



# XTP2201

**18V 500mA,**

**Ultra-Low I<sub>Q</sub>, Low-Dropout LDO**

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## 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

### DESCRIPTION

The XTP2201 is a Low-Dropout (LDO) linear voltage regulator, and support 3V to 18V input voltage range with very-low quiescent (I<sub>Q</sub>) . These features help modern appliances meet increasingly stringent energy requirements and help extend battery life in portable-power solutions.

Other features include short-circuit current limit and thermal shutdown protection, overload, and over-temperature conditions.

The XTP2201 is available in green SOT89-3, SOT23-5, SOT23-3, and DFN1.2\*1.6-4 packages.

### FEATURES

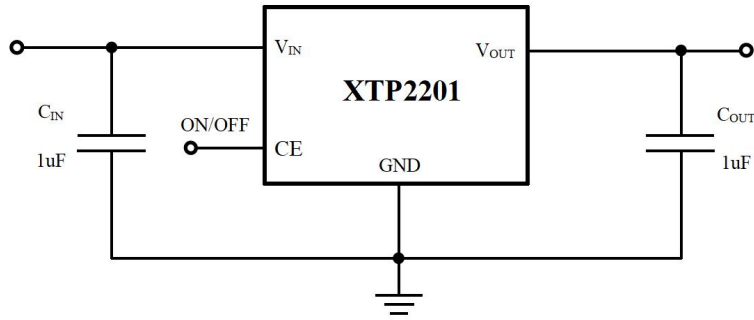
- Operating Input Voltage Range: 3V~18V
- Fixed Output Voltage: 0.9V, 1.05V, 1.2V, 1.5V, 1.8V, 2.5V, 2.7V, 2.8V, 3.0V, 3.3V, 3.6V, 4.0V, 4.4V, 5.0V
- Output Voltage Accuracy : ±1%
- Low Quiescent Current: 1.5uA (TYP)  
Shutdown Supply Current: 0uA (TYP)
- PSRR: 76dB@100Hz, 65dB@1KHz, 45dB@10KHz
- Current Limiting Protection
- Thermal Shutdown Protection
- Operation Temperature: -40°C~+85°C
- Package: SOT89-3, SOT23-5, SOT23-3, and DFN1.2\*1.6-4

### APPLICATIONS

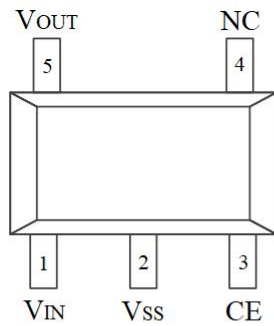
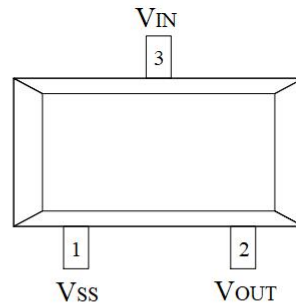
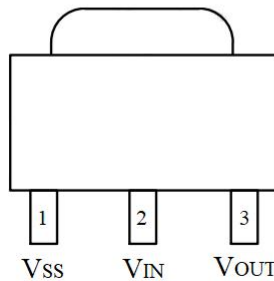
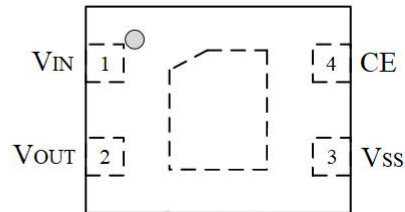
- ◇ Home and building automation
- ◇ Portable Devices
- ◇ Portable power tools
- ◇ Smart door lock
- ◇ White goods

# 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

## TYPICAL APPLICATION CIRCUIT



## PIN CONFIGURATIONS


**SOT23-5**

**SOT23-3**

**SOT89-3**

**DFN1.2\*1.6-4**

SOT23-5	SOT23-3	SOT89-3	DFN1.2*1.6-4	NAME	DESCRIPTION
1	3	2	1	VIN	Input Voltage Supply
2	1	1	3	VSS	GND
3	-	-	4	CE	Enable PIN
4	-	-	-	NC	Not Connected
5	2	3	2	VOUT	Regulator Output

## 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

### ORDERING INFORMATION

Part Number	Package	Ordering Number	Part Number	Package	Ordering Number
XTP2201-0.9	SOT89-3	XTP2201-090ASACT	XTP2201-0.9	SOT23-5	XTP2201-090AS2CT
XTP2201-1.05	SOT89-3	XTP2201-105ASACT	XTP2201-1.05	SOT23-5	XTP2201-105AS2CT
XTP2201-1.2	SOT89-3	XTP2201-120ASACT	XTP2201-1.2	SOT23-5	XTP2201-120AS2CT
XTP2201-1.5	SOT89-3	XTP2201-150ASACT	XTP2201-1.5	SOT23-5	XTP2201-150AS2CT
XTP2201-1.8	SOT89-3	XTP2201-180ASACT	XTP2201-1.8	SOT23-5	XTP2201-180AS2CT
XTP2201-2.5	SOT89-3	XTP2201-250ASACT	XTP2201-2.5	SOT23-5	XTP2201-250AS2CT
XTP2201-2.7	SOT89-3	XTP2201-270ASACT	XTP2201-2.7	SOT23-5	XTP2201-270AS2CT
XTP2201-2.8	SOT89-3	XTP2201-280ASACT	XTP2201-2.8	SOT23-5	XTP2201-280AS2CT
XTP2201-3.0	SOT89-3	XTP2201-300ASACT	XTP2201-3.0	SOT23-5	XTP2201-300AS2CT
XTP2201-3.3	SOT89-3	XTP2201-330ASACT	XTP2201-3.3	SOT23-5	XTP2201-330AS2CT
XTP2201-3.6	SOT89-3	XTP2201-360ASACT	XTP2201-3.6	SOT23-5	XTP2201-360AS2CT
XTP2201-4.0	SOT89-3	XTP2201-400ASACT	XTP2201-4.0	SOT23-5	XTP2201-400AS2CT
XTP2201-4.4	SOT89-3	XTP2201-440ASACT	XTP2201-4.4	SOT23-5	XTP2201-440AS2CT
XTP2201-5.0	SOT89-3	XTP2201-500ASACT	XTP2201-5.0	SOT23-5	XTP2201-500AS2CT

## 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

### ORDERING INFORMATION

Part Number	Package	Ordering Number	Part Number	Package	Ordering Number
XTP2201-0.9	SOT23-3	XTP2201-090AS1CT	XTP2201-0.9	DFN1.2*1.6-4	XTP2201-090AD8CT
XTP2201-1.05	SOT23-3	XTP2201-105AS1CT	XTP2201-1.05	DFN1.2*1.6-4	XTP2201-105AD8CT
XTP2201-1.2	SOT23-3	XTP2201-120AS1CT	XTP2201-1.2	DFN1.2*1.6-4	XTP2201-120AD8CT
XTP2201-1.5	SOT23-3	XTP2201-150AS1CT	XTP2201-1.5	DFN1.2*1.6-4	XTP2201-150AD8CT
XTP2201-1.8	SOT23-3	XTP2201-180AS1CT	XTP2201-1.8	DFN1.2*1.6-4	XTP2201-180AD8CT
XTP2201-2.5	SOT23-3	XTP2201-250AS1CT	XTP2201-2.5	DFN1.2*1.6-4	XTP2201-250AD8CT
XTP2201-2.7	SOT23-3	XTP2201-270AS1CT	XTP2201-2.7	DFN1.2*1.6-4	XTP2201-270AD8CT
XTP2201-2.8	SOT23-3	XTP2201-280AS1CT	XTP2201-2.8	DFN1.2*1.6-4	XTP2201-280AD8CT
XTP2201-3.0	SOT23-3	XTP2201-300AS1CT	XTP2201-3.0	DFN1.2*1.6-4	XTP2201-300AD8CT
XTP2201-3.3	SOT23-3	XTP2201-330AS1CT	XTP2201-3.3	DFN1.2*1.6-4	XTP2201-330AD8CT
XTP2201-3.6	SOT23-3	XTP2201-360AS1CT	XTP2201-3.6	DFN1.2*1.6-4	XTP2201-360AD8CT
XTP2201-4.0	SOT23-3	XTP2201-400AS1CT	XTP2201-4.0	DFN1.2*1.6-4	XTP2201-400AD8CT
XTP2201-4.4	SOT23-3	XTP2201-440AS1CT	XTP2201-4.4	DFN1.2*1.6-4	XTP2201-440AD8CT
XTP2201-5.0	SOT23-3	XTP2201-500AS1CT	XTP2201-5.0	DFN1.2*1.6-4	XTP2201-500AD8CT

### PACKAGE/ORDERING INFORMATION

Package	Quantity/Reel	Operating Temperature Range
SOT89-3	3000	-40°C~85°C
SOT23-5	3000	-40°C~85°C
SOT23-3	3000	-40°C~85°C
DFN1.2*1.6-4	3000	-40°C~85°C

## 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

### ABSOLUTE MAXIMUM RATINGS

Parameter		Min	Max	Unit
Power Supply Voltage	V <sub>IN</sub>	-0.3	20	V
Output Current	I <sub>OUT</sub>	0	0.6	A
CE Voltage	V <sub>CE</sub>	-0.3	20	V
T <sub>j</sub>	Maximum Junction Temperature	-40	125	°C
T <sub>OPR</sub>	Operating Temperature Range	-40	85	°C
T <sub>stg</sub>	Storage Temperature Range	-65	150	°C
T <sub>L</sub>	Lead Temperature (Soldering 10 sec)		260	°C

**Note:** Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

### ESD,ELECTROSTATIC DISCHARGE PROTECTION

Symbol	Parameter	Condition	Minimum Level	Unit
HBM	Human Body Model ESD	ANSI/ESDA/JEDEC JS-001 <sup>(1)</sup>	4000	V
CDM	Charged Device Model ESD	ANSI/ESDA/JEDEC JS-002 <sup>(2)</sup>	1000	V

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

### RECOMMENDED OPERATING CONDITIONS (Unless otherwise noted, T<sub>A</sub>=25°C)

Parameter		Min	Max	Unit
Power Supply	V <sub>IN</sub>	3	18	V
Output Current (continuously)	I <sub>OUT</sub>	0	0.5	A

## 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

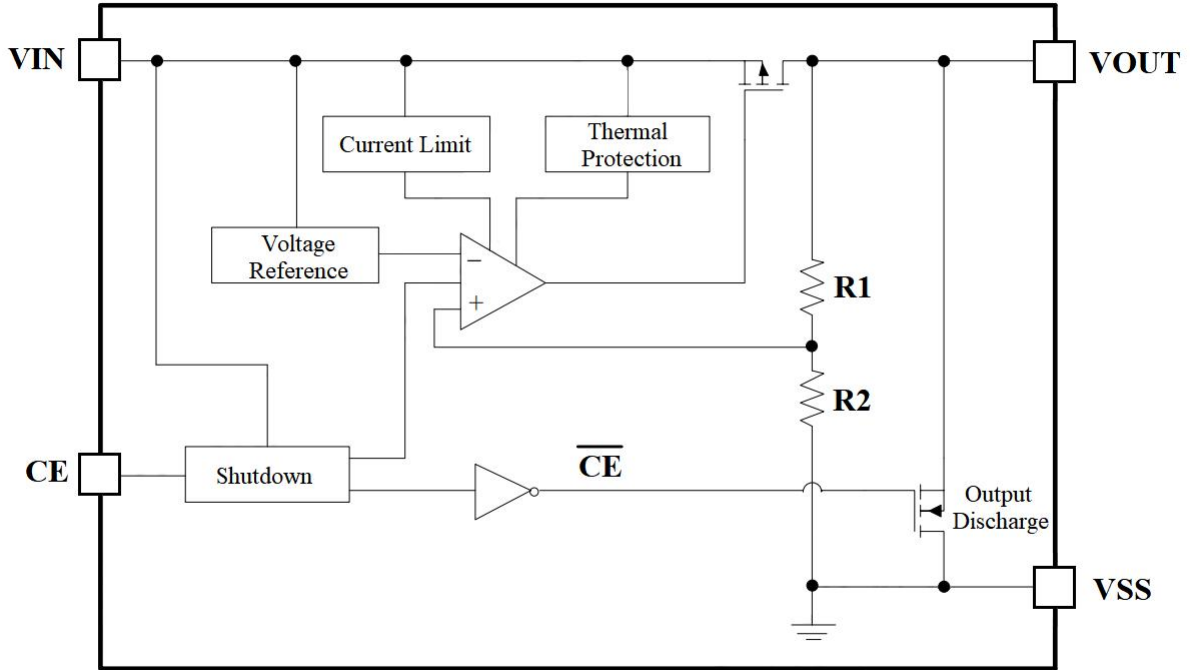
### ELECTRICAL CHARACTERISTICS

V<sub>IN</sub>=V<sub>OUT</sub>+1V (V<sub>OUT</sub>>2V), V<sub>IN</sub>=V<sub>OUT</sub>+1.5V (V<sub>OUT</sub>≤2V), V<sub>CE</sub>=V<sub>IN</sub>, T<sub>A</sub>=25°C

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V <sub>IN</sub>	Operating Supply Voltage		3		18	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =V <sub>OUT</sub> +1V		500		mA
ΔV <sub>OUT</sub>	Load Regulation	V <sub>IN</sub> =V <sub>OUT</sub> +1V, 1mA≤I <sub>OUT</sub> ≤100mA		6	20	mV
V <sub>DIF</sub>	Dropout Voltage	V <sub>OUT</sub> ≥3V, I <sub>OUT</sub> =100mA		135		mV
I <sub>Q</sub>	Quiescent Current	V <sub>IN</sub> =V <sub>OUT</sub> +1V		1.5	3.0	uA
I <sub>CEL</sub>	Shutdown Current	V <sub>CE</sub> =0V		0	0.2	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	Line Regulation	I <sub>OUT</sub> =30mA, V <sub>OUT</sub> +1V≤V <sub>IN</sub> ≤18V		0.03		%V
I <sub>LIM</sub>	Output Current Limit			750		mA
V <sub>CEH</sub>	CE Logic High		1.7			V
V <sub>CEL</sub>	CE Logic Low				0.5	V
R <sub>DIS</sub>	Output Discharge Resistance	V <sub>CE</sub> <0.5V		500		Ω
PSRR	Power Supply Rejection Ratio	@100Hz		76		dB
		@1KHz		65		dB
		@10KHz		45		dB
T <sub>SHDN</sub>	Thermal Shutdown Temperature			165		°C
T <sub>SHDNHYS</sub>	Thermal Shutdown Hysteresis			20		°C

**18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO**

**FUNCTION BLOCK DIAGRAM**

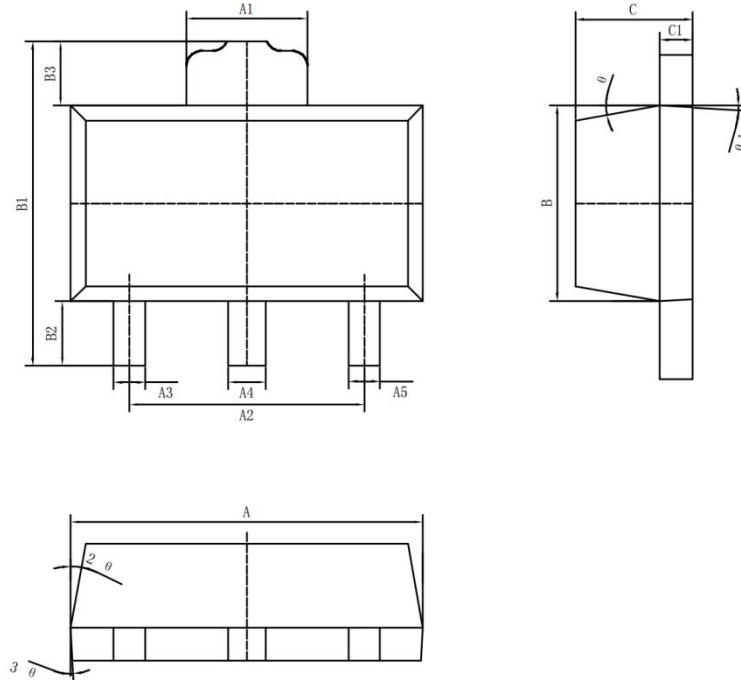




# 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

## PACKAGE OUTLINE DIMENSIONS

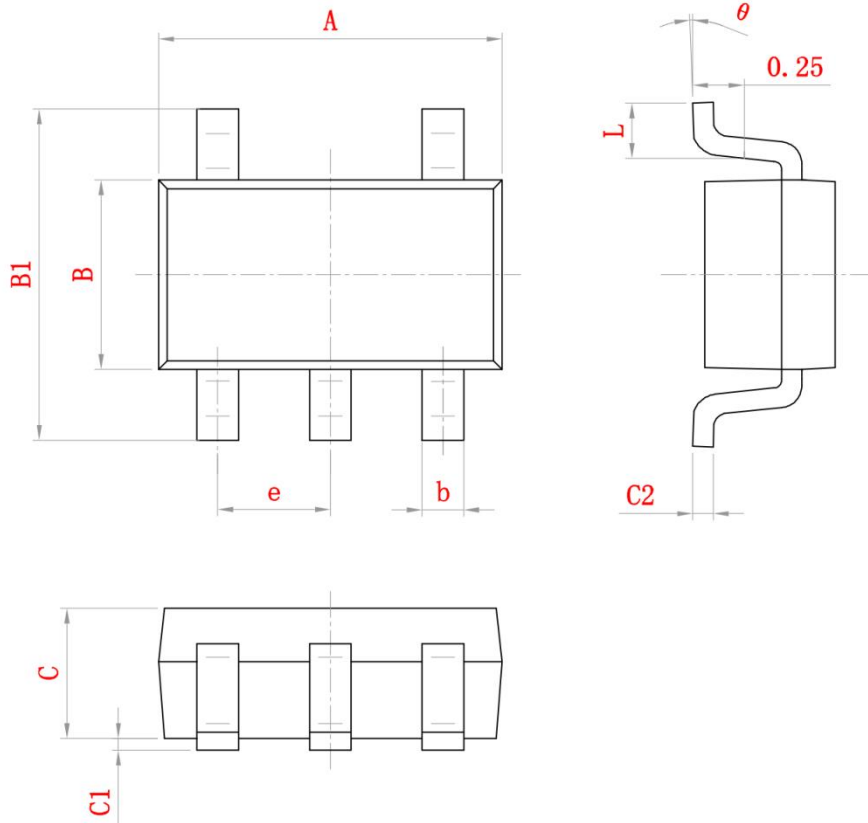
### SOT89-3



SYMBOL	DIMENSIONS IN MILLIMETERS	
	MIN	MAX
A	4.40	4.60
A1	1.65	1.75
A2	2.95	3.05
A3	0.35	0.45
A4	0.43	0.53
A5	0.35	0.45
B	2.40	2.60
B1	4.05	4.25
B2	0.82	0.83
B3	0.82	0.83
C	1.40	1.60
C1	0.35	0.45
$\theta$	6° TYP4	
$\theta_1$	3° TYP4	
$\theta_2$	6° TYP4	
$\theta_3$	3° TYP4	

**18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO**

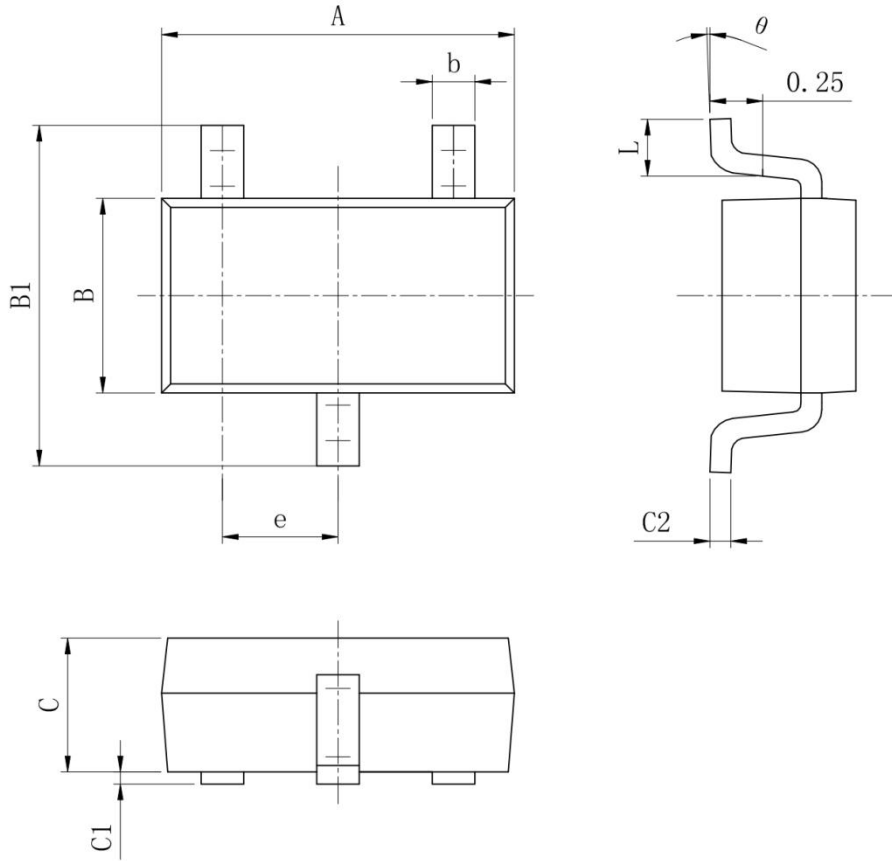
SOT23-5



SYMBOL	DIMENSIONS IN MILLIMETERS	
	MIN	MAX
A	2.82	3.02
e	0.95 BSC	
b	0.28	0.45
B	1.50	1.70
B1	2.60	3.00
C	1.05	1.15
C1	0.03	0.15
C2	0.12	0.23
L	0.35	0.55
θ	0	8°

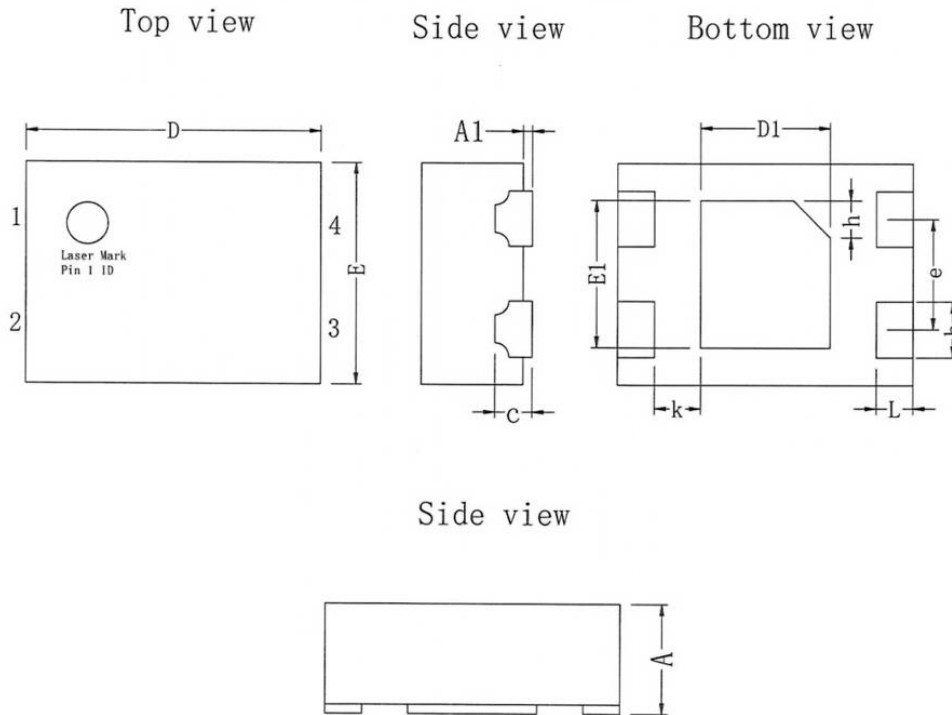
**18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO**

SOT23-3



SYMBOL	DIMENSIONS IN MILLIMETERS	
	MIN	MAX
A	2.82	3.02
e	0.95 BSC	
b	0.28	0.45
B	1.50	1.70
B1	2.60	3.00
C	1.05	1.15
C1	0.03	0.15
C2	0.12	0.23
L	0.35	0.55
θ	0	8°

# 18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO

**DFN1.2\*1.6-4**


SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
c	0.152 REF		
D	1.50	1.60	1.70
D1	0.60	0.70	0.80
E	1.10	1.20	1.30
E1	0.70	0.80	0.90
e	0.60 BSC		
h	0.10	0.20	0.30
K	0.200MIN		
L	0.15	0.20	0.25

**18V 500mA, Ultra-Low I<sub>Q</sub>, Low-Dropout LDO****REVISION HISTORY**

<b>Number</b>	<b>Date</b>	<b>Description</b>
Rev 0.0	2023/02	XTP2201 datasheet release