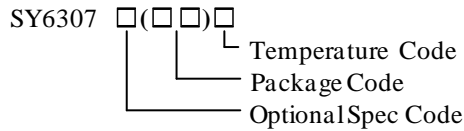


## General Description

SY6307B is a 500mA low dropout bias rail LDO regulator with built-in NMOS. Compact DFN1.2x1.2-6 package is optimized for use in space constrained applications.

## Ordering Information



Ordering Number	Package Type	Note
SY6307BSCC	DFN1.2x1.2-6	--

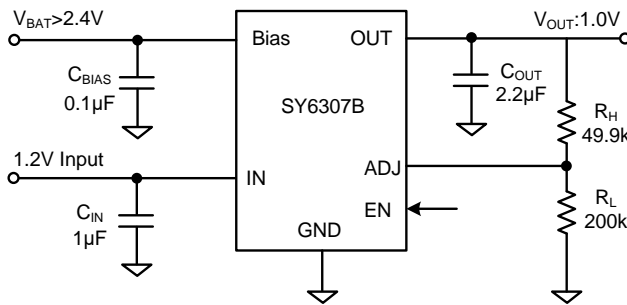
## Features

- Input Voltage Range: 0.8V-5.5V
- Bias Voltage Range: 2.4V-5.5V
- Output Voltage Accuracy: +/-1%
- Bias Input Quiescent Current: 110μA
- Up to 500mA Output Current
- Current Limit Protection
- Over Temperature Shutdown
- Output Auto-discharge Resistor: 130Ω
- RoHS Compliant and Halogen Free
- Compact Package: DFN1.2x1.2-6

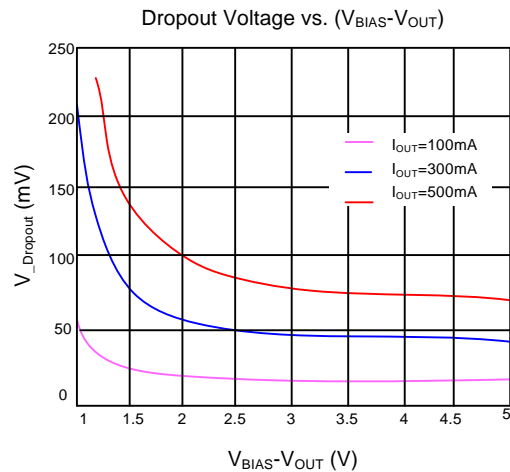
## Applications

- Battery-powered Equipment
- Smart Phones, Tablets
- Cameras, DVRs, STB and Camcorders

## Typical Applications

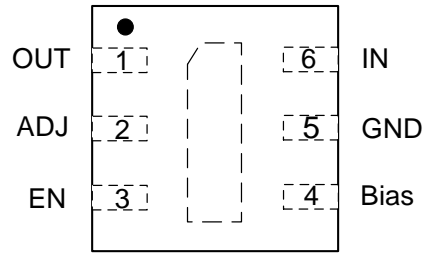


**Figure1. Schematic Diagram**



**Figure2. Dropout Curve**

## Pinout (top view)



(DFN1.2x1.2-6)

Top mark: Hxyz for SY6307BSCC (Device code: H,  $x$ =year code,  $y$ =week code,  $z$ =lot number code)

Pin Number	Symbol	Pin Description
1	OUT	Output pin. Decouple this pin to GND with at least a 2.2 $\mu$ F ceramic capacitor.
2	ADJ	Output voltage programming pin. Connect this pin to the center point of the output resistor divider (as shown in Figure 1) to program the output voltage: $V_{OUT}=0.8V \times (1+R_H/R_L)$ .
3	EN	Enable control pin. Pull high to enable the regulator. Pull low to shut down the regulator. Do not leave it floating.
4	Bias	Bias voltage supply for internal control circuits. Decouple this pin to GND with at least a 0.1 $\mu$ F ceramic capacitor.
5	GND	Ground pin.
6	IN	Input voltage supply pin. Decouple this pin to GND with at least a 1 $\mu$ F ceramic capacitor.

## Block Diagram

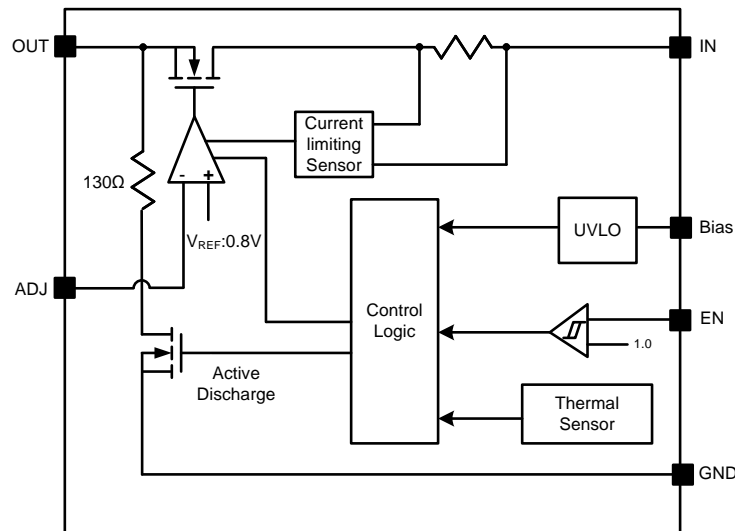


Figure3. Block Diagram



## Absolute Maximum Ratings (Note 1)

IN, OUT, Bias, EN, ADJ	-0.3V to 6.0V
Power Dissipation, $P_D$ @ $T_A = 25^\circ\text{C}$ , DFN1.2x1.2-6	1.4W
Package Thermal Resistance (Note 2)	
$\theta_{JA}$	70°C/W
$\theta_{JC}$	12°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)

Bias Input Voltage	2.4V to 5.5V
IN	0.8V to 5.5V
OUT	0.8V to $V_{Bias}-1.4V$
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C

## Electrical Characteristics

( $V_{IN}=1.2V$ ,  $V_{OUT}=1.0V$ ,  $V_{Bias}=3.3V$ ,  $I_{OUT}=1mA$ ,  $C_{IN}=1.0\mu F$ ,  $C_{OUT}=2.2\mu F$ ,  $T_A=25^\circ C$  unless otherwise specified)

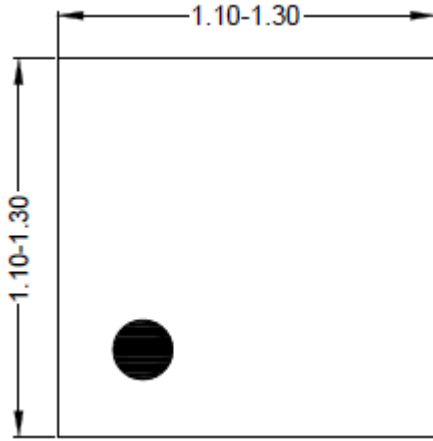
Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
Input Voltage Range	$V_{IN}$		$V_{OUT}+V_{DO}$		5.5	V
Bias Input Voltage	$V_{Bias}$		2.4		5.5	V
Bias Supply Current	$I_{Bias}$			110		$\mu A$
Bias Shutdown Current	$I_{SD}$	$V_{EN}=0$		0.1	1	$\mu A$
Feedback Reference Voltage	$V_{REF}$		0.792	0.8	0.808	V
Current Limit	$I_{LIM}$		500			mA
Load Regulation	$V_{LOAD}$	$I_{OUT}: 1mA\sim 500mA$		2		mV
$V_{Bias}$ Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{Bias}}$	2.7 V or ( $V_{OUT(NOM)} + 1.6 V$ ), whichever is greater < $V_{Bias} < 5.5 V$		0.01		%/V
Dropout Voltage	$V_{DO}$	$I_{OUT}=500mA$		90		mV
Ripple Rejection	$PSRR_{(VIN)}$	$V_{IN}$ to $V_{OUT}$ , $f = 1 kHz$ , $I_{OUT} = 150mA$ , $V_{IN} \geq V_{OUT} + 0.5 V$		70		dB
	$PSRR_{(VBias)}$	$V_{Bias}$ to $V_{OUT}$ , $f = 1 kHz$ , $I_{OUT} = 150mA$ , $V_{IN} \geq V_{OUT} + 0.5 V$		70		dB
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T}$	$I_{OUT}=100mA$ $-40^\circ C \leq T \leq 85^\circ C$		$\pm 100$		ppm/ $^\circ C$
Output Noise Voltage	$V_N$	$V_{IN}=V_{OUT}+0.5V$ , $V_{OUT}=1V$ , $f=10Hz$ to $100kHz$		40		$\mu V_{RMS}$
Discharge resistor	$R_{Discharge}$			130		$\Omega$
EN Rising Threshold	$V_{ENH}$		1.0			V
EN Falling Threshold	$V_{ENL}$				0.4	V
Thermal Shutdown Temperature	$T_{SD}$			150		$^\circ C$
Thermal Shutdown Hysteresis	$T_{HYS}$			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.

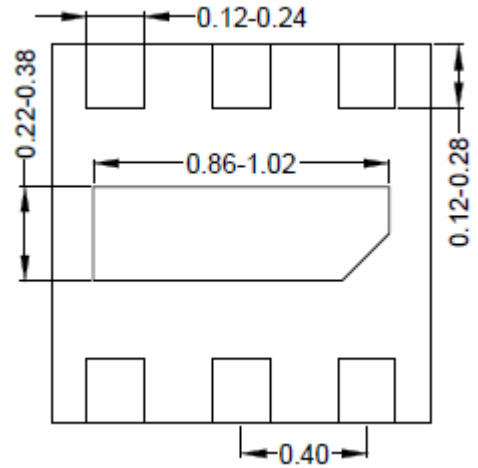
**Note 2:**  $\theta_{JA}$  of SY6307BSCC is measured in the natural convection at  $T_A = 25^\circ C$  on a two-layer Silergy evaluation board.  $\theta_{JC}$  measurement. Paddle of DFN 1.2x1.2-6 package is the case position for SY6307BSCC.

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

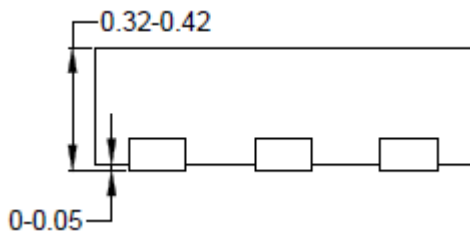
**DFN1.2×1.2-6 Package Outline Drawing**



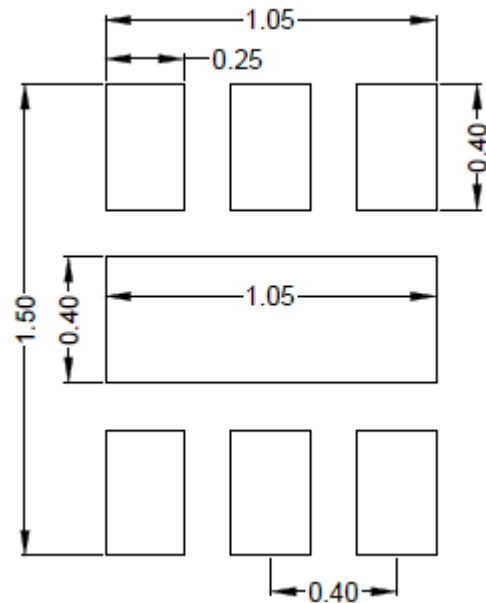
**Top view**



**Bottom view**



**Side view**



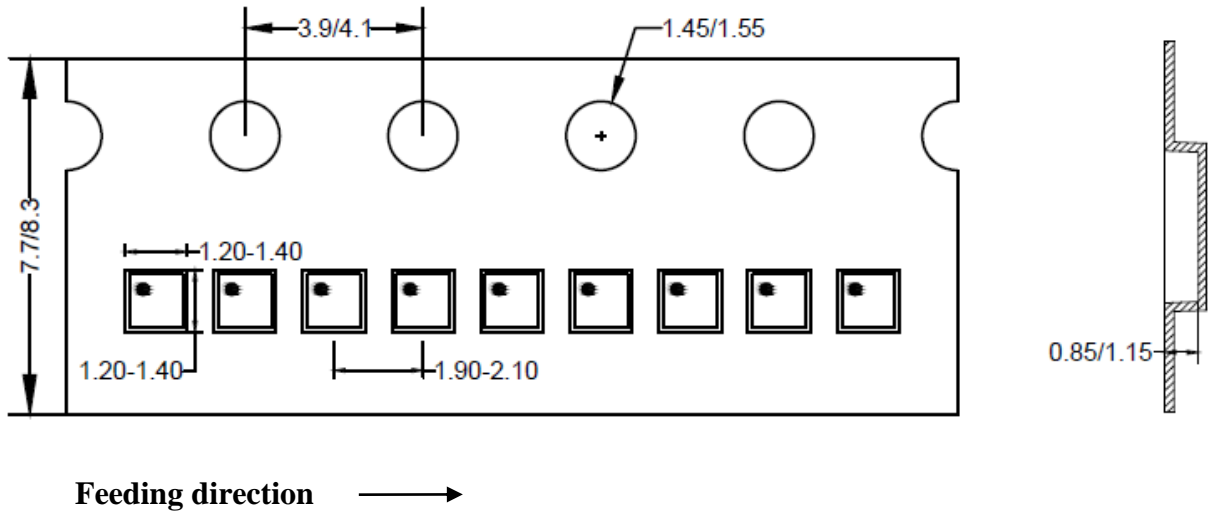
**Recommended PCB layout  
(Reference only)**

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

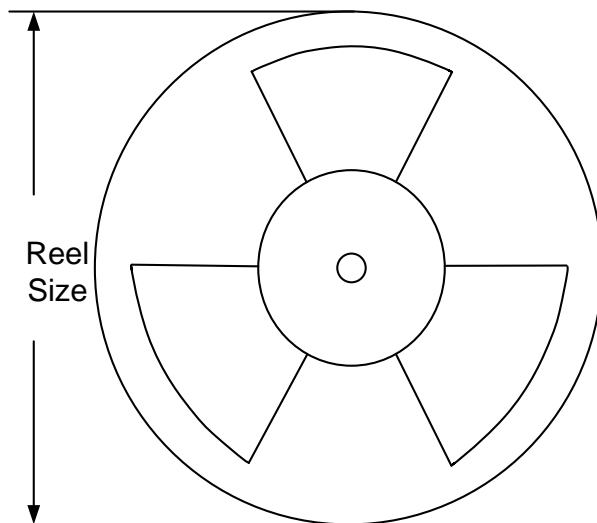
**Taping & Reel Specification**

**1. Taping orientation**

**DFN1.2×1.2**



**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
DFN1.2×1.2	8	2	7"	400	160	5000

**3. Others: NA**

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