XTP2201

18V 500mA,

Ultra-Low I_Q, Low-Dropout LDO

XTX Technology Inc.

Tel: (+86 755) 28229862
Fax: (+86 755) 28229847

Web Site: http://www.xtxtech.com/
Technical Contact: pmic@xtxtech.com

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DESCRIPTION

The XTP2201 is a Low-Dropout (LDO) linear voltage regulator, and support 3V to 18V input voltage range with very-low quiescent (I_Q) . 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: 1.8uA (TYP)
  Shutdown Supply Current: 0uA (TYP)
- PSRR: 76dB@100Hz, 65dB@1KHz, 45dB@10KHz
- Current Limiting Protection
- Thermal Shutdown Protection
- Operation Temperature: -40℃~+85℃
- Package: SOT89-3, SOT23-5, SOT23-3, and DFN1.2*1.6-4

APPLICATIONS

✧ Home and building automation

✧ Portable Devices

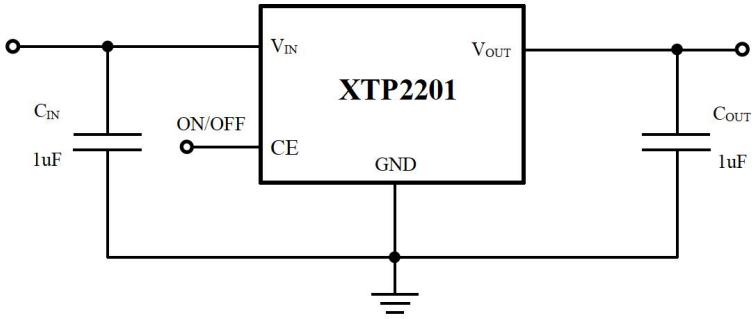
✧ Portable power tools

✧ Smart door lock

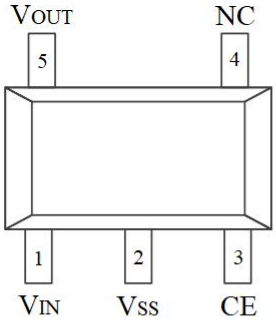
✧ White goods

18V 500mA, Ultra-Low I_Q, Low-Dropout LDO

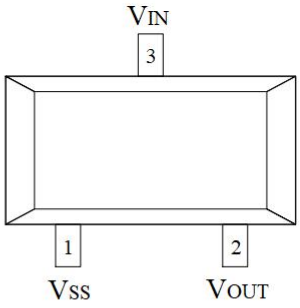
TYPICAL APPLICATION CIRCUIT



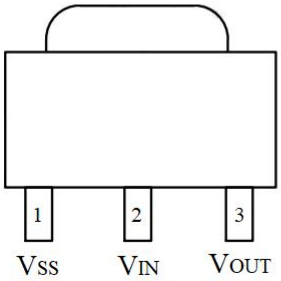
PIN CONFIGURATIONS



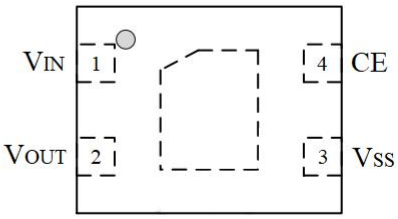
SOT23-5



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_Q, 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_Q, 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

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ABSOLUTE MAXIMUM RATINGS

Parameter		Min	Max	Unit
Power Supply Voltage	V_{IN}	-0.3	20	V
Output Current	I_{OUT}	0	0.6	A
CE Voltage	V_{CE}	-0.3	20	V
T_j	Maximum Junction Temperature	-40	125	°C
T_{OPR}	Operating Temperature Range	-40	85	°C
T_{stg}	Storage Temperature Range	-65	150	°C
T_L	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(1)	4000	V
CDM	Charged Device Model ESD	ANSI/ESDA/JEDEC JS-002(2)	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_A=25°C)

Parameter		Min	Max	Unit
Power Supply	V_{IN}	3	18	V
Output Current (continuously)	I_{OUT}	0	0.5	A

18V 500mA, Ultra-Low I_Q, Low-Dropout LDO

ELECTRICAL CHARACTERISTICS

V_{IN}=V_{OUT}+1V (V_{OUT}>2V), V_{IN}=V_{OUT}+1.5V (V_{OUT}≤2V), V_{CE}=V_{IN}, T_A=25°C

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IN}	Operating Supply Voltage		3		18	V
I_{OUT}	Output Current	V_{IN}=V_{OUT}+1V		500		mA
ΔV_{OUT}	Load Regulation	V_{IN}=V_{OUT}+1V, 1mA≤I_{OUT}≤100mA		6	20	mV
V_{DIF}	Dropout Voltage	V_{OUT}≥3V, I_{OUT}=100mA		135		mV
I_Q	Quiescent Current	V_{IN}=V_{OUT}+1V		1.8	3.0	uA
I_{CEL}	Shutdown Current	V_{CE}=0V		0	0.2	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	Line Regulation	I_{OUT}=30mA, V_{OUT}+1V≤V_{IN}≤18V		0.03		%V
I_{LIM}	Output Current Limit			750		mA
V_{CEH}	CE Logic High		1.7			V
V_{CEL}	CE Logic Low				0.5	V
R_{DIS}	Output Discharge Resistance	V_{CE}<0.5V		500		Ω
PSRR	Power Supply Rejection Ratio	@100Hz		76		dB
		@1KHz		65		dB
		@10KHz		45		dB
T_{SHDN}	Thermal Shutdown Temperature			165		℃
$T_{SHDNHYS}$	Thermal Shutdown Hysteresis			20		℃

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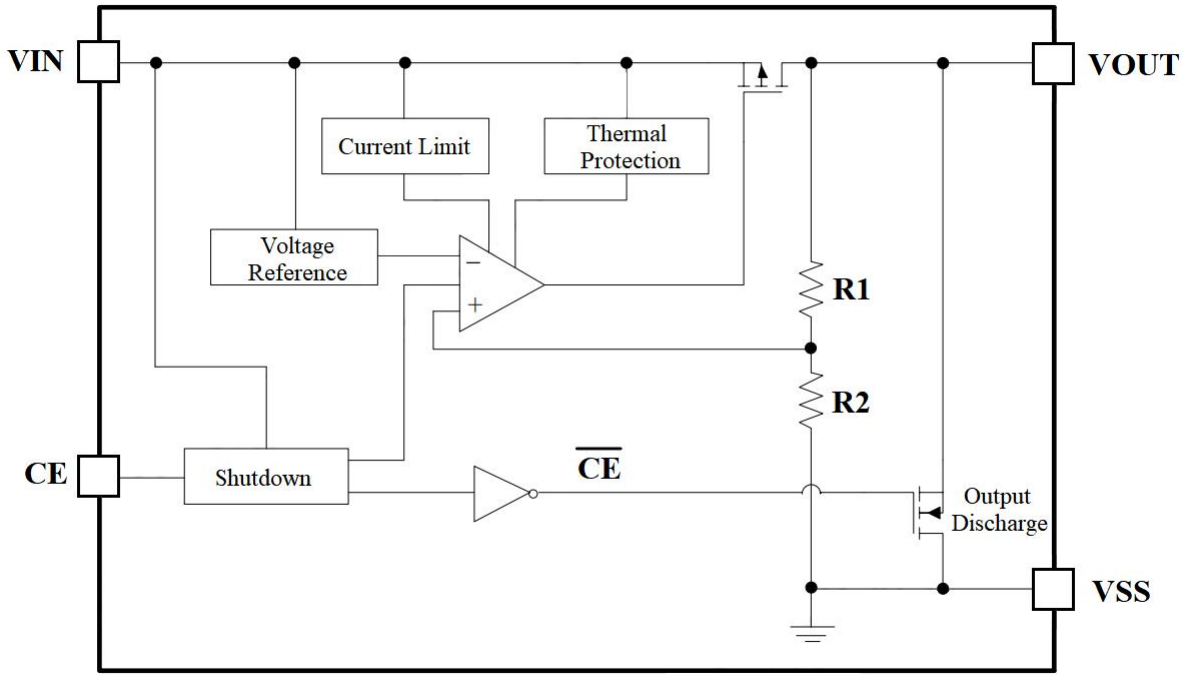
FUNCTION BLOCK DIAGRAM



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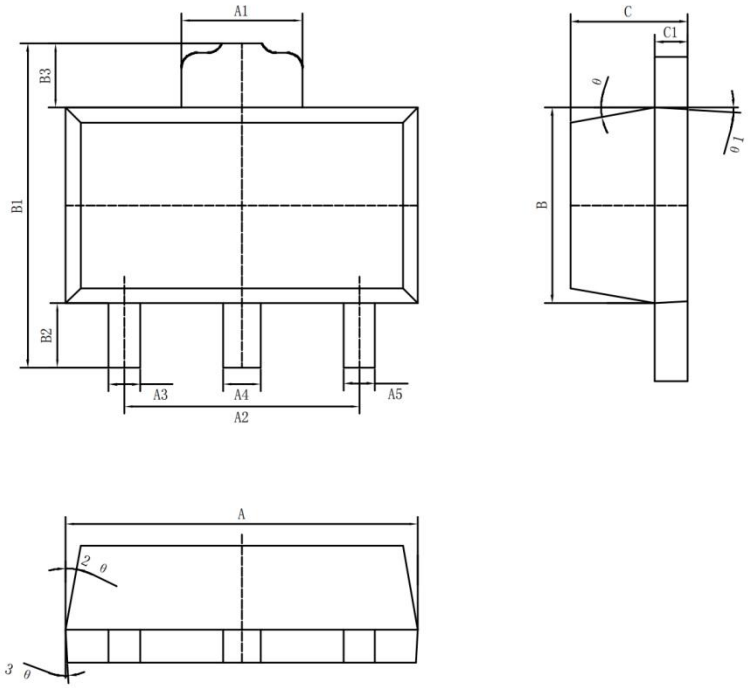
PACKAGE OUTLINE DIMENSIONS

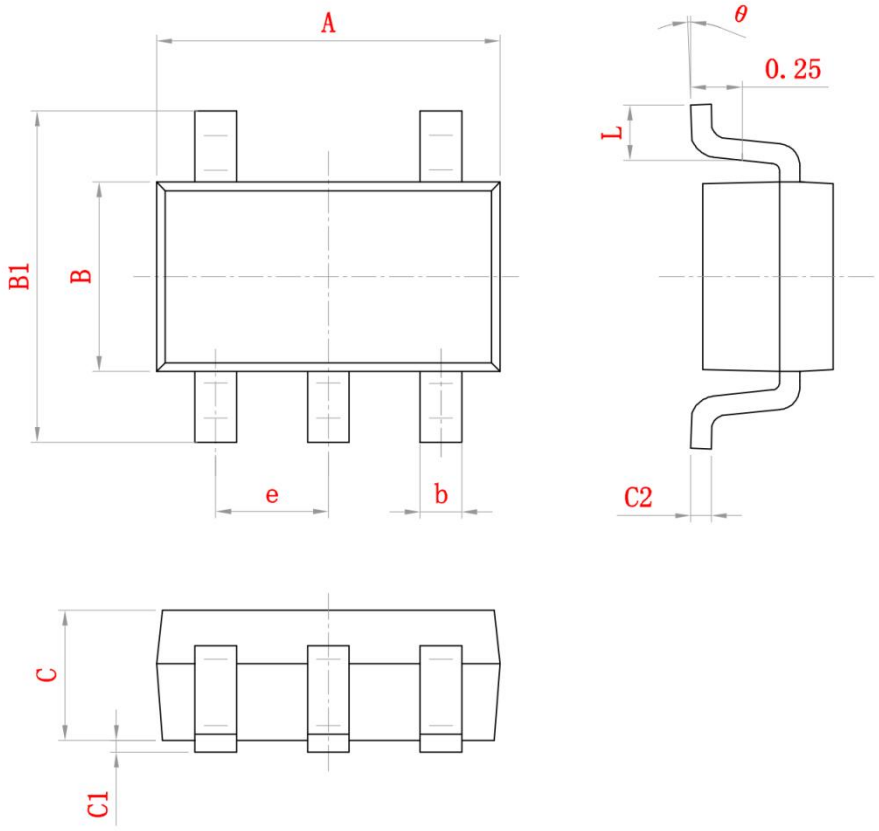
SOT89-3



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
θ	6° TYP4	
θ1	3° TYP4	
θ2	6° TYP4	
θ3	3° TYP4	

18V 500mA, Ultra-Low I_Q, Low-Dropout LDO

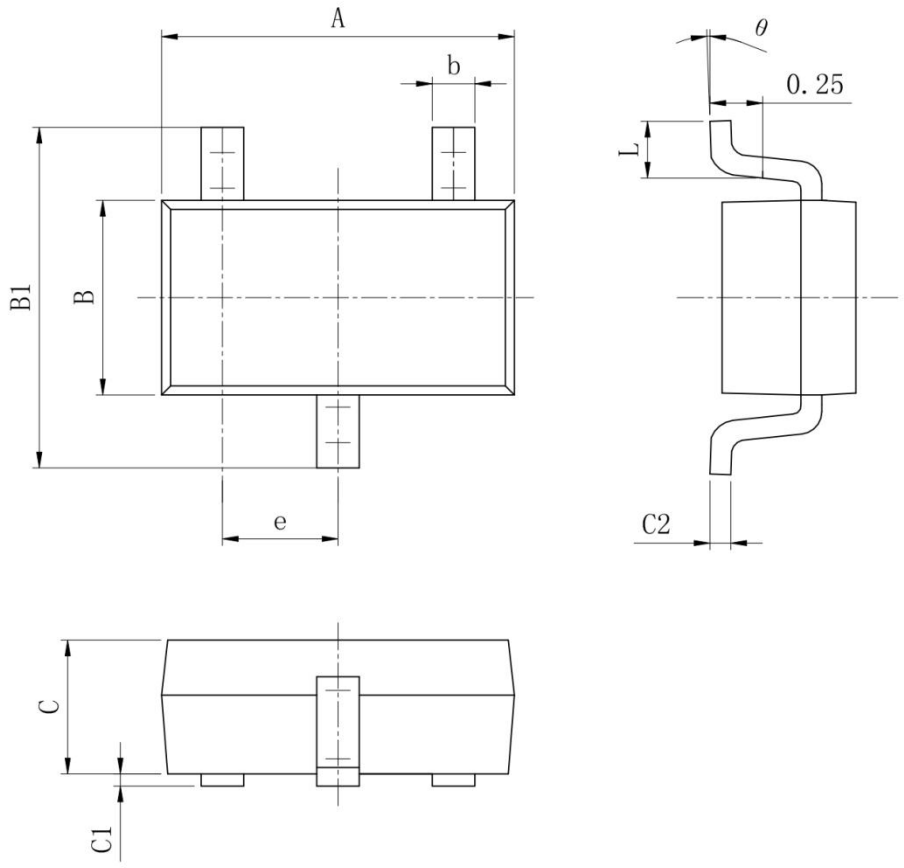
SOT23-5



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_Q, 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°

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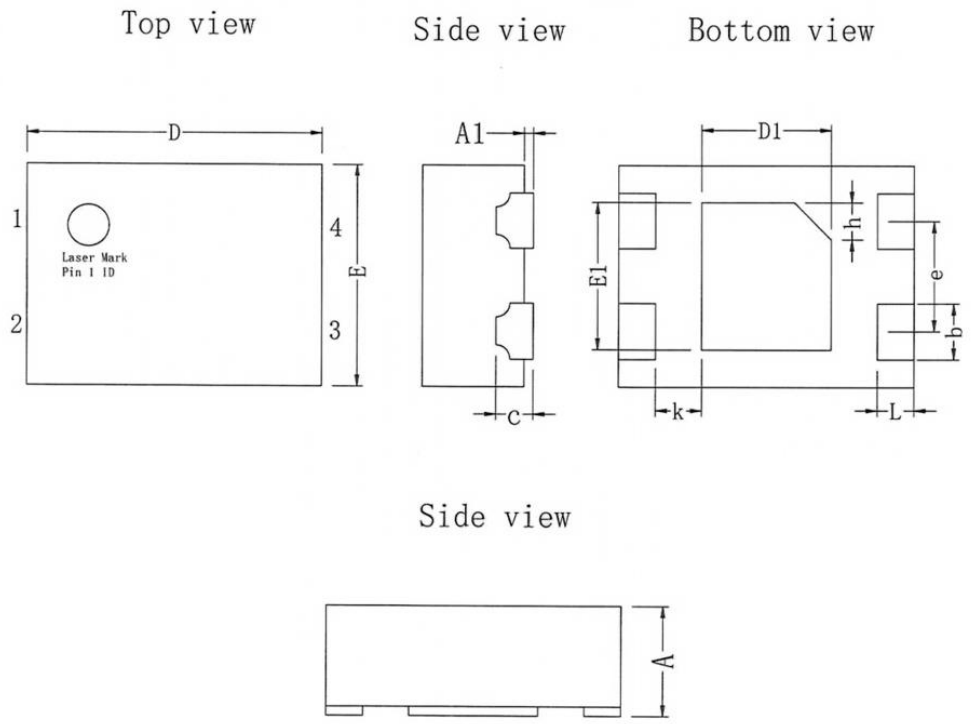
DFN1.2*1.6-4



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_Q, Low-Dropout LDO

REVISION HISTORY

Number	Date	Description
Rev 0.0	2023/02	XTP2201 datasheet release

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