Description

The PJ9402 is a high accuracy, low dropout voltage, low current consumption, high PSRR three-terminal step-down regulator, Input voltage supports up to 10V, which provide large output currents even when the difference of the input-output voltage is small and has good adjustment rate, Integrated high-precision reference voltage source and output power tube over-current protection circuit and over-temperature protection.

The Enable pin EN to control the chip into standby mode, in which static current consumption is greatly reduced.

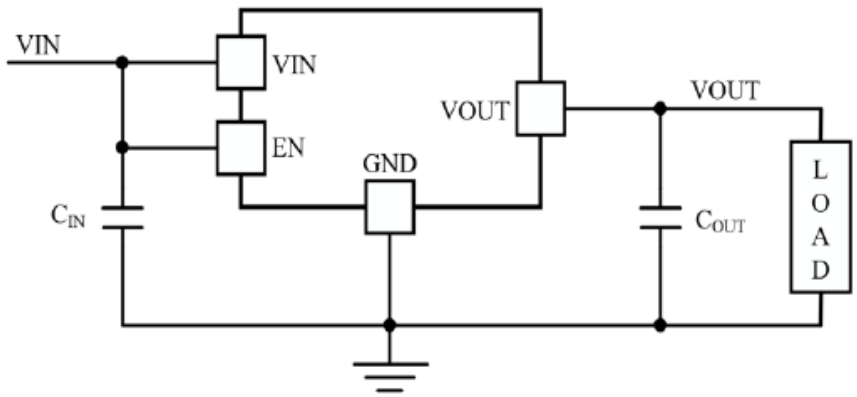
Features

- Wide Input Voltage Range: 2.3V~10V
- Maximum Output Current: 400mA
- Standard Fixed Output Voltage Options: 1.2V~5.0V(customized by every 0.1V step)
- Low Quiescent Current: 2.1μA(Typ.)@ VIN=6V
- PSRR=76dB@1kHz
- Low Dropout : 75mV @ IOUT=50mA,VOUT=3.3V
- Low Output Voltage Accuracy: ±2%
- EN Pin Standby Function
- Built-in Over-current , Over-temperature Protection
- Available Packages: SOT-23, SOT-89, SOT-23-3, SOT-23-5 and DFN1x1-4L

Applications

- One or Two Lithium Batteries Portable Equipments
- Two or Six Dry Batteries Power Supply Systems
- Bluetooth, RF Systems
- Consumer Electronics

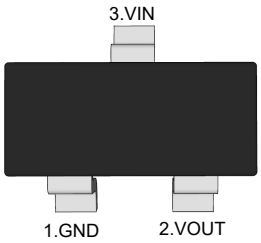
Typical Application Circuit



Note: C_{IN} recommends at least 1μF; In order to ensure the stability of the output voltage,
C_{OUT} should choose ceramic electricity capacity at least 1μF, or electrolytic capacitance at least 2.2uF.

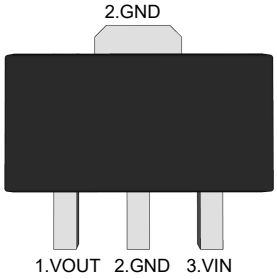
Pin Distribution

SOT-23



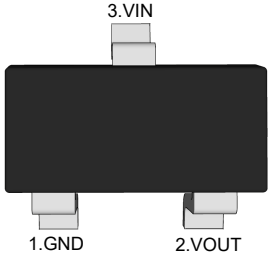
(Top View)

SOT-89



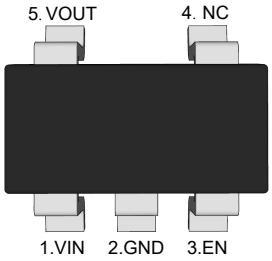
(Top View)

SOT-23-3



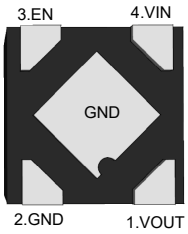
(Top View)

SOT-23-5



(Top View)

DFN1x1-4L



(Bottom View)

Functional Pin Description

Pin Name	Pin Function
VIN	Power Input Voltage
GND	Ground
EN	Chip Enable (Active High). Note that this pin is high impedance
NC	NO Connected
VOUT	Output Voltage

Ordering Information

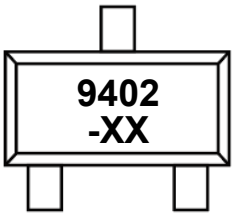
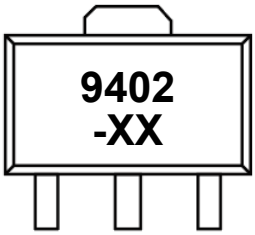
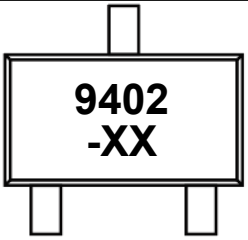
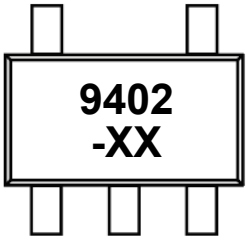
PJ9402□□□□

Package Type
SA:SOT-23 SQ:SOT-89 SC:SOT-23-3
SE:SOT-23-5 DE:DFN1x1-4L

Output Voltage
1.2V~5.0V by 0.1V step.
For example, 33means product outputs 3.3V

Output current tap
L : 400mA

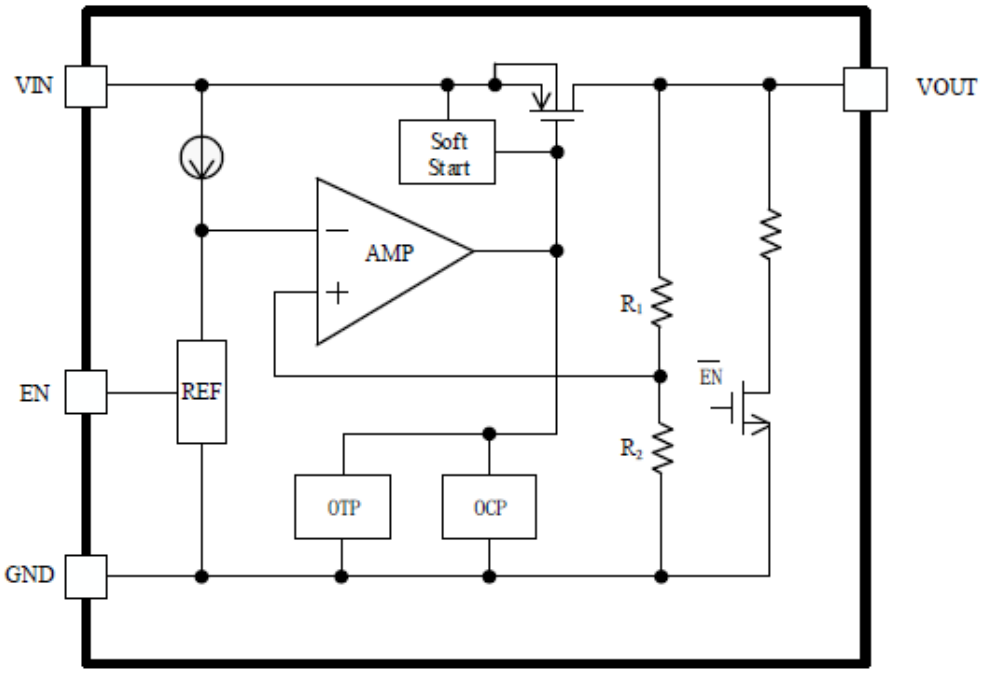
Ordering Information Continue

Orderable Device	Package	Reel (inch)	Package Qty (PCS)	Eco Plan Note1	MSL Level	Marking Code
PJ9402LXXSA Note2	SOT-23	7	3000	RoHS & Green	MSL1	 XX:Output Voltage e.g. 3.0:3.0V
PJ9402LXXSQ Note2	SOT-89	7/13	1000/3000	RoHS & Green	MSL1	 XX:Output Voltage e.g. 3.0:3.0V
PJ9402LXXSC Note2	SOT-23-3	7	3000	RoHS & Green	MSL3	 XX:Output Voltage e.g. 3.0:3.0V
PJ9402LXXSE Note2	SOT-23-5	7	3000	RoHS & Green	MSL3	 XX:Output Voltage e.g. 3.0:3.0V
PJ9402LXXDE Note2	DFN1x1-4L	7	10000	RoHS & Green	MSL1	 XX:Output Voltage e.g. 30:3.0V

Note:

1. RoHS：PJ defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials.
Green：PJ defines "Green" to mean Halogen-Free and Antimony-Free.
2. XX indicates 1.2V~5.0V. For example, 33 means product outputs 3.3V.

Function Block Diagram



Absolute Maximum Ratings Note3

Ratings at 25℃ ambient temperature unless otherwise specified.

Parameter		Value	Unit
Input Voltage Range		-0.3 ~ +12	V
Output Voltage Range		-0.3 ~ V_{IN}+0.3	V
Output Current		450	mA
Power Dissipation	SOT-23	300	mW
	SOT-23-3	400	mW
	SOT-89	600	mW
	SOT-23-5	400	mW
	DFN1x1-4L	400	mW
Thermal Resistance,Junction-to-Ambient	SOT-23	380	°C/W
	SOT-23-3	300	°C/W
	SOT-89	180	°C/W
	SOT-23-5	300	°C/W
	DFN1x1-4L	300	°C/W
Operating Ambient Temperature		-40 ~ +85	°C
Junction temperature		150	°C
Storage temperature range		-55 ~ +125	°C
ESD Voltage	HBM	3	KV

Note3: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect.

Recommended Operating Conditions

Parameter	Value	Unit
Supply Voltage	2.3~10	V
Maximum Output Current	400	mA
Operating Ambient Temperature	-40 ~ +85	°C

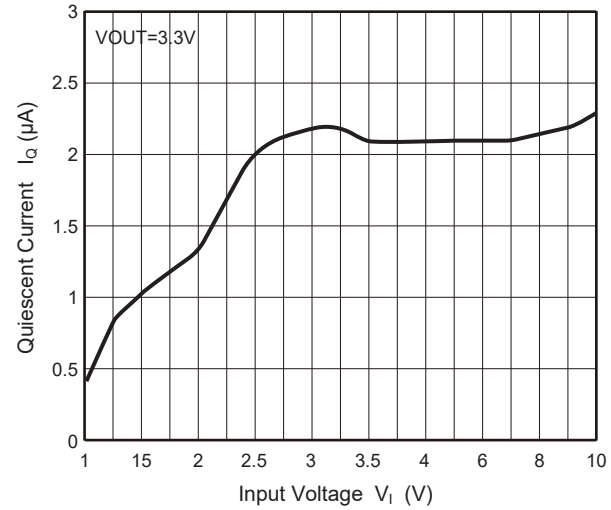
Electrical Characteristics

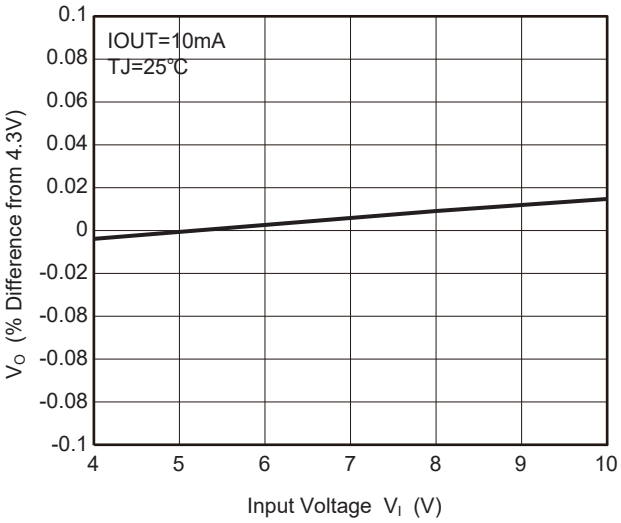
(V_{IN}=V_{OUT}+1V, C_{IN}=1μF, C_{OUT}=1μF, T_A=25℃ , unless otherwise noted.)

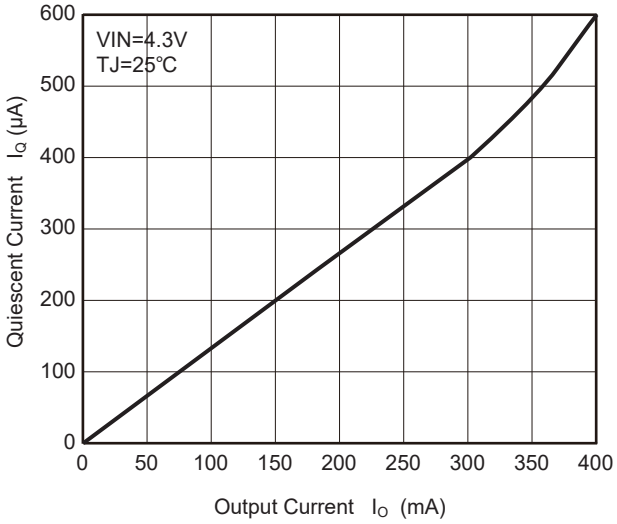
Parameter		Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Input Voltage		V_{IN}			2.3	--	10	V
Output Voltage Accuracy		ΔV_{OUT}	V_{IN}=12V, I_{OUT}=10mA		-2	--	+2	%
Quiescent Current		I_Q	V_{IN}=6V, I_{OUT}=0mA		--	2.1	3	μA
			V_{IN}=10V, I_{OUT}=0mA		--	2.5	6	
Shutdown Current		I_{Shut}	V_{EN}=0V		--	--	0.1	μA
Dropout Voltage		V_{DROP}	V_{OUT}≤2V	I_{OUT}=50mA	--	160	--	mV
			2<V_{OUT}≤3V		--	120	--	
			3<V_{OUT}≤5V		--	75	--	
Line Regulation		ΔV_{LINE}	V_{OUT}+1V≤V_{IN}≤6V I_{OUT}=10mA		--	0.01	--	%/V
Load Regulation		ΔV_{LOAD}	1mA<I_{OUT}<200mA V_{IN}=V_{OUT}+1V		--	0.02	--	%/mA
Current Limit		I_{Limit}			--	400	--	mA
EN Input Threshold	Logic Low	V_{IL}	V_{IN}=5V		--	--	0.4	V
	Logic High	V_{IH}	V_{IN}=5V		1.2	--	--	V
Output Noise Voltage		V_N	BW=10Hz~100KHz		--	50	--	μVrms
Power Supply Rejection Ratio		PSRR	V_{IN}=5V+1V_{P-P}(AC),I_{OUT}=50mA f=1KHz,V_{OUT}=3.3V		--	76	--	dB
Output Discharge Resistance		R_D	V_{EN}=0V,V_{OUT}=0.5V		--	500	--	Ω
Thermal Shutdown Temperature		T_{OTP}	Shutdown, Temp increasing		--	160	--	°C
Thermal Shutdown Temperature Hysteresis		T_{HYS}	Reset, Temp increasing		--	25	--	°C

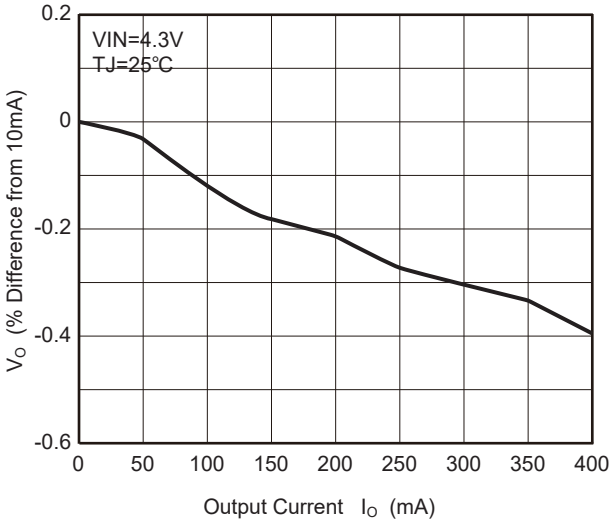
Typical Electrical Curves

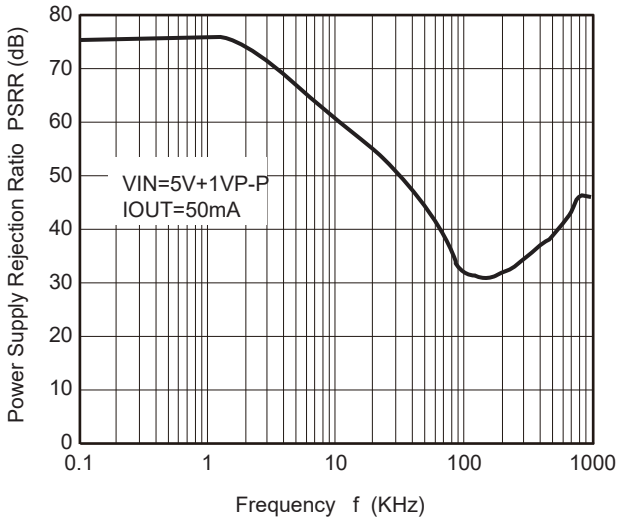
(C_{IN}=1μF, C_{OUT}=1μF, T_A=25℃ , unless otherwise noted.)



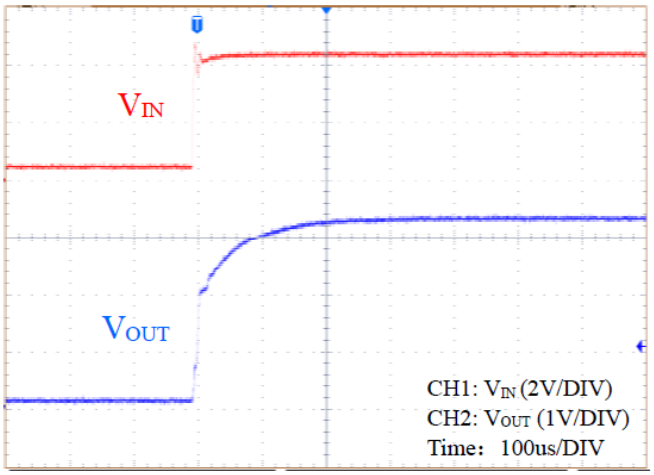




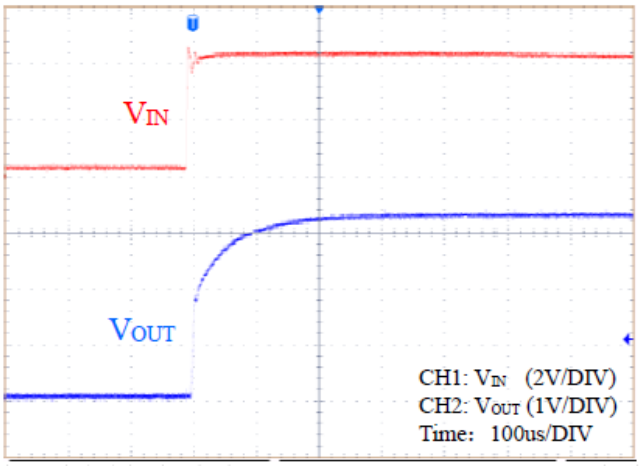




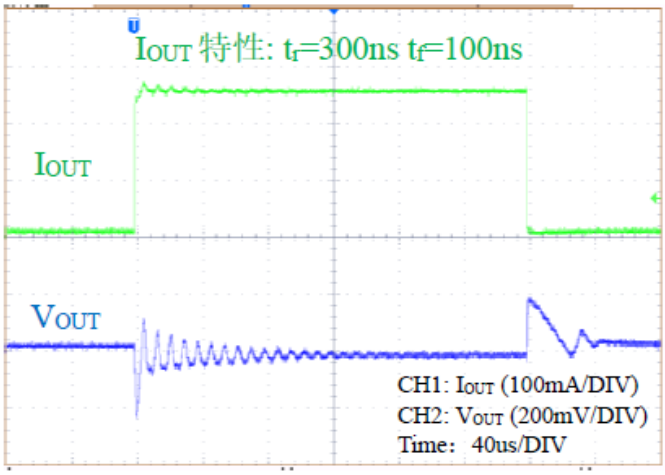
Power ON: I_{OUT}=0mA, 0V~4.3V(V_{IN})



Power ON: I_{OUT}=150mA, 0V~4.3V(V_{IN})



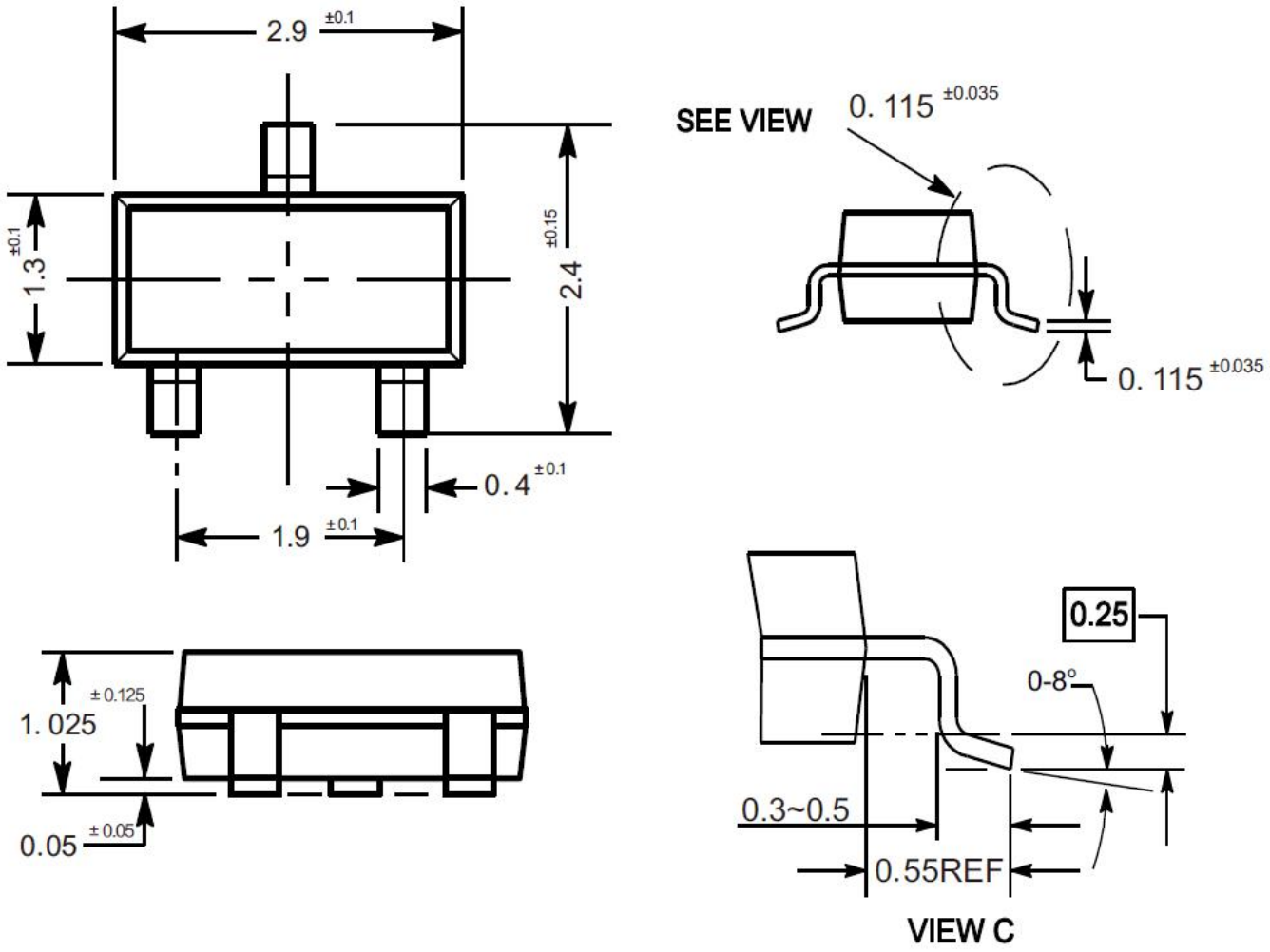
Load transient: V_{IN}=4.3V, 10mA~250mA(I_{OUT})



Package Outline

SOT-23

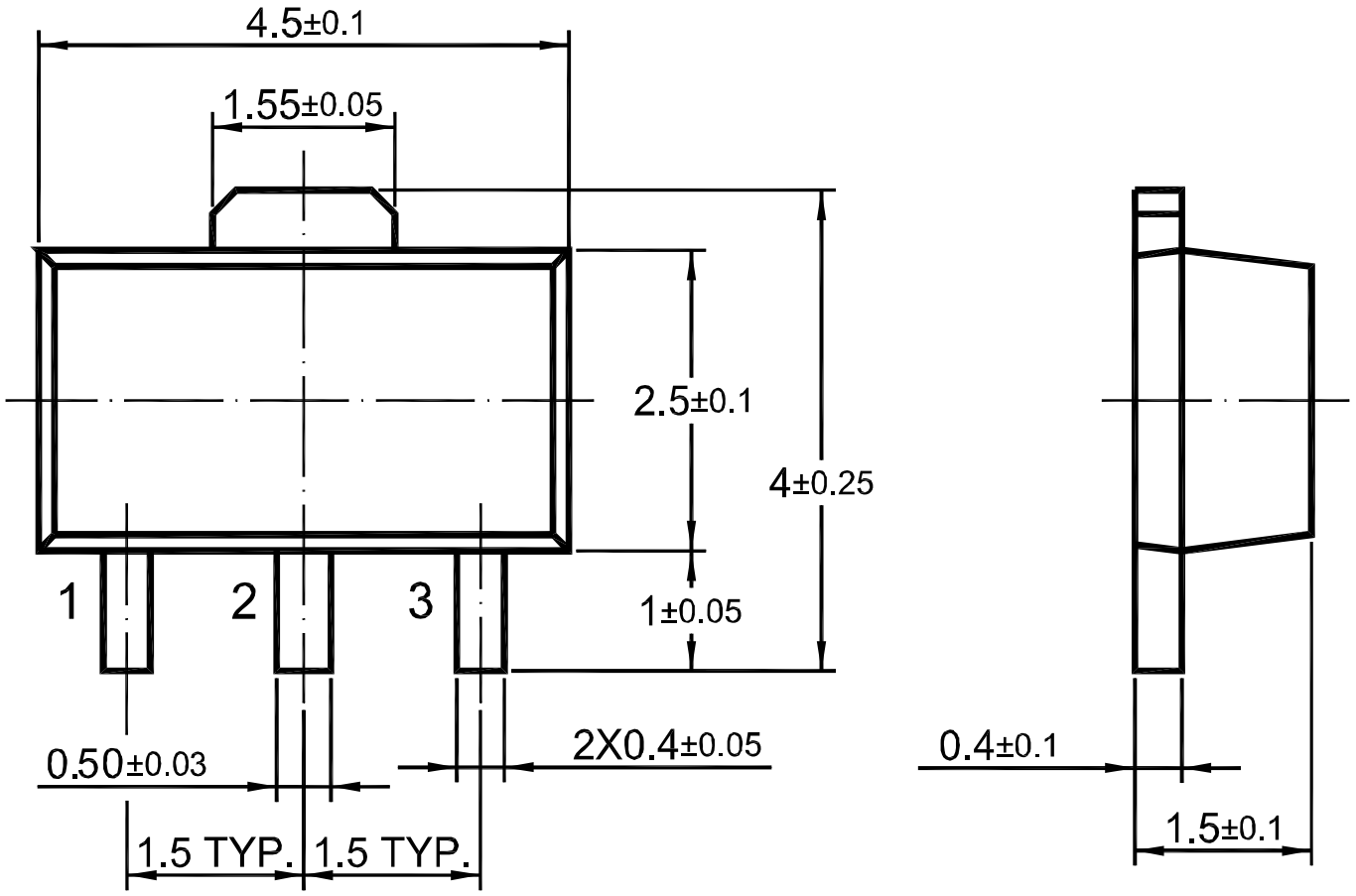
Dimensions in mm



Package Outline

SOT-89

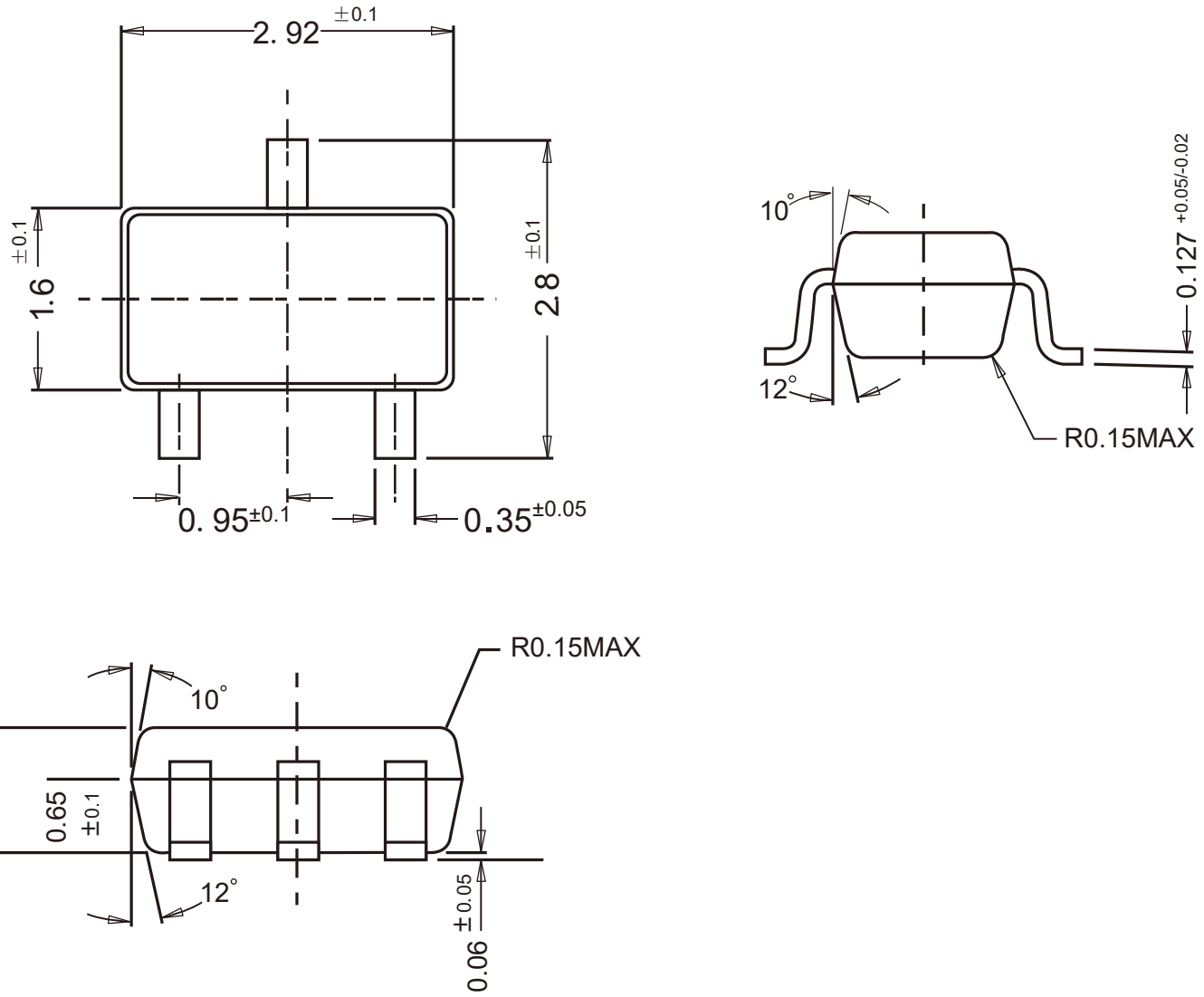
Dimensions in mm



Package Outline

SOT-23-3

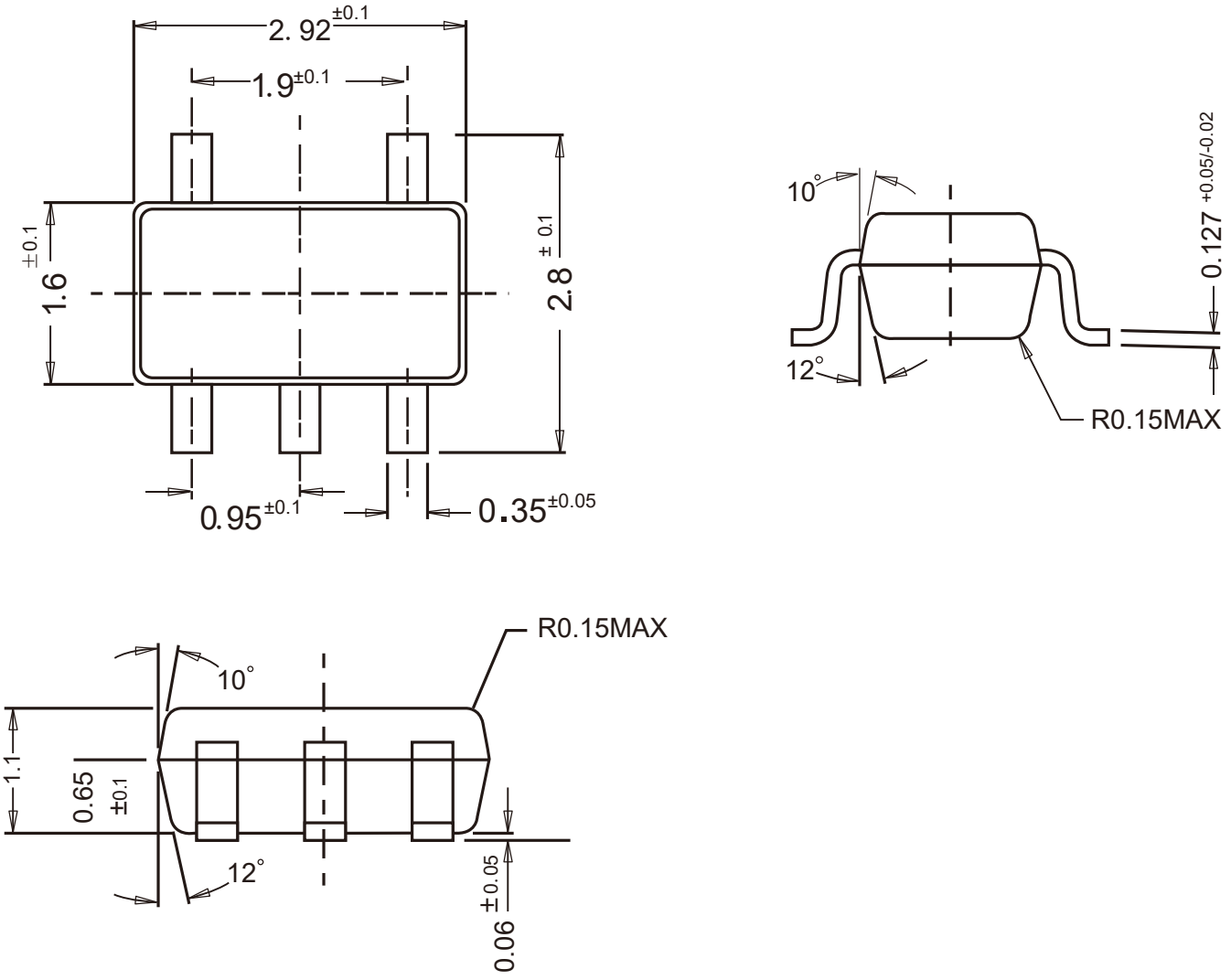
Dimensions in mm



Package Outline

SOT-23-5

Dimensions in mm



Package Outline

DFN1x1-4L
Dimensions in mm