General Description

The EHP6017 series are low dropout linear regulators and optimized to provide a high-performance solution for battery power system to deliver low quiescent current. The devices offer a new level of cost-effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The EHP6017 series are designed to make use of low-cost ceramic capacitors which ensure the stability of the output current, and enhance the efficiency in order to prolong the battery life of those portable devices.

EHP6017 can provide product selections of output value in the range of 1.2V~3.6V by every 0.1V step. The EHP6017 regulators are available in SOT23-5L and SOT23 packages. Standard products are Pb-free and Halogen free products.

Features

◆Input voltage : 2.5V~6.5V

◆Output range: 1.2V~3.6V
(customized by every 0.1V step)

◆Output current: 300mA
@ V_{OUT}>2V, 0.5V<=V_{IN}-V_{OUT}<=1V

◆Dropout voltage: 100mV @ IOUT=100mA

◆Quiescent current: 0.9μA Typ.

◆Shut-down current: < 0.1μA

◆Recommend capacitor: 1μF

Applications

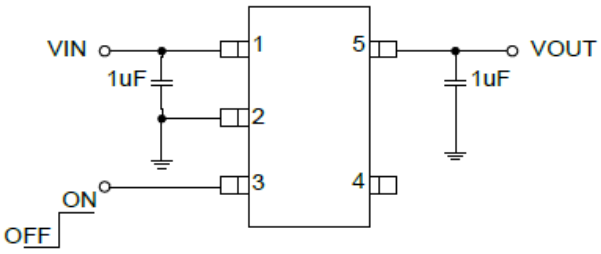
◆Reference voltage source

◆Toys

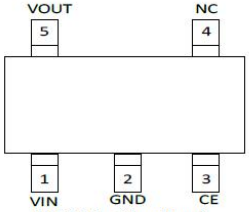
◆Bluetooth, wireless handsets

◆Others portable electronic device

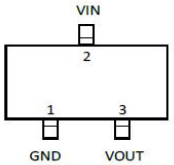
Typical Application Circuit



Pin Assignment



SOT23-5L（Top View）



SOT23（Top View）

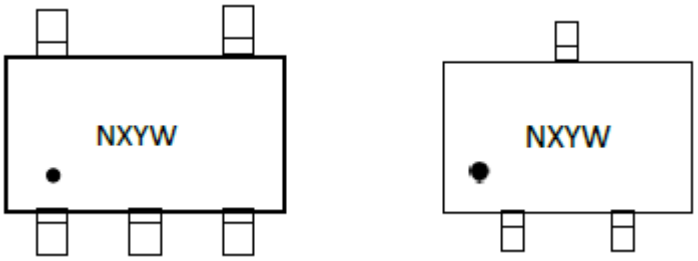
Order Information

EHP6017X XX X

- Reel
- B2=SOT23-5L
  B1= SOT23-3L
- Voat Discharge Type： A=Yes S=No

PART NO	PACAKGE	VOUT	STATUS	TEMPERATURE	TAPE & REEL
EHP6017S	SOT23-5L	No	Active	-40 ~ +85℃	3000/REEL
EHP6017A	SOT23-5L	Yes	NA	-40 ~ +85℃	3000/REEL
EHP6017S	SOT23	No	Active	-40 ~ +85℃	3000/REEL
EHP6017A	SOT23	Yes	NA	-40 ~ +85℃	3000/REEL

Marking Description



“N”: product code, “F” stands for “HP6017”, and “G” for “HP6017A”.
“X”: Output Voltage Code
“Y”: Internal Control Code
“W”: week of manufacturing. “A” stands for week 1, “Z” stands for week 26, “$\overline{A}$” stands for week 27, “$\overline{Z}$” stands for week 52.

Pin Description

PIN(SOT23-5L)	PIN(SOT23)	SYMBOL	I/O	DESCRIPTTION
1	2	VIN	P	Input
2	1	GND	-	Ground
3	/	CE	I	Chip Enable(Active high, do not float)
4	/	NC	-	Not Connected
5	3	VOUT	O	Output

Typical Output Voltage Code Table

V_{OUT}	CODE	V_{OUT}	CODE
1.2V	O	1.5V	P
1.8V	Q	2.5V	R
2.8V	D	3.0V	E
3.3V	F	3.6V	G

ABSOLUTE MAXIMUM RATINGS (Note)

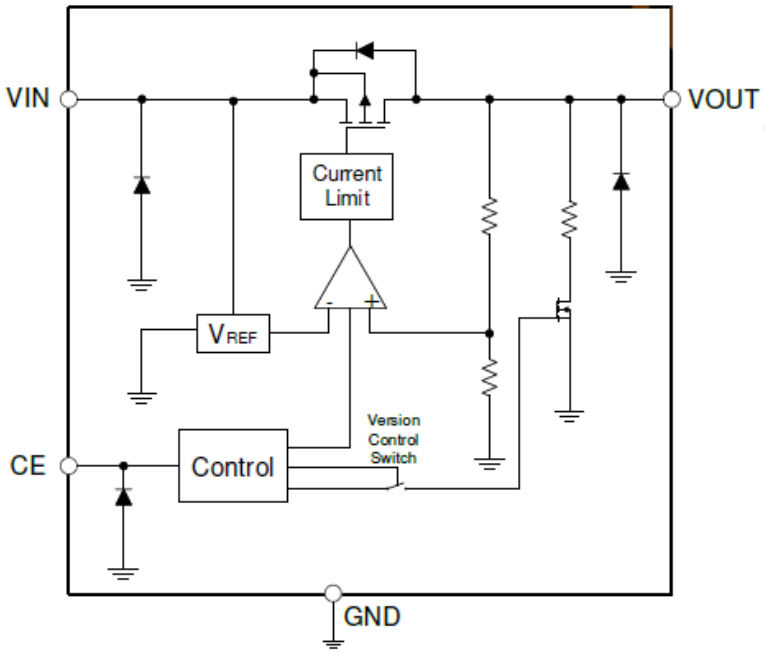
SYMBOL	ITEMS		VALUE	UNIT
V_{IN}	Input Voltage		-0.3~8	V
I_{OUT}	Output Current*1		500	mA
P_{DMAX}	Power Dissipation	SOT23-5L	0.45	W
		SOT23	0.4	W
$R_{\theta JA}$	Thermal Resistance	SOT23-5L	270	℃/W
		SOT23	300	
T_J	Junction Temperature		-40~125	℃
T_A	Ambient Temperature		-40~85	℃
T_{STG}	Storage Temperature		-55~150	℃
T_{SOLDER}	Package Lead Soldering Temperature		260℃, 10s	

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.
*1: Vo=3.3V, Vin=4.3V

Recommanded Operating Range

SYMBOL	ITEMS	VALUE	UNIT
V_{IN}	VIN Supply Voltage	2.5 to 6.5	V
I_{OUT}	Output Current (DC)	<300	mA
T_{OPT}	Operating Temperature	-40 to +85	℃

Simplified Block Diagram



Electrical Characteristics

The following specifications apply for VOUT=VIN+1V, TA=25℃, unless specified otherwise.

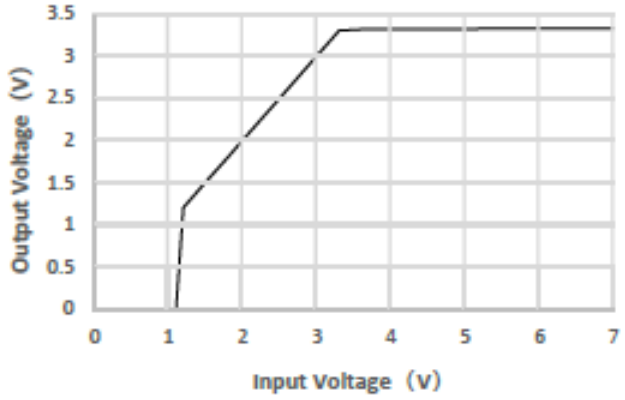
SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage	Note 1	2.5		6.5	V
V_{OUT}	Output Range	I_{OUT}=1mA, V_{OUT} ≥ 1.5V	-2	V_{SET}	2	%
		I_{OUT}=1mA, 1.2V ≤ V_{OUT} < 1.5V	-30	V_{SET}	30	mV
I_Q	Quiescent Current	V_{OUT}=3.3V, I_{OUT}=0		0.9	2	μA
I_{LIMIT}	Current Limit	V_{IN}=V_{CE}, V_{IN}=3.8V, V_{OUT}=3.3V		700		mA
V_{DROP}	Dropout Voltage	V_{OUT}=3.3V, I_{OUT}=200mA		170	200	mV
		V_{OUT}=3.3V, I_{OUT}=250mA		250	300	
$\triangle V_{LINE}$	Line Regulation	V_{IN}=2.7~5.5V, I_{OUT}=1mA		0.01	0.15	%/V
$\triangle V_{LOAD}$	Load Regulation	V_{OUT}=3.3V, V_{IN}=4.3V, I_{OUT}=1~300mA V_{OUT}=1.8V, V_{IN}=2.8V, I_{OUT}=1~250mA			36	mV
I_{SHORT}	Short Current	V_{CE}=V_{IN}, V_{OUT} Short to GND with 1Ω		90		mA
I_{SHDN}	Shut-down Current	V_{CE}=0V		0.1	1	μA
V_{CEH}	CE Logic High Voltage	V_{IN}=5.5V, I_{OUT}=1mA	1.2		V_{IN}	V
V_{CEL}	CE Logic Low Voltage	V_{IN}=5.5V, V_{OUT}=0V			0.4	V
I_{CE}	CE Input Current	V_{CE}= 0 to 5.5V			1.0	μA
R_{DIS}	Output Discharge Resistance (A version only)	V_{IN}=5.0V, V_{EN}= 0V		500		Ω

Note 1: On the minimum input voltage condition, the load capability is about 30mA.

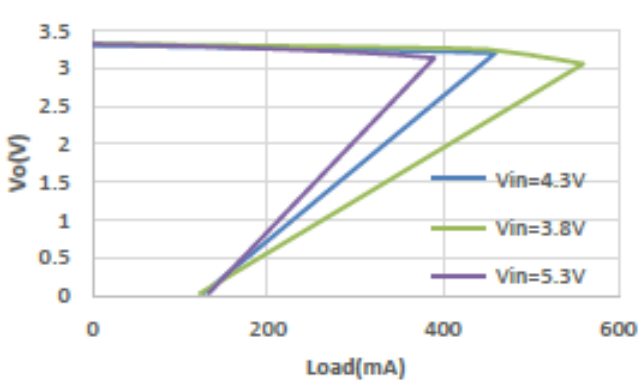
Typical Performance Characteristics

C_{IN}=1uF, C_{OUT}=1uF, T_{OPT}=25°C, V_{IN}=5V, V_{OUT}=3.3V

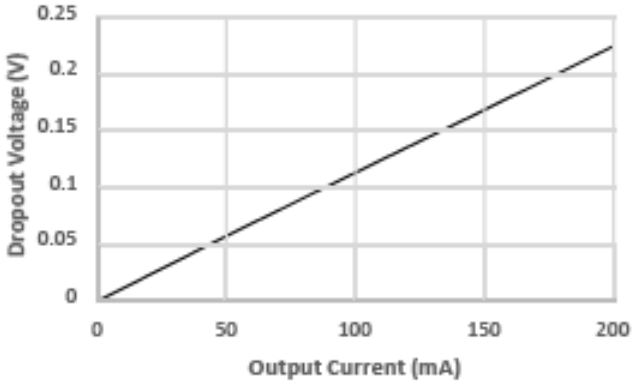
Line Regulation



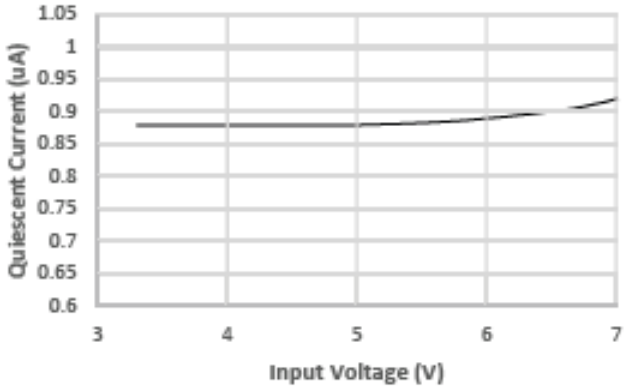
Load Regulation



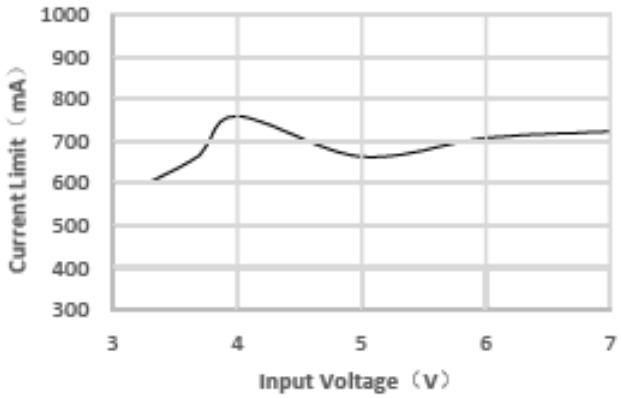
Dropout Voltage vs. Output Current



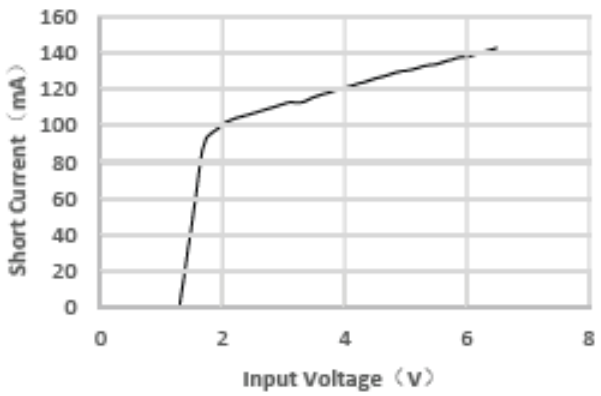
Quiescent Current vs. Input Voltage

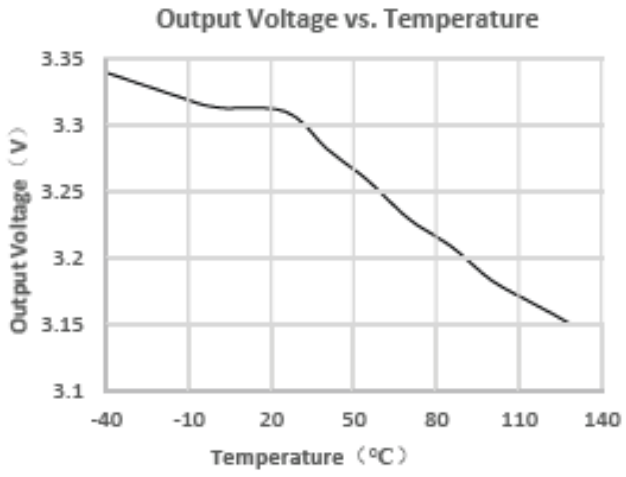


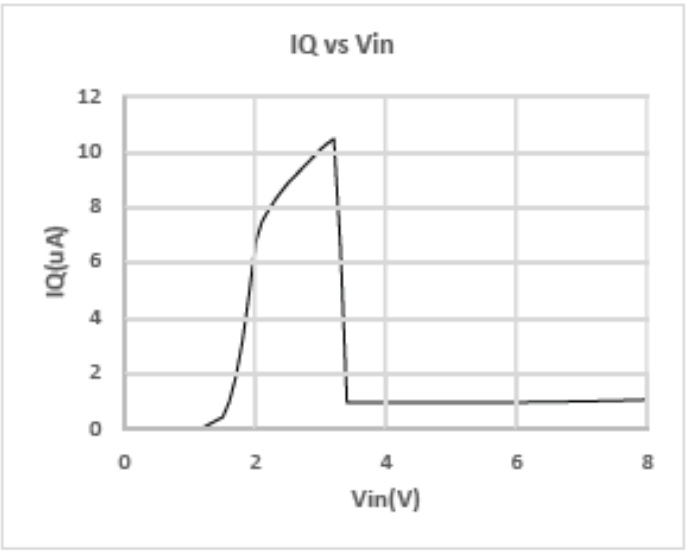
Current Limit vs. Input Voltage



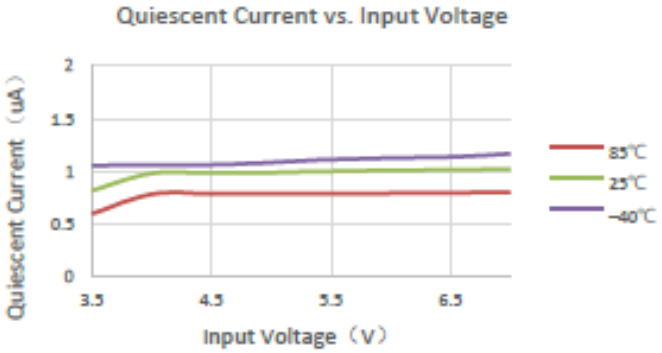
Short Current vs. Input Voltage





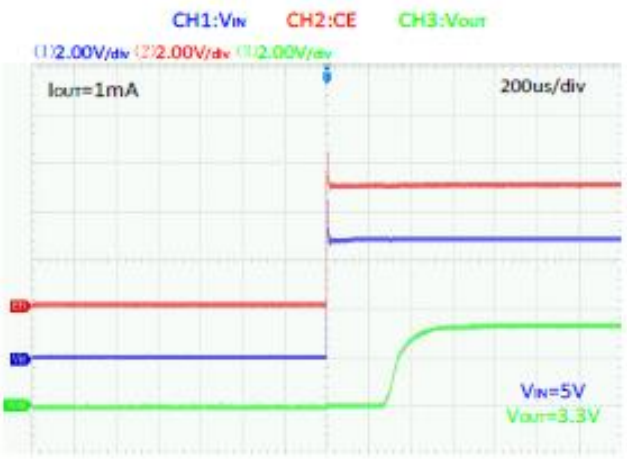


Quiescent Current vs. Input Voltage

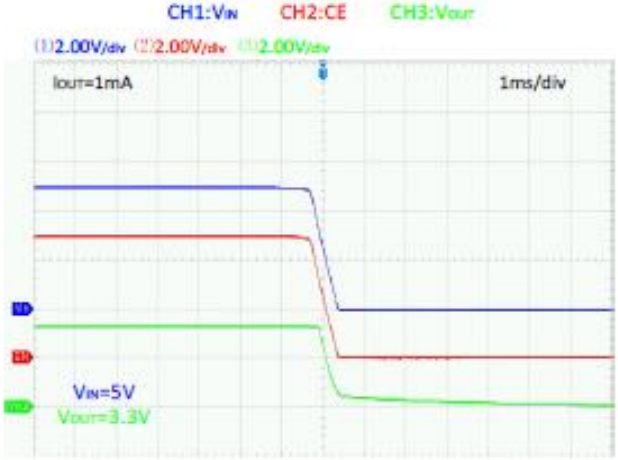


Power ON/OFF：

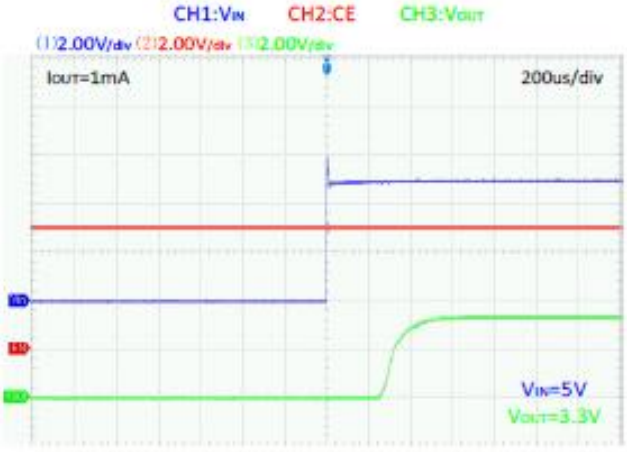
V_{IN}、CE 同时上电



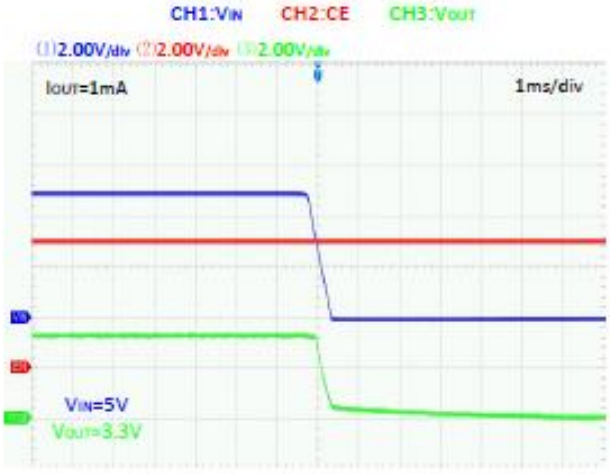
V_{IN}、CE 同时下电



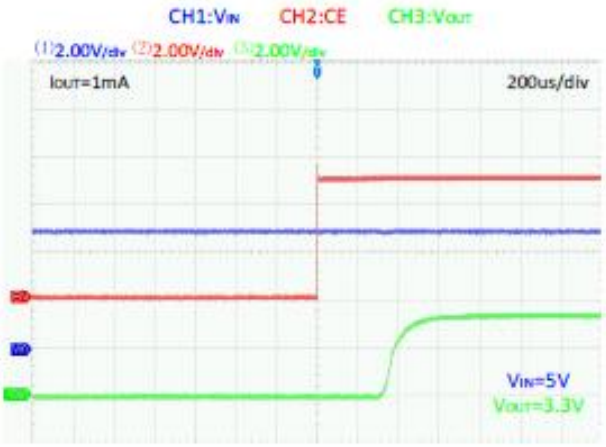
V_{IN} 上电



V_{IN} 下电



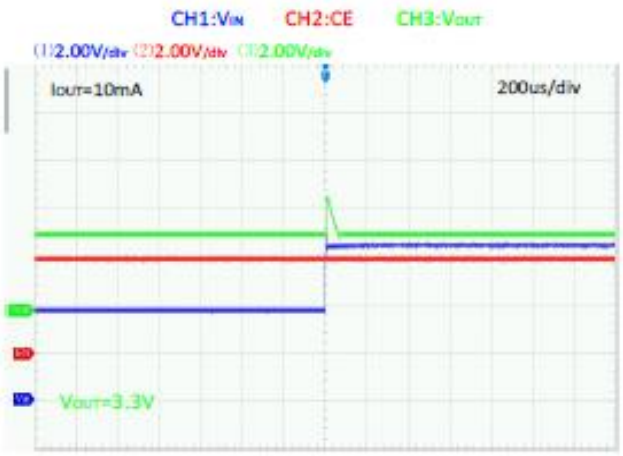
CE 上电



CE 下电

Line transient response：

V_{IN}=4V to 6.5V



V_{IN}=6.5V to 4V

Load transient response：

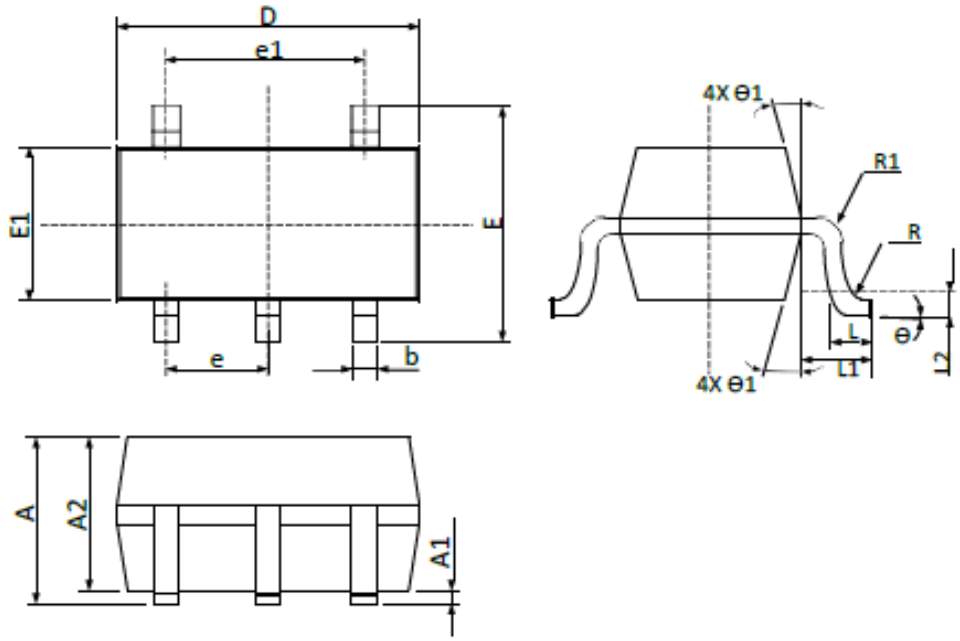
I_{OUT}=50mA to 200mA

I_{OUT}=200mA to 50mA

Package Outline

Package	SOT23-5L	Devices per reel	3000Pcs	Unit	mm

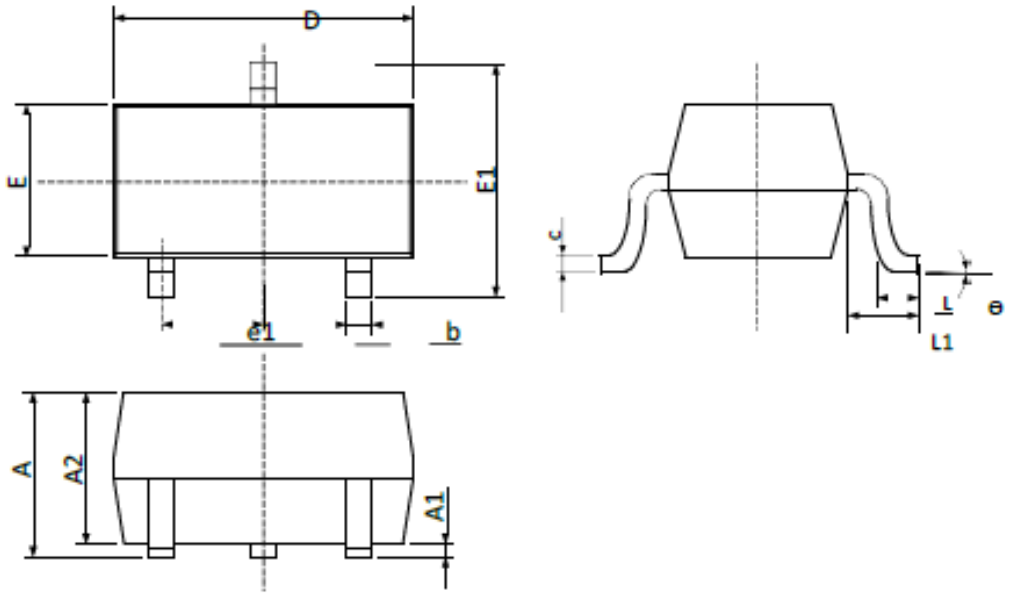
Package Dimension:



DIMENSIONS IN MILLIMETERS			
SYMBOL	MINIMUM	NOMINAL	MAXIMUM
A	-	-	1.35
A1	0.00	-	0.15
A2	1.00	1.10	1.20
b	0.30	-	0.50
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.30	0.45	0.60
L1	0.60 REF		
L2	0.25 REF		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	4°	8°
θ1	5°	10°	15°

Package	SOT-23	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



DIMENSIONS IN MILLIMETERS			
SYMBOL	MINIMUM	NOMINAL	MAXIMUM
A	0.90	-	1.15
A1	0.00	-	0.15
A2	0.90	1.00	1.05
b	0.30	0.40	0.50
c	0.08	-	0.15
D	2.80	2.90	3.00
E	1.20	1.30	1.40
E1	2.25	2.40	2.55
e1	1.80	-	2.00
L	0.30	-	0.50
L1	0.50	0.55	0.60
θ	0°	-	8°