



## General Description

The SY6281 develops ultra-low  $R_{ds(on)}$  switch with programmable current limiting to protect the power source from over current and short circuit conditions. It integrates the over temperature protection and discharges the output capacitor during the shutdown. In case the output is pulled higher than the input voltage under the shutdown, the SY6281 can block the current flowing from the output to the input.

## Features

- Distribution voltages: 2.4V to 5.5V
- Programmable current limit
- Enable polarity: active low
- Over temperature shutdown and automatic retry
- Reverse blocking (no body diode)
- At shutdown, OUT can be forced higher than IN
- Automatic output discharge at shutdown
- Compact SOT23 packages minimize the board space.

## Ordering Information

SY6281 □(□□□)  
 □ Temperature Code  
 □ Package Code  
 □ Optional Spec Code

Temperature Range: -40°C to 85°C

Ordering Number	Package type	Note
SY6281AAC	SOT23-5	----

## Applications

- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories

## Typical Applications

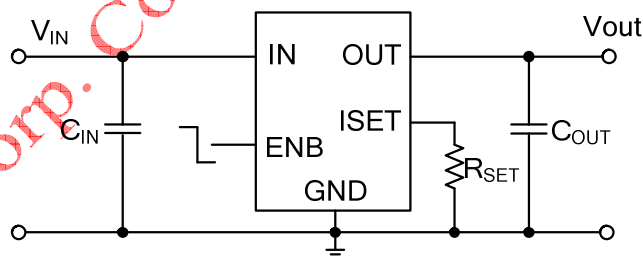
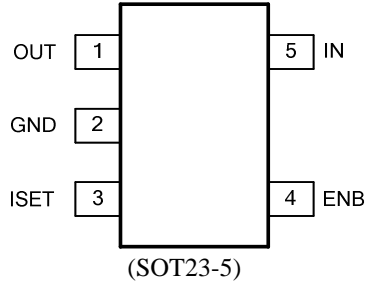


Figure 1. Schematic Diagram

**Pinout (top view)**



Top mark: **FHxyz** (Device code: FH, *x=year code, y=week code, z=lot number code*)

Pin Name	Pin number	Pin Description
IN	5	Input pin
GND	2	Ground pin
OUT	1	Output pin
ENB	4	ON/OFF control. Pull low to enable IC. Do not float.
ISET	3	Current limit programming pin. Connect a resistor Rset from this pin to GND to program the current limit: $I_{lim} (A) = 6800/R_{set} (ohm)$

**Absolute Maximum Ratings** (Note 1)

All pins-----	6V
Power Dissipation, $P_D$ @ $T_A = 25^\circ C$ SOT23-5, -----	0.6W
Package Thermal Resistance (Note 2)	
$\theta_{JA}$ -----	200°C/W
$\theta_{JC}$ -----	130°C/W
Junction Temperature Range -----	150°C
Lead Temperature (Soldering, 10 sec.) -----	260°C
Storage Temperature Range -----	-65°C to 150°C

**Recommended Operating Conditions** (Note 3)

IN-----	2.4V to 5.5V
All other pins -----	0-5.5V
Junction Temperature Range -----	-40°C to 125°C
Ambient Temperature Range -----	-40°C to 85°C



**Electrical Characteristics**

( $V_{IN} = 5V$ ,  $C_L = 1\mu F$ , per channel,  $T_A = 25^\circ C$  unless otherwise specified)

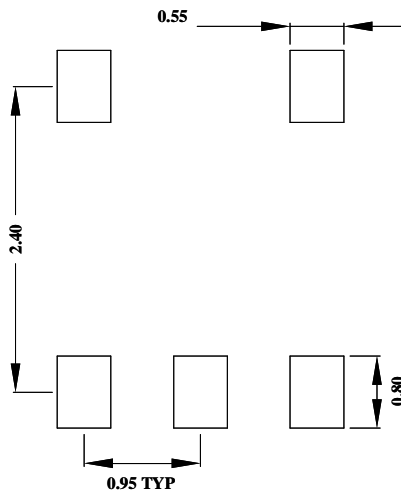
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	$V_{IN}$		2.4		5.5	V
Shutdown Input Current	$I_{SHDN}$	Open load, IC Disabled.		0.1	1	$\mu A$
Quiescent Supply Current	$I_Q$	Open load, IC Enabled.		25		$\mu A$
FET RON	$R_{DS(ON)1}$			80		m $\Omega$
ENB Rising Threshold	$V_{ENB(H)}$		2			V
ENB Falling Threshold	$V_{ENB(L)}$				0.8	V
ENB Leakage	$I_{ENB}$	$V_{ENB} = 5.5V$			1	$\mu A$
IN UVLO Threshold	$V_{IN-UVLO}$				2.3	V
IN UVLO Hysteresis	$V_{IN-HYS}$			0.1		V
Over Current Limit	$I_{LIM}$	$R_{SET} = 6.8k\Omega$	0.75	1	1.25	A
	$I_{LIM(min)}$			0.4		A
	$I_{LIM(max)}$			2		A
Turn-ON Time	$T_{ON}$	$R_L = 10\Omega$		120		us
Turn-OFF Time	$T_{OFF}$	$R_L = 10\Omega, C_L = 1\mu F$		10		us
OUT Shutdown Discharge Resistance	$R_{DIS}$			150		$\Omega$
Thermal Shutdown Temperature	$T_{SD}$			130		$^\circ C$
Thermal Shutdown Hysteresis				20		$^\circ C$

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

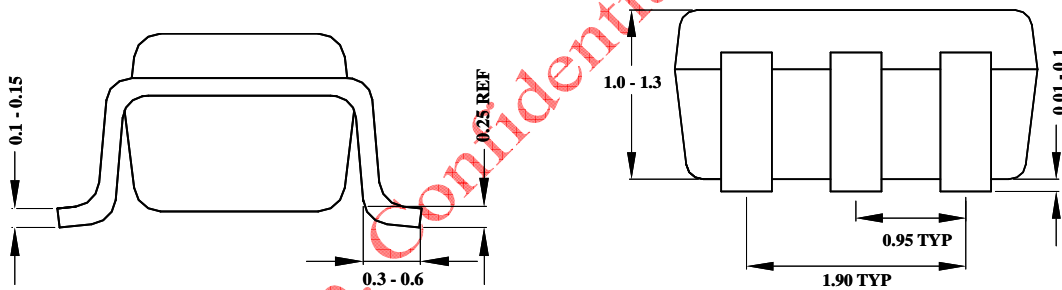
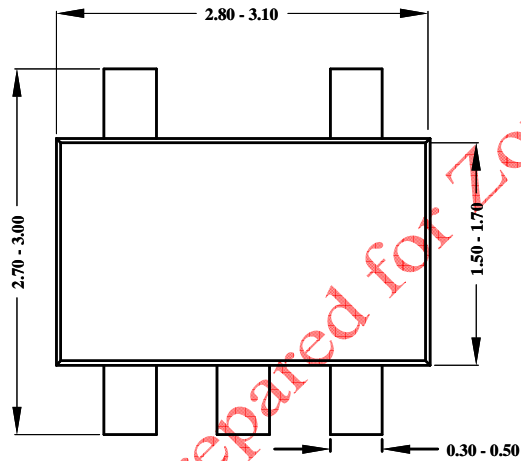
**Note 2:**  $\theta_{JA}$  is measured in the natural convection at  $T_A = 25^\circ C$  on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Pin 2 of SOT23-5 packages is the case position for  $\theta_{JC}$  measurement.

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

**SOT23-5 Package outline & PCB layout design**



**Recommended Pad Layout**



**Notes: All dimensions are in millimeters.  
All dimensions don't include mold flash & metal burr.**

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