SY6280

Low Loss Power Distribution Switch
TARGET DESIGN SPECIFICATION
Preliminary Spec

General Description

The SY6280 develops ultra-low Rds(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 SY6280 can block the current flowing from the output to the input.

Features

- Distribution voltages: 2.4V to 5.5V
- Programmable current limit
- 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

SY6280□(□□)□

- Temperature Code
- Package Code
- Optional Spec Code

Temperature Range: -40°C to 85°C

Ordering Number	Package type	Note
SY6280AAC	SO23-5	1A

Applications

- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories

Typical Applications

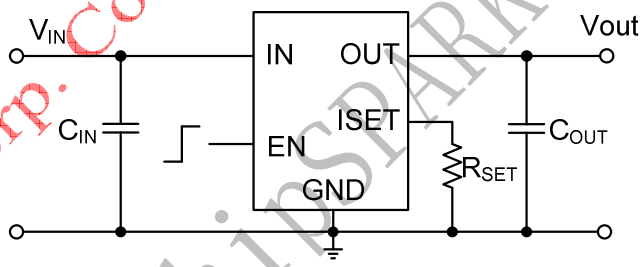
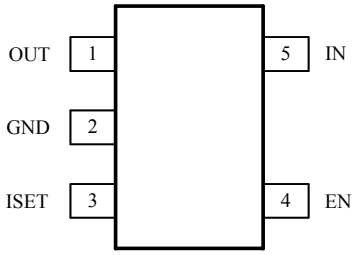


Figure 1. Schematic Diagram

Pinout (top view)



(SOT23-5)

Top mark: **CO*xyz*** (Device code: CO, ***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
EN	4	ON/OFF control. Don't leave it floating.
ISET	3	Current limit programming pin. Connect a resistor Rset from this pin to GND to program the current limit: Ilim (A)=6800/Rset (ohm)

Absolute Maximum Ratings (Note 1)

All pins---------- 6V
Power Dissipation, P_D @ T_A = 25°C SOT23-5, ---------- 0.4W
Package Thermal Resistance (Note 2)
θ_{JA} ---------- 250°C/W
θ_{JC} ---------- 130°C/W
Junction Temperature Range ---------- 150°C
Lead Temperature (Soldering, 10 sec.) ---------- 260°C
Storage Temperature Range ---------- -65°C to 150°C
ESD Susceptibility (Note 2)
HBM (Human Body Mode) ---------- 2kV
MM (Machine Mode) ---------- 200V

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, CL=1uF, per channel, T_A = 25°C unless otherwise specified)

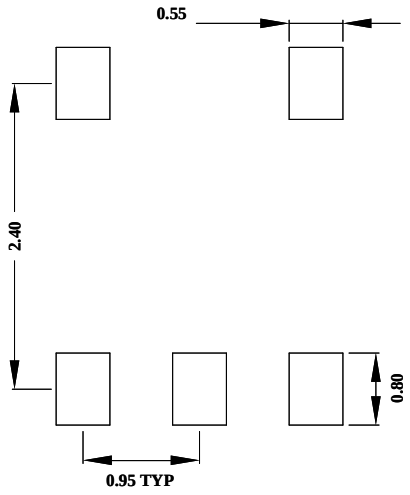
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	V_{IN}		2.4		5.5	V
Shutdown Input Current	I_{SHDN}	R_L=R_{OPEN}, EN="0"		0.1	1	μA
Quiescent Supply Current	I_Q	R_L=R_{OPEN}, EN="1"		25		μA
FET RON	$R_{DS(ON)1}$			80		mΩ
EN Rising Threshold	$V_{EN(H)}$	V_{IN}=2.7-4.2V	2			V
	$V_{EN(H)}$	V_{IN}=4.2-5.5V	2.4			V
EN Falling Threshold	$V_{EN(L)}$				0.8	V
EN Leakage	I_{EN}	V_{EN}=5.5V			1	μA
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}=6.8kΩ	0.75	1	1.25	A
	$I_{LIM(min)}$			0.13		A
	$I_{LIM(max)}$			2		A
Turn-ON Time	T_{ON}	R_L=10Ω		120		us
Turn-OFF Time	T_{OFF}	R_L=10Ω, C_L=1uF		10		us
OUT Shutdown Discharge Resistance	R_{DIS}			150		Ω
Thermal Shutdown Temperature	T_{SD}			130		C
Thermal Shutdown Hysteresis				20		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.

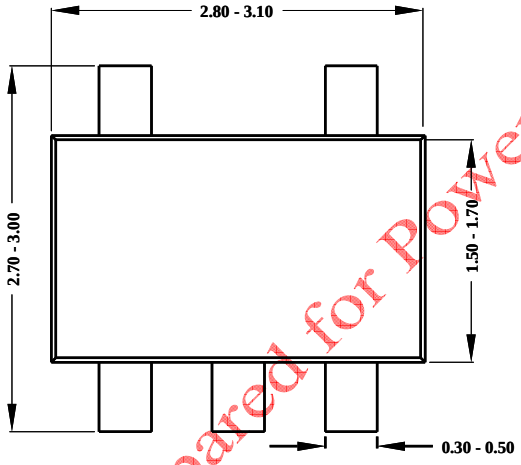
Note 2: θJA is measured in the natural convection at TA = 25°C on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Pin 2 of SOT23-5 packages is the case position for θJC measurement.

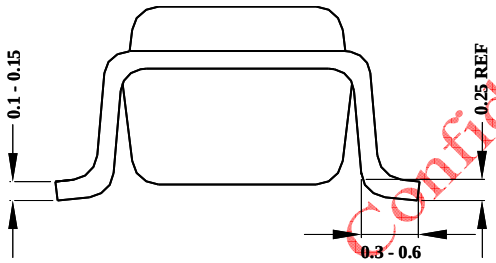
Note 3: The device is not guaranteed to function outside its operating conditions

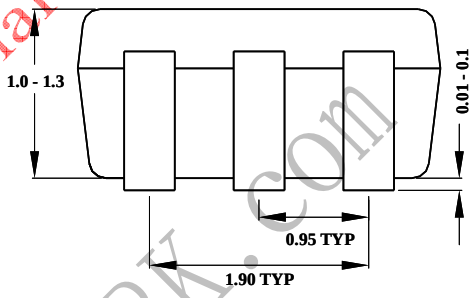
SOT23-5 Package outline & PCB layout design



Recommended Pad Layout







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