b>Change</b>
Jul.09, 2018	Revision 0.9A	"Features" page1: Change from "1A Continuous Load Current Capability" to "1.5A Continuous Load Current Capability".
Mar.09, 2018	Revision 0.9	Initial Release



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