7V Input , 500mA , Ultra Low Noise ,High PSRR, CMOS LDO

Description

The AF6213 series of low-dropout linear regulators are ultralow noise LDOs with high accuracy, high ripple rejection and ultra-fast load transient performance. The AF6213 has the FB pin and the fold-back maximum output current which depends on the output voltage.

The series are very suitable for the battery-powered equipment such as RF applications and other systems requiring a quiet voltage source.

Applications

- Portable consumer equipment
- Wireless handsets, Smart Phones
- Bluetooth, Digital cameras and Digital audio
- PDAs and other handheld products

Device Information

AF 6213 – ADJ C

① ② ③ ④

①	Standard
②	Product Name
③	Output Voltage Adjustable
④	C: SOT23-5L Package

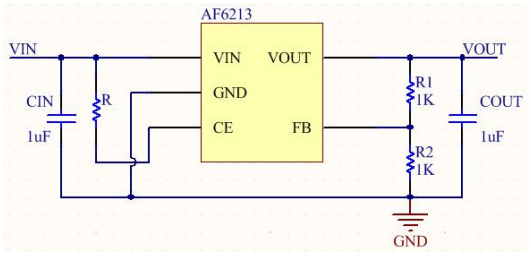
Ordering Information

Packing	Shipping
Tape and Reel	3K

Features

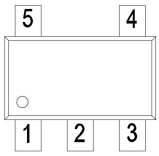
- Input Voltage Range: 1.8V~7V
- Adjustable Output Voltage Range: 0.6V~5.5V
- Output Current: 500mA
- Quiescent Current: 45uA
- Dropout Voltage: 110mV@100mA
- Fixed Voltage Accuracy: ±2%(Typ.)
- PSRR: 70dB at 1kHz
- Excellent Line and Load Transient Response
- Short-Circuit Protection
- Ultralow-Noise: 40μVRMS(10Hz~100kHz)

Typical Application

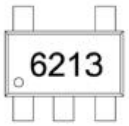


Pin Configuration

Symbol	Package Pin
	SOT23-5L
VIN	1
GND	2
CE	3
FB	4
OUT	5



SOT23-5L



Marking

Absolute Maximum Ratings(1)

(Unless otherwise specified, all voltage are with respect to GND, TA=25°C)

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	V_{IN}	-0.3~8	V
Output Voltage	V_{OUT}	-0.3~V_{IN}	V
Output Current	I_{OUT}	750	mA
Power Dissipation	P_D	0.4	W
Operating Junction Temperature	T_J	-40~125	°C
Storage Temperature	T_{STG}	-40~125	°C
Lead Temperature(Soldering, 10 sec)	T_L	260	°C

(1). Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under recommended operating conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods my affect device reliability.

Electronics Characteristics

(Unless otherwise specified, VIN=VOUT+1V, CIN=COUT=1uF, TA=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}(2)		1.8		7	V
Output Voltage	V_{OUT}		0.98 V_{OUT}	V_{OUT}	1.02 V_{OUT}	V
Output Current	I_{OUT}		500			mA
Dropout Voltage	V_{DIF}	I_{OUT} =100mA		110		mV
Quiescent Current	I_Q	I_{OUT}=0		45	80	uA
Shutdown current	I_{CEL}	V_{CE}=V_{SS}			0.1	uA
Line Regulation	$\triangle V_{LINE}$	I_{OUT} =10mA V_{OUT}+1V≤V_{IN}≤7V		0.01	0.2	%/V
Load Regulation	$\triangle V_{LOAD}$	V_{IN}=V_{OUT}+1V 1mA≤I_{OUT}≤100mA		1		mV
FB Voltage	V_{FB}	I_{OUT}=1mA	0.588	0.6	0.612	V
Temperature Coefficient	TC	I_{OUT}=10mA -40°C<T_A<85°C		50		ppm

Current Limit	I_{LIM}		600	750		mA
Short Current	I_{SHORT}	V_{OUT} =V_{SS}		20		mA
CE High Voltage	V_{CEH}		1.2		V_{IN}	V
CE Low Voltage	V_{CEL}				0.3	V
Power Supply Rejection Ratio	PSRR	I_{OUT}=50 mA, 1kHz		70		dB
		I_{OUT}=50 mA, 10kHz		50		
Output noise voltage		BW=10Hz to 100kHz, I_{OUT}=10mA		40		μV_{RMS}

(2). Minimum V_{IN} is 1.8V or V_{OUT} + V_{DO}, whichever is greater.

Dropout Voltage Chart

Setting Output Voltage	Dropout Voltage (mV) Typ.			
V_{OUT}(V)	I_{OUT}=100mA	I_{OUT}=200mA	I_{OUT}=300mA	I_{OUT}=500mA
1.2	372mV	642mV	876mV	1.368V
1.5	248mV	471mV	681mV	1.128V
1.8	189mV	370mV	550mV	947mV
2.1	157mV	311mV	469mV	820mV
2.5	132mV	265mV	400mV	706mV
2.8	120mV	241mV	365mV	645mV
3.0	111mV	229mV	348mV	612mV
3.3	107mV	214mV	325mV	574mV
3.6	101mV	203mV	307mV	542mV
4.0	98mV	184mV	292mV	506Mv
4.5	93mV	183mV	275mV	474mV
5.0	88mV	173mV	261mV	446mV

Application Information

The following table shows the typical application circuit with AF6213-ADJ. The external resistor sets the output voltage according to the following equation:

$$V_{OUT} = 0.6V \times \left(1 + \frac{R1}{R2}\right)$$

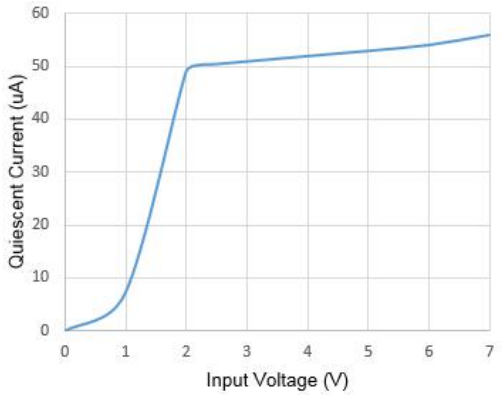
Resistor select for output voltage setting:

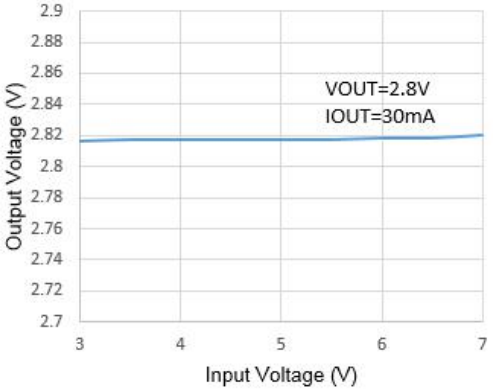
V_{OUT}	R1	R2
1.2V	30.1K	30.1K
1.5V	45.3K	30.1K
1.8V	60.4K	30.1K

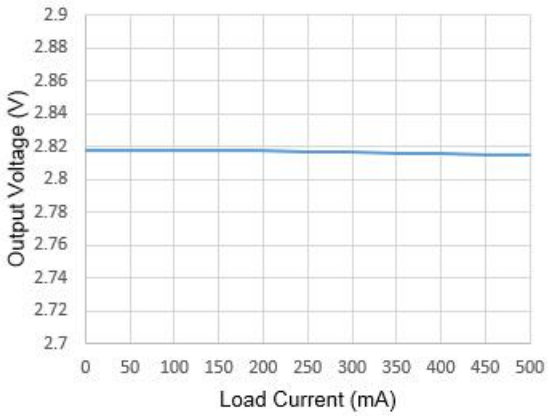
2.5V	95.3K	30.1k
2.8V	110K	30.1k
3.0V	120K	30.1K
3.3V	137K	30.1K
5.0V	221K	30.1k

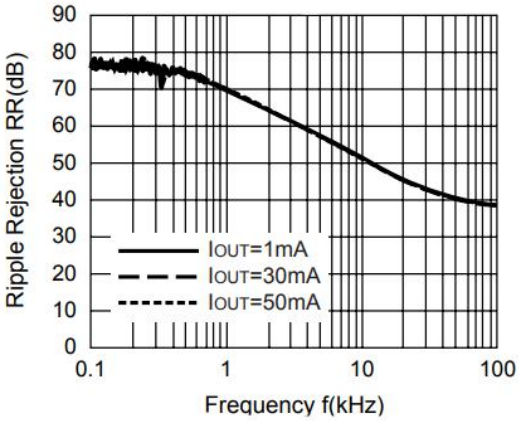
Typical Characteristics

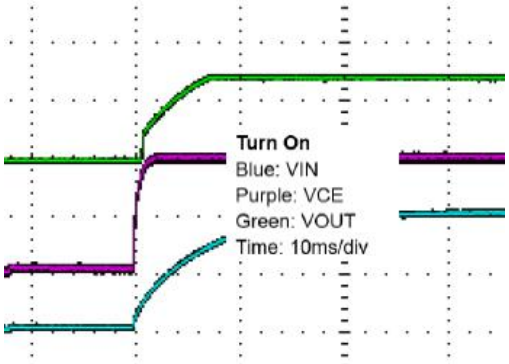
(Unless otherwise specified, $V_{IN}=V_{OUT}+1V$, $C_{IN}=C_{OUT}=1uF$, $T_A=25°C$)

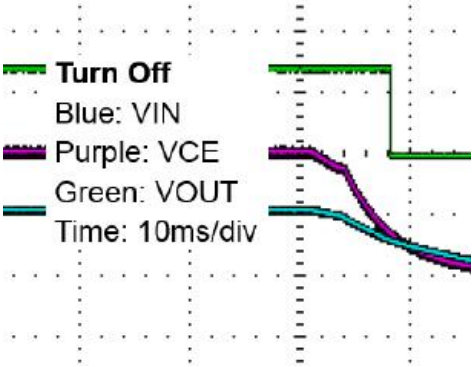


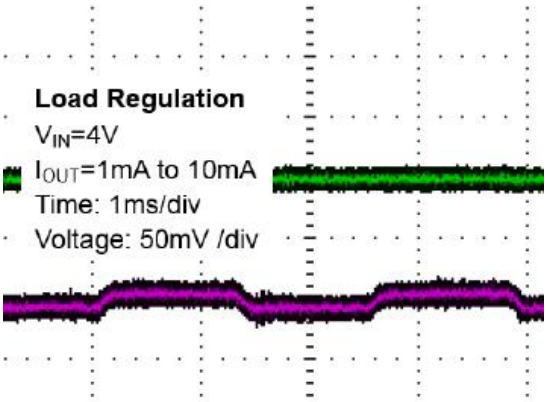


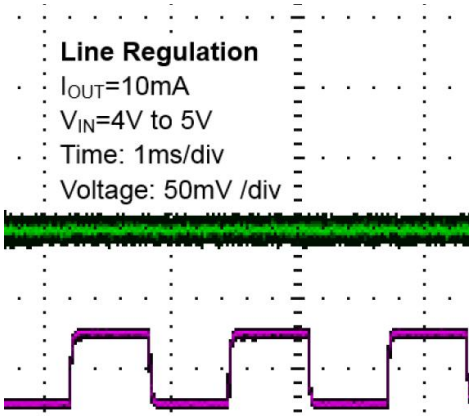




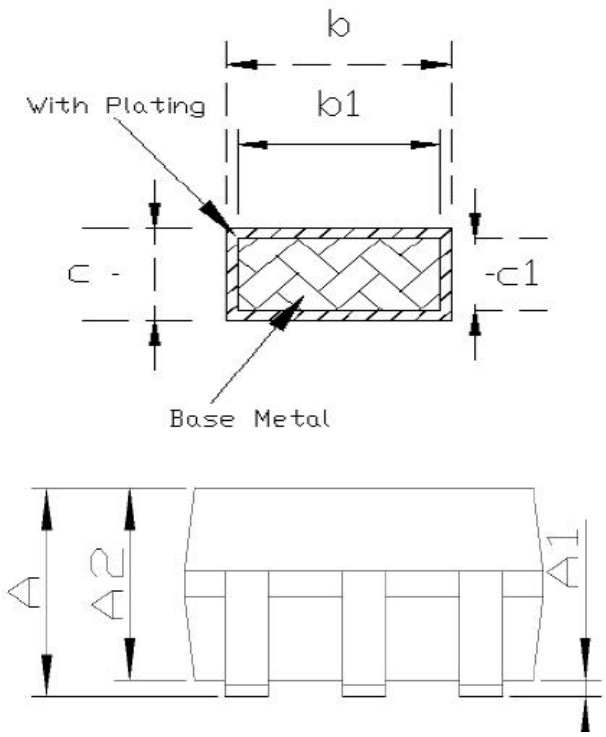






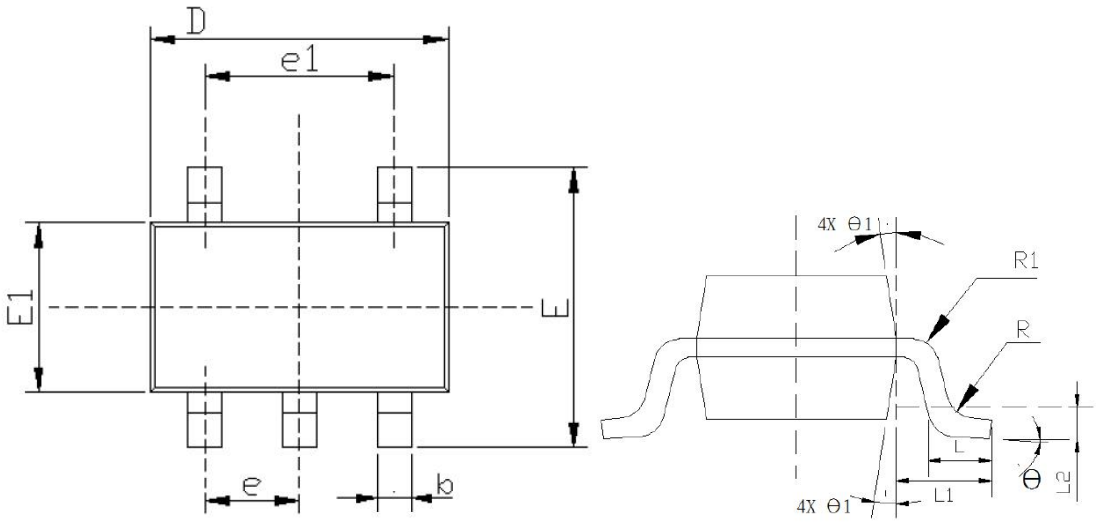


Package Information



Common Dimensions (Units of Measure=Millimeter)			
SYMBOL	MINIMUM	NOMINAL	MAXIMUM
A	-	-	1.35
A1	0	-	0.15
A2	1.00	1.10	1.20
b	0.35	-	0.45
b1	0.32	-	0.38
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.6 REF		
L2	0.25 REF		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	4°	8°
θ 1	5°	10°	15°

SOT23-5L


D
e1
E1
E
e
b
4X θ1
R1
R
L
θ
L2
L1
4X θ1

History Version

V1.0	Product datasheet	2017-05-12
V1.6	Organize typesetting	2019-11-20
V1.7	Increase the input voltage range of the CE pin	2020-08-26