

General Description

SY6280/ SY6280A is ultra-low $R_{DS(ON)}$ switch with programmable current limit to protect the power source from over current and short circuit conditions. They incorporate over temperature protection and reverse blocking functions. SY6280 automatically discharges the output capacitors during shutdown.

Ordering Information

SY6280□(□□)□
 └───┬───┬───
 Temperature Code
 Package Code
 Optional Spec Code

Ordering Number	Package type	Note
SY6280AAC	SOT23-5	----
SY6280AAAC	SOT23-5	----

Features

- Input Voltage: 2.4V to 5.5V
- 2A Load Current Capability
- Programmable Current Limit
- Enable Polarity: Active High
- Over Temperature Protection
- Reverse Blocking (No Body Diode)
- OUT Can be Forced Higher Than IN at Shutdown
- Output Discharge Function
 - ◇ SY6280: Auto Output Discharge Function
 - ◇ SY6280A: No Output Discharge Function
- Compact SOT23-5 Package Minimizes the Board Space

Applications

- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories

Typical Applications

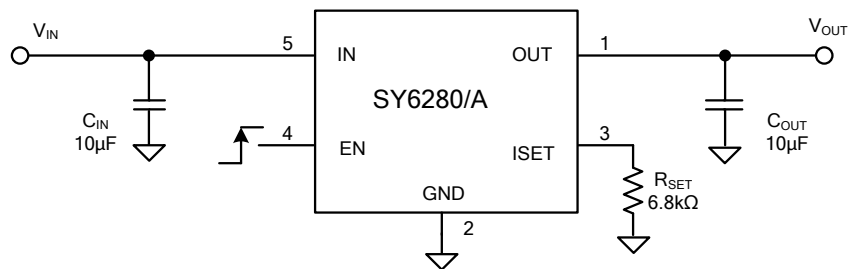
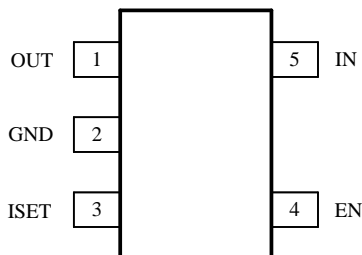


Figure1. Schematic Diagram (1A current limit)

Pinout (top view)



(SOT23-5)

Top mark: **CO**xyz for SY6280 (Device code: CO, x=year code, y=week code, z= lot number code)

QWxyz for SY6280A (Device code: QW, x=year code, y=week code, z= lot number code)

Pin Name	Pin number	Pin Description
IN	5	Input pin, decoupled with a 10 μ F capacitor to GND
GND	2	Ground pin
OUT	1	Output pin, decoupled with a 10 μ F capacitor to GND
EN	4	ON/OFF control. Pull high 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: $I_{LIM} (A) = 6800/R_{SET} (\Omega)$

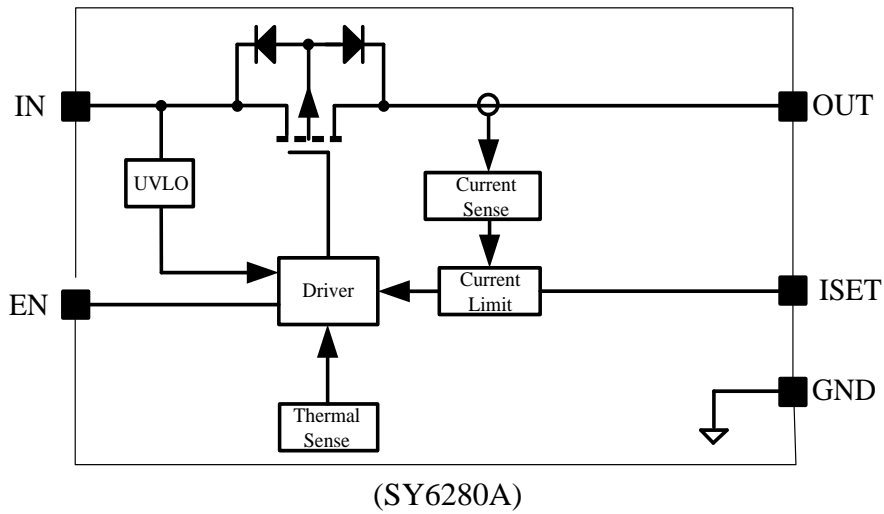
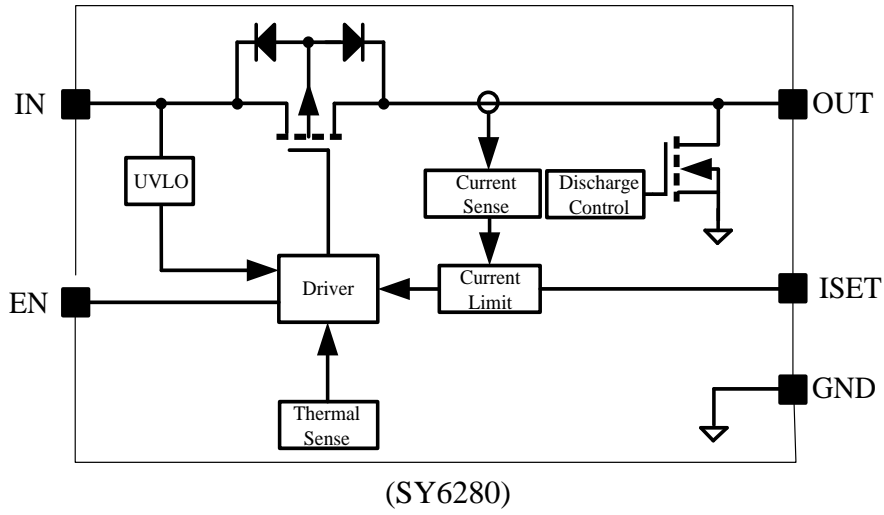
Absolute Maximum Ratings (Note 1)

All pins	-0.3V to 6V
Power Dissipation, P_D @ $T_A = 25^\circ\text{C}$ SOT23-5,	0.6W
Package Thermal Resistance (Note 2)	
θ_{JA}	200 $^\circ\text{C}/\text{W}$
θ_{JC}	130 $^\circ\text{C}/\text{W}$
Junction Temperature	150 $^\circ\text{C}$
Lead Temperature (Soldering, 10 sec.)	260 $^\circ\text{C}$
Storage Temperature Range	-65 $^\circ\text{C}$ to 150 $^\circ\text{C}$
ESD Susceptibility	
HBM (Human Body Mode)	2kV
CDM	500V

Recommended Operating Conditions (Note 3)

IN	2.4V to 5.5V
All Other Pins	0V to 5.5V
Junction Temperature Range	-40 $^\circ\text{C}$ to 125 $^\circ\text{C}$
Ambient Temperature Range	-40 $^\circ\text{C}$ to 85 $^\circ\text{C}$

Block Diagram





SY6280/SY6280A

Electrical Characteristics

($V_{IN} = 5V$, $C_{OUT} = 10\mu F$, $T_A = 25^\circ C$ unless otherwise specified)

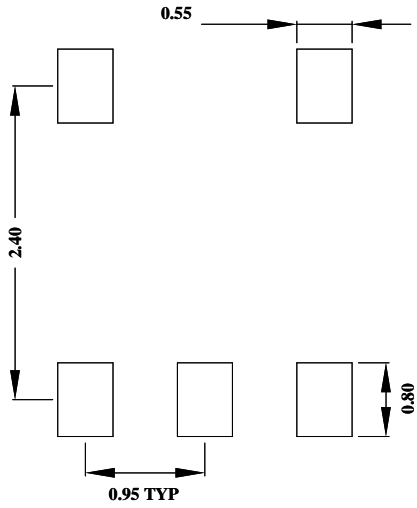
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Range	V_{IN}		2.4		5.5	V
Shutdown Input Current	I_{SHDN}	Open load, IC Disabled.		0.2	1	μA
Quiescent Supply Current	I_Q	Open load, IC Enabled.		38	50	μA
FET RON	$R_{DS(ON)}$			63		$m\Omega$
EN Rising Threshold	$V_{EN(H)}$		2			V
EN Falling Threshold	$V_{EN(L)}$				0.8	V
EN Leakage Current	I_{EN}	$V_{EN} = 5.0V$			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}	$R_{SET} = 6.8k\Omega$	0.75	1	1.25	A
	$I_{LIM(min)}$			0.4		A
Turn-on Time	T_{ON}	$R_L = 10\Omega$, $C_{OUT} = 1\mu F$		130		μs
Turn-off Time	T_{OFF}	$R_L = 10\Omega$, $C_{OUT} = 1\mu F$		20		μs
OUT Shutdown Discharge Resistance	R_{DIS}	SY6280 Only		120		Ω
Thermal Shutdown Temperature	T_{SD}			130		$^\circ C$
Thermal Shutdown Hysteresis				20		$^\circ C$

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.

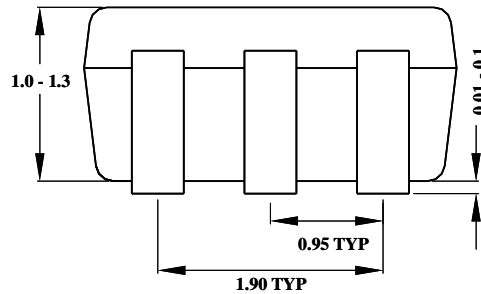
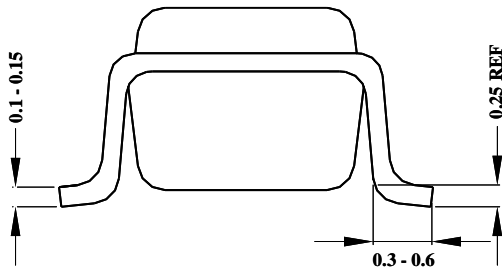
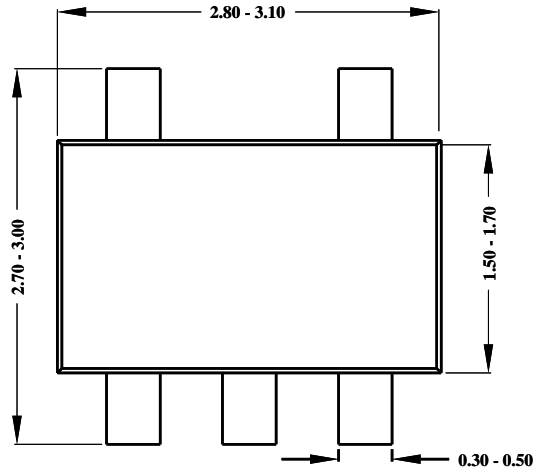
Note 2: θ_{JA} is measured in the natural convection at $T_A = 25^\circ C$ on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Pin 2 of SOT23-5 packages is the case position for θ_{JC} measurement.

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

SOT23-5 Package outline & PCB layout design



Recommended Pad Layout



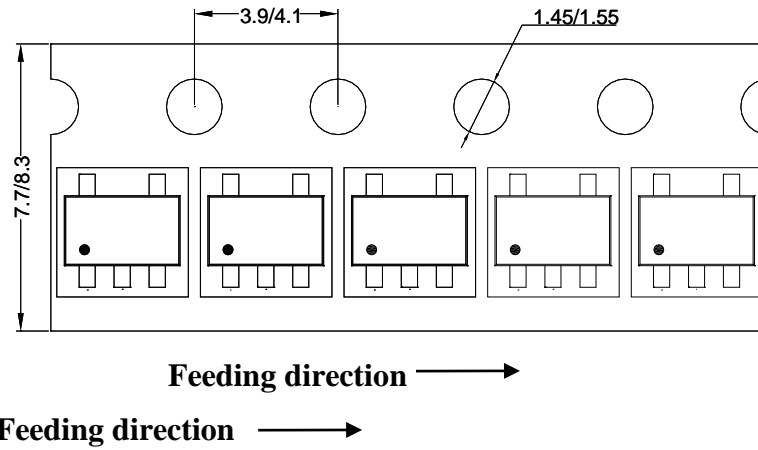
Notes: All dimensions are in millimeters.

All dimensions don't include mold flash & metal burr.

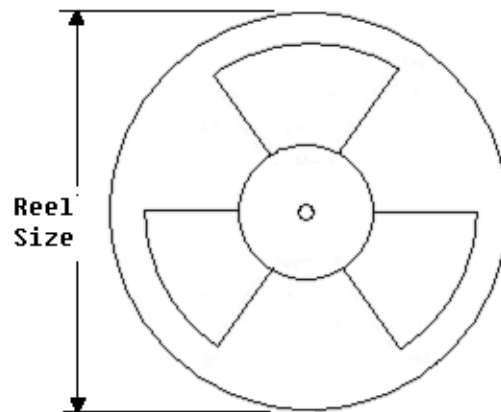
Taping & Reel Specification

1. Taping orientation

SOT23-5



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
SOT23-5	8	4	7"	280	160	3000

3. Others: NA