General Description

SY6281 and SY6281A are ultra-low $R_{DS(ON)}$ switch with programmable current limit to protect the power source from over current and short circuit conditions. It incorporates over temperature protection and reverse blocking functions. SY6281 automatically discharges the output capacitors during shutdown.

Ordering Information

SY6281 □(□□)□

- Temperature Code
- Package Code
- Optional Spec Code

Ordering Number	Package type	Note
SY6281AAC	SOT23-5	----
SY6281AAAC	SOT23-5	----

Features

- Input voltage: 2.4V to 5.5V
- 2A load current capability
- Programmable current limit
- Enable polarity: active low
- Over temperature protection
- Reverse blocking (no body diode)
- OUT can be forced higher than IN at shutdown
- Output discharge function
  - ✧ SY6281: Auto output discharge function
  - ✧ SY6281A: No output discharge function
- Compact SOT23-5 package minimizes the board space

Applications

- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories

Typical Applications

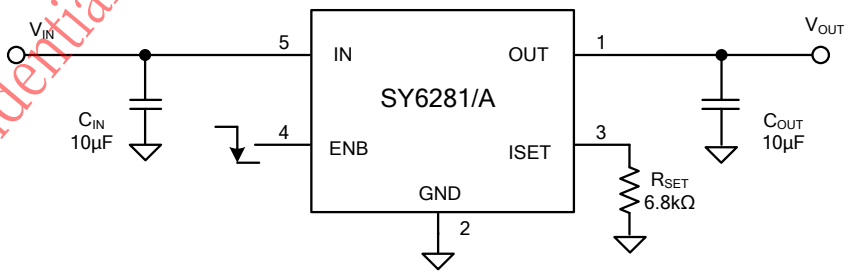
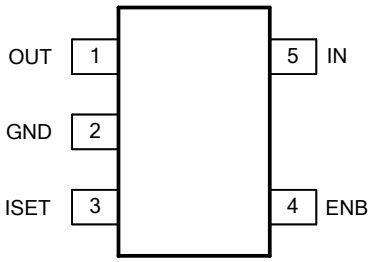


Figure 1. Schematic Diagram(1A current limit)

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Pinout (top view)



(SOT23-5)

Top mark: **FH*xyz*** for SY6281(Device code: FH, ***x=year code, y=week code, z= lot number code***)
MZxyz for SY6281A(Device code: MZ, ***x=year code, y=week code, z= lot number code***)

Pin Name	Pin number	Pin Description
IN	5	Input pin, decoupled with a 10μF capacitor to GND
GND	2	Ground pin
OUT	1	Output pin, decoupled with a 10μF capacitor to GND
ENB	4	ON/OFF control. Pull low to enable IC. Do not leave it floating
ISET	3	Current limit programming pin. Connect a resistor R_{SET} from this pin to ground to program the current limit: I_{LIM} (A)=6800/R_{SET} (Ω)

Absolute Maximum Ratings (Note 1)

All pins ---------- -0.3V to 6V
Power Dissipation, P_D @ T_A = 25°C, SOT23-5, ---------- 0.6W
Package Thermal Resistance (Note 2)
θ_{JA} ---------- 200°C/W
θ_{JC} ---------- 130°C/W
Junction Temperature ---------- 150°C
Lead Temperature (Soldering, 10 sec.) ---------- 260°C
Storage Temperature Range ---------- -65°C to 150°C

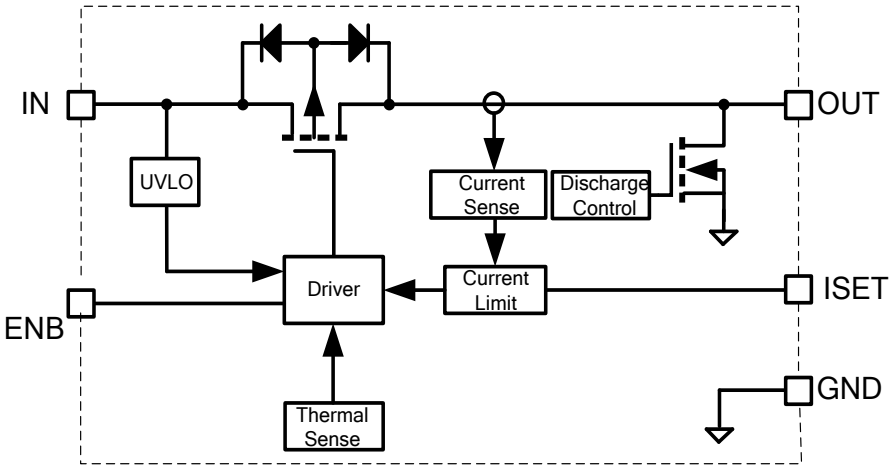
Recommended Operating Conditions (Note 3)

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

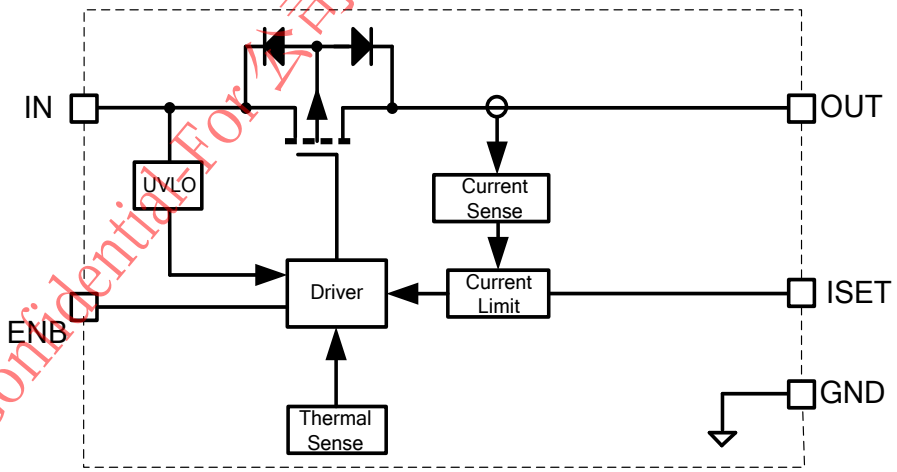
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Block Diagram



(SY6281)



(SY6281A)

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Electrical Characteristics

(V_{IN} = 5V, C_{OUT}=10μF, 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}	Open load, IC Disabled.		0.2	1	μA
Quiescent Supply Current	I_Q	Open load, IC Enabled.		38		μA
FET RON	$R_{DS(ON)}$			63		mΩ
ENB Rising Threshold	$V_{ENB(H)}$		2			V
ENB Falling Threshold	$V_{ENB(L)}$				0.8	V
ENB Leakage Current	I_{ENB}	V_{ENB}=5.0V			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
	$I_{LIM(min)}$			0.4		A
Turn-on Time	T_{ON}	R_L=10Ω, C_{OUT}=1μF		130		μs
Turn-off Time	T_{OFF}	R_L=10Ω, C_{OUT}=1μF		20		μs
OUT Shutdown Discharge Resistance	R_{DIS}	SY6281		120		Ω
Thermal Shutdown Temperature	T_{SD}			130		℃
Thermal Shutdown Hysteresis				20		℃

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.

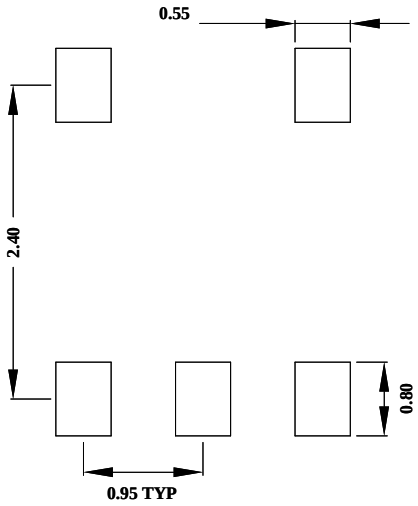
Note 2: θ_{JA} is measured in the natural convection at T_A = 25°C on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Pin 2 of SOT23-5 packages is the case position for θ_{JC} measurement.

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

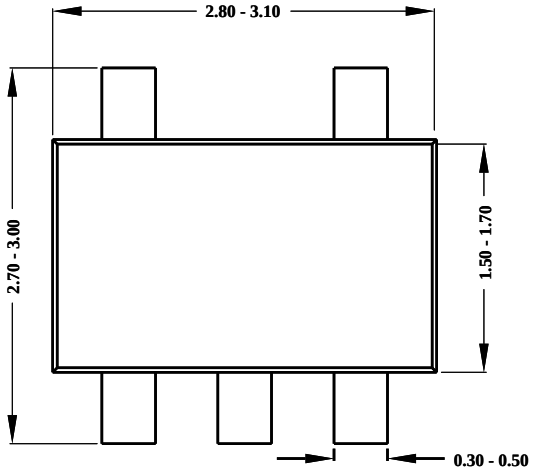
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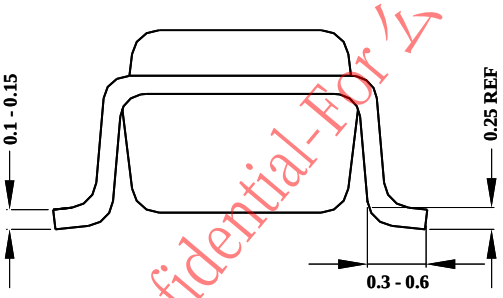
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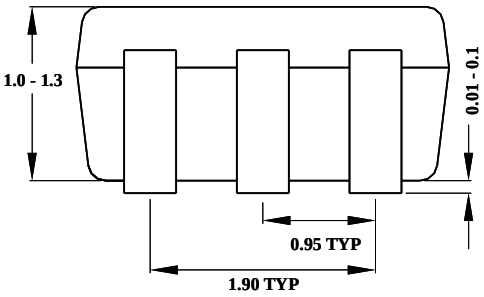
SOT23-5 Package outline & PCB layout design



Recommended Pad Layout







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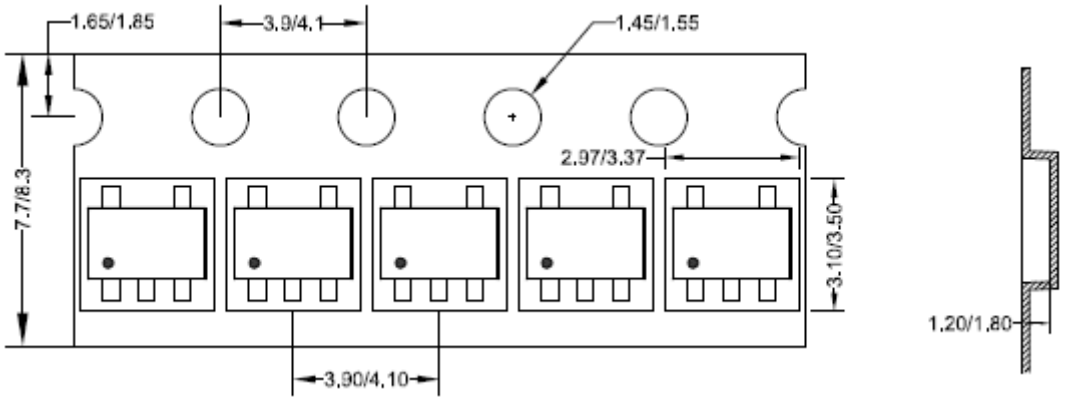
Notes: All dimensions are in millimeters.
All dimensions don't include mold flash & metal burr.

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Taping & Reel Specification

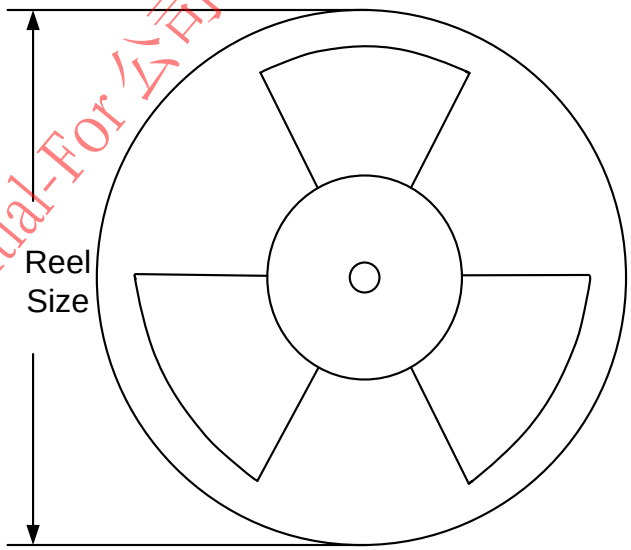
1. Taping orientation

SOT23-5



Feeding direction ⟶

2. Carrier Tape & Reel specification for packages



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Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer length(mm)	Leader length (mm)	Qty per reel
SOT23-5	8	4	7"	280	160	3000

3. Others: NA

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