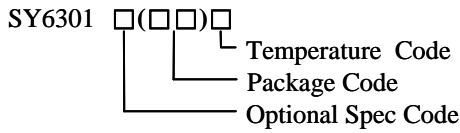


General Description

The SY6301 is a super low dropout LDO regulator with small package, capable of delivering up to 1A output current.

Ordering Information



Ordering Number	Package type	Note
SY6301DSC	DFN3×3-6	----

Features

- Input Voltage Range: 1.6-5.5V
- Output Voltage Accuracy: $\pm 3\%$
- Up to 1A Output Current
- Low Dropout Voltage:
 - Typ. 0.32V at $I_{OUT}=1A, V_{OUT}=1.5V$
 - Typ. 0.18V at $I_{OUT}=1A, V_{OUT}=2.8V$
- Current Limiting Protection
- Thermal Shutdown Protection
- Quiescent Current: 60 μ A
- Output Auto-discharge Function
- Over Temperature Protection
- RoHS Compliant and Halogen Free
- Compact Package: DFN3×3-6

Applications

- Portable Communication Equipments
- Hand-Held Instruments, Notebook PC
- Camcorders and Cameras

Typical Applications

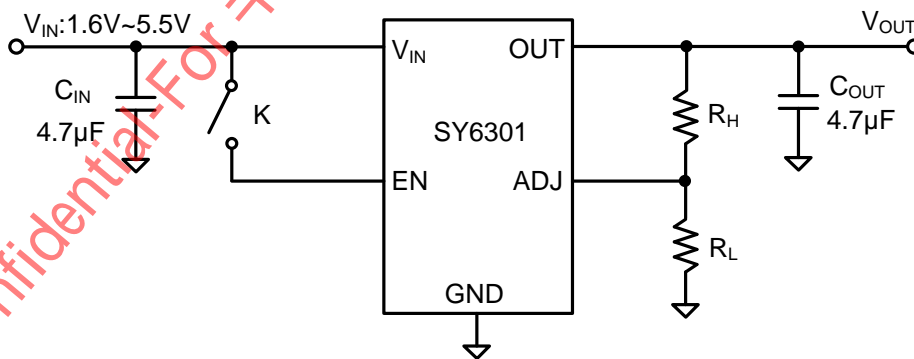
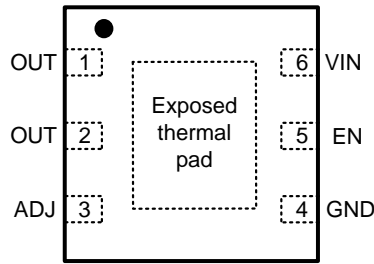


Figure1. Schematic Diagram

Pinout (top view)



(DFN3x3-6)

Top mark: **RBxyz** for SY6301DSC (Device code: RB, *x*=year code, *y*=week code, *z*=lot number code)

Pin Name	Pin Number	Pin Description
OUT	1, 2	Output pin. Decouple this pin to the GND pin with at least a 4.7μF ceramic capacitor.
ADJ	3	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: $V_{OUT}=1.0V \times (1+R_H/R_L)$.
GND	4	Ground pin.
EN	5	Enable control pin. A 5MΩ pull-down resistor is integrated.
VIN	6	Input pin. Decouple this pin to the GND pin with at least a 4.7μF ceramic capacitor.

Block Diagram

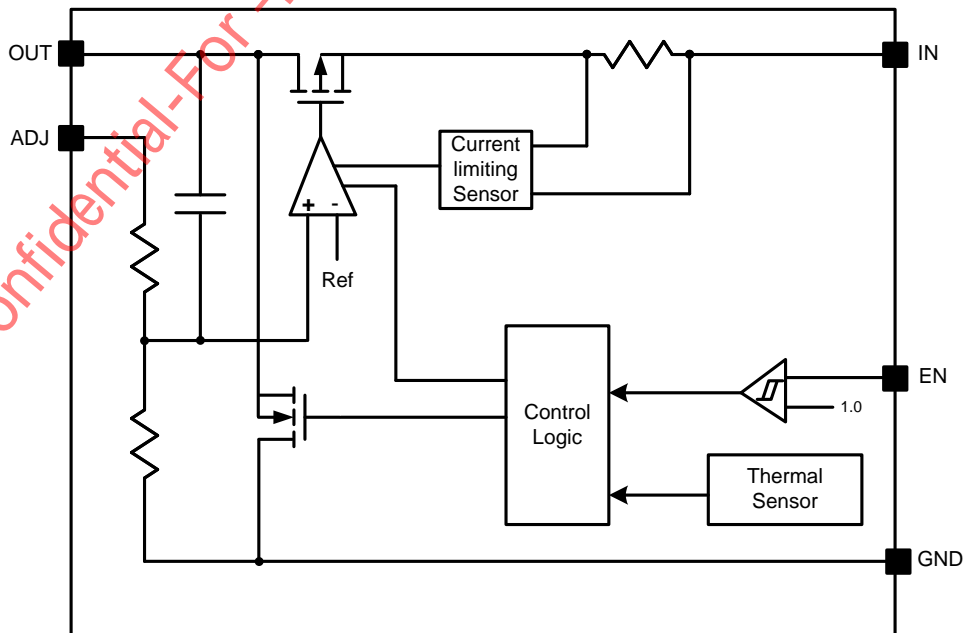


Figure2. Block Diagram

Absolute Maximum Ratings (Note 1)

IN, EN	-----	6.0V
Power Dissipation, P _D @ T _A = 25°C DFN3×3-6	-----	2W
Package Thermal Resistance (Note 2)		
θ _{JA}	-----	50°C/W
θ _{JC}	-----	15°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)

Supply Input Voltage	-----	1.6V to 5.5V
Junction Temperature Range	-----	-40°C to 125°C
Ambient Temperature Range	-----	-40°C to 85°C

Electrical Characteristics

(V_{IN} = 5V, C_{IN}=4.7μF, C_{OUT}=4.7μF, T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
Input Voltage Range	V _{IN}		1.6		5.5	V
Supply Current	I _{SS}	V _{EN} =V _{IN} =2V, V _{OUT} =V _{ADJ} , I _{OUT} =0A		60	100	μA
Shutdown Current	I _{SD}	V _{IN} =6.0V, V _{EN} =0		0.1	1	μA
Output Voltage Accuracy	ΔV _{OUT}	V _{OUT} =V _{ADJ} , V _{IN} =2.0V, I _{OUT} =100mA	0.970		1.030	V
Output Voltage Range			1.0		V _{IN}	V
Current Limit	I _{LIM}		1.0			A
Load Regulation	ΔV _{OUT} /ΔI _{OUT}	V _{OUT} =V _{ADJ} , V _{IN} =2.0V 1mA≤I _{OUT} ≤1A		-3		mV/A
Line Regulation	ΔV _{OUT} /ΔV _{IN}	V _{OUT} =V _{ADJ} , I _{OUT} =100mA 2.0≤V _{IN} ≤5.5V		0.05	0.2	%/V
EN Pull-down Resistance	R _{EN}			5		MΩ
Ripple Rejection	RR	f=1kHz, Ripple 0.5V _{P-P} V _{OUT} =V _{ADJ} , V _{IN} =2.5V, I _{OUT} =100mA		-60		dB
Output Voltage Temperature Coefficient	ΔV _{OUT} /ΔT	I _{OUT} =100mA -40°C≤T≤85°C		±100		ppm/°C
Short Current Limit	I _{SHORT}	V _{OUT} =0V		250		mA
Discharge Resistor	R _{DISCHG}			100		Ω
EN Rising Threshold	V _{ENH}		1.0			V
EN Falling Threshold	V _{ENL}				0.4	V
Thermal Shutdown Temperature	T _{SD}			150		°C
Thermal Shutdown Hysteresis	T _{HYS}			20		°C
Dropout Voltage	V _{DROP}	Refer to following table				

Dropout Voltage by output Voltage

$T_A = 25^\circ\text{C}$

Output Voltage(V) V_{OUT}	Dropout Voltage V_{DROP} (V)		
	$I=300\text{mA}$		$I=1\text{A}$
	Typ.	Max	Typ
$1.0\text{V} \leq V_{OUT} < 1.5\text{V}$	0.18	0.32	0.50
$1.5\text{V} \leq V_{OUT} < 2.6\text{V}$	0.10	0.15	0.28
$2.6\text{V} \leq V_{OUT}$	0.05	0.10	0.18

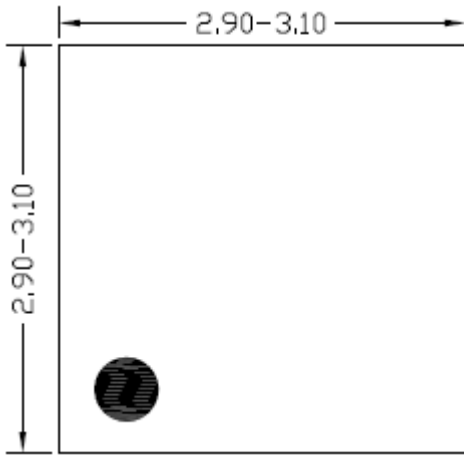
Note 1: Stresses beyond the “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification is not implied. Exposure to absolute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

Note 2: θ_{JA} is measured in the natural convection at $T_A = 25^\circ\text{C}$ on a two-layer Silergy evaluation board.

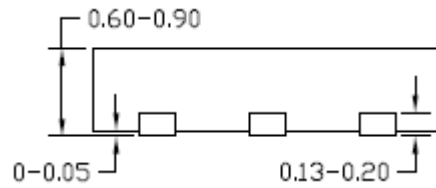
Note 3: The device is not guaranteed to function outside its operating conditions

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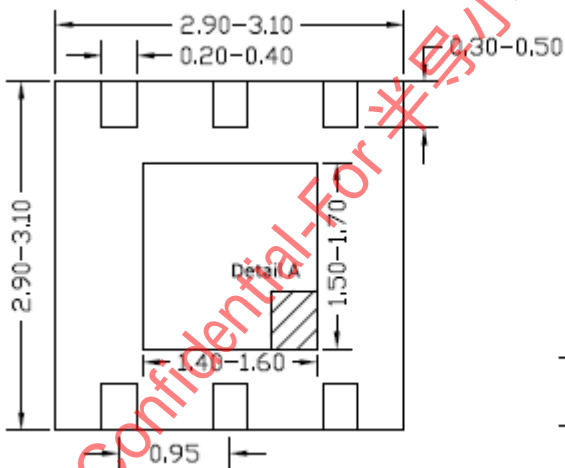
DFN3×3-6 Package Outline Drawing



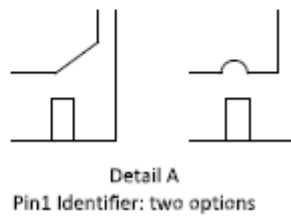
Top View



Side View



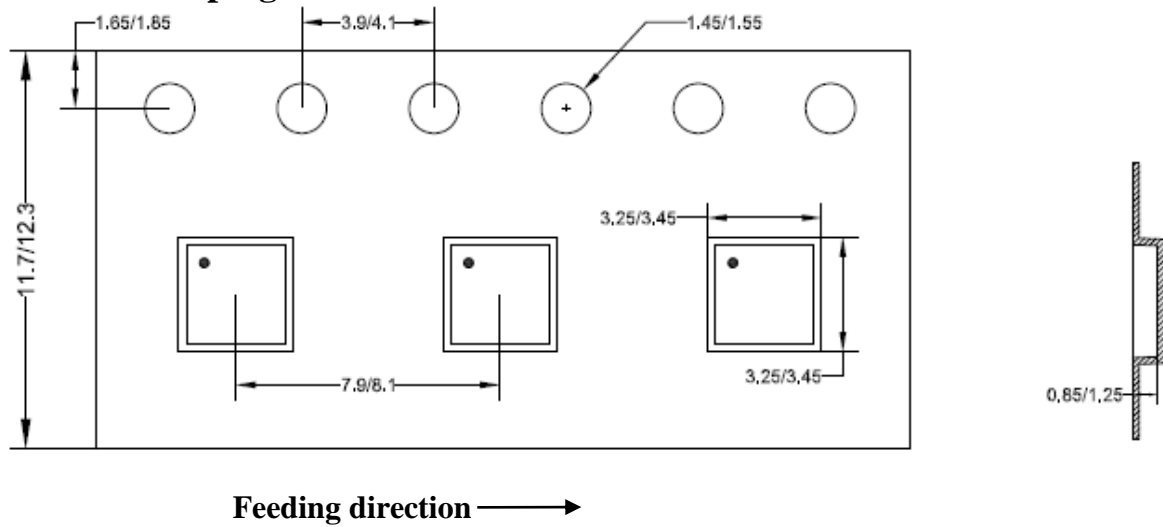
Bottom View



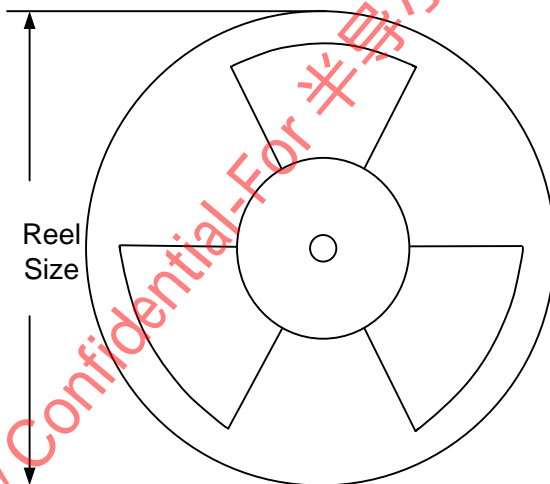
Notes: All dimension in millimeter and exclude mold flash & metal burr

Taping & Reel Specification

1. DFN3×3 taping orientation



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
DFN3×3	12	8	13"	400	400	5000

3. Others: NA