



**30V Input , 350mA , Low Current Consumption , CMOS LDO**

**Description**

The AF77XXH series are a group of positive voltage regulators manufactured by CMOS technologies with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. The AF77XXH series can deliver 350mA output current and allow an input voltage as high as 30V.

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

**Applications**

- Cordless Phones
- Radio control systems
- Laptop, Palmtops and PDAs
- Single-lens reflex DSC
- PC peripherals with memory
- Wireless Communication Equipments
- Portable Audio Video Equipments
- Car Navigation Systems
- LAN Cards
- Ultra Low Power Microcontrolle

**Device Information**

AF 77 XX H – M/P/N/C R/G

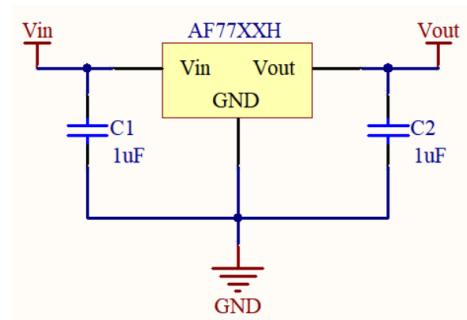
① ② ③ ④ ⑤ ⑥

①	Standard
②	Product Series
③	Output Voltage e.g. 33 = 3.3V
④	High Voltage
⑤	M: SOT-23-3 Package
	P: SOT-89-3 Package
	N: SOT-23 Package
	C: SOT23-5 Package
⑥	R: RoHS / Pb Free
	G: Halogen Free

**Features**

- Input Voltage Range: 2.5V~30V
- Output Voltage Range: 1.2V~12V
- Output Current: 350mA
- Low Quiescent Current: 2uA
- Low Dropout Voltage:  
200mV@100mA(VOUT=3.3V)
- Fixed Voltage Accuracy: ±2%(Typ.)
- PSRR: 70dB at 1kHz
- Output Noise: 27xVOUT μVRMS (10Hz~100 kHz)
- Excellent Line and Load Transient Response
- Short-Circuit Protection, Built-in Current Limiter
- Over-Temperature Protection

**Typical Application**



**Pin Configuration**

Symbol	Package Pin		
	SOT23 SOT23-3	SOT89-3	SOT23-5
GND	1	1	2
OUT	2	3	5
VIN	3	2	1
CE	-	-	3

SOT23/SOT23-3      SOT89-3      SOT23-5



**✚ Absolute Maximum Ratings<sup>(1)</sup>**

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

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage <sup>(2)</sup>		V <sub>IN</sub>	-0.3~33	V
Output Voltage <sup>(2)</sup>		V <sub>OUT</sub>	-0.3~13	V
CE Pin Voltage		V <sub>CE</sub>	-0.3~33	V
Output Current		I <sub>OUT</sub>	600	mA
Power Dissipation	SOT23	P <sub>D</sub>	0.25	W
	SOT23-3		0.3	W
	SOT23-5		0.35	W
	SOT89-3		0.5	W
Operating Junction Temperature Range <sup>(3)</sup>		T <sub>J</sub>	-40~125	°C
Storage Temperature		T <sub>STG</sub>	-40~125	°C
Lead Temperature(Soldering, 10 sec)		T <sub>L</sub>	260	°C
ESD rating	Human Body Model - (HBM)		2	kV
	Machine Model- (MM)		200	V

(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 may affect device reliability.

(2) All voltages are with respect to network ground terminal.

(3) The AF77XXH includes over temperature protection that is intended to protect the device during momentary overload. Junction temperature will exceed 125°C when over temperature protection is active.

**✚ Electronics Characteristics**

(Unless otherwise specified, V<sub>IN</sub>=V<sub>OUT</sub>+1V, C<sub>IN</sub>=C<sub>OUT</sub>=1uF, TA=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP. <sup>(4)</sup>	MAX	UNIT	
Input Voltage	V <sub>IN</sub>		2.5	—	30	V	
Output Voltage Range	V <sub>OUT</sub>		1.2	—	12	V	
Output Voltage Accuracy		I <sub>OUT</sub> =1mA	-2	—	2	%	
			-1	—	1	%	
Dropout Voltage	V <sub>dir</sub> <sup>(5)</sup>	I <sub>OUT</sub> =100mA, V <sub>OUT</sub> =3.3V	—	200	—	mV	
Supply Current	I <sub>SS</sub>	I <sub>OUT</sub> =0	1.2V≤V <sub>OUT</sub> ≤7.0V	—	2	5	μA
			7.0V<V <sub>OUT</sub> ≤12.0V	—	3	6	μA



## AF77XXH Series

Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	$I_{OUT} = 10\text{mA}$ $V_{OUT} + 1\text{V} \leq V_{IN} \leq 28\text{V}$	—	0.01	0.3	%/V	
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1\text{V}$ , $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$	—	10	—	mV	
Temperature Coefficient	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta T_A}$	$I_{OUT} = 10\text{mA}$ , $-40^\circ\text{C} < T_A < 125^\circ\text{C}$		50		ppm	
Output Current Limit	$I_{LIM}$	$V_{OUT} = 0.5 \times V_{OUT(Normal)}$ , $V_{IN} = 5\text{V}$	350	600	-	mA	
Short Current	$I_{SHORT}$	$V_{OUT} = V_{SS}$	—	100	—	mA	
Power Supply Rejection Ratio	PSRR	$I_{OUT} = 50\text{mA}$ A	100Hz		75		dB
			1kHz	—	70	—	
			10kHz	—	55	—	
			100kHz	—	40	—	
Output Noise Voltage	$V_{ON}$	BW=10Hz to 100kHz	—	$27 \times V_{OUT}$	—	$\mu\text{VRMS}$	
Thermal Shutdown Temperature	$T_{SD}$	—	—	160	—	$^\circ\text{C}$	
Thermal Shutdown Hysteresis	$\Delta T_{SD}$	—	—	20	—	$^\circ\text{C}$	
Standby Current	$I_{STBY}$	$CE = V_{SS}$			0.5	$\mu\text{A}$	
CE "High" Voltage	$V_{CE"H"}$		1.5		$V_{IN}$	V	
CE "Low" Voltage	$V_{CE"L"}$				0.3	V	
$C_{OUT}$ Auto-Discharge Resistance	$R_{DISCHRG}$	$V_{IN} = 5\text{V}$ , $V_{OUT} = 3.0\text{V}$ , $V_{CE} = V_{SS}$		150		$\Omega$	

(4) Typical numbers are at 25°C and represent the most likely norm.

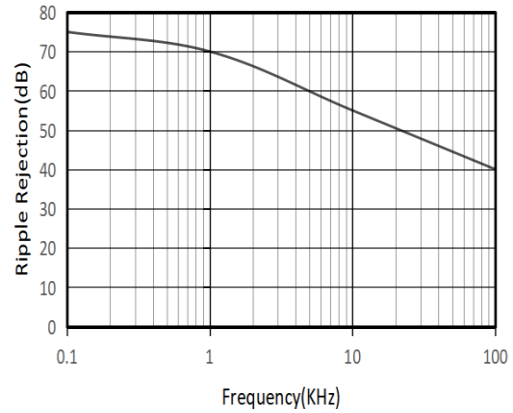
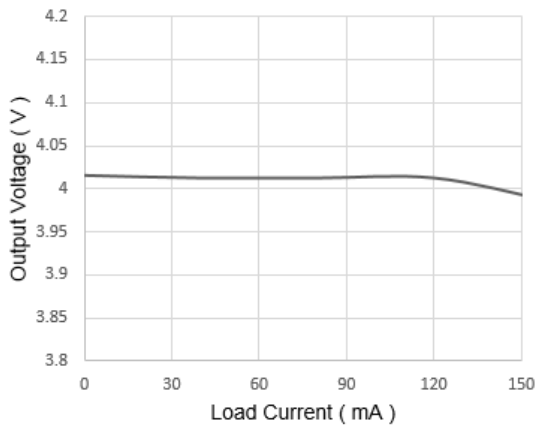
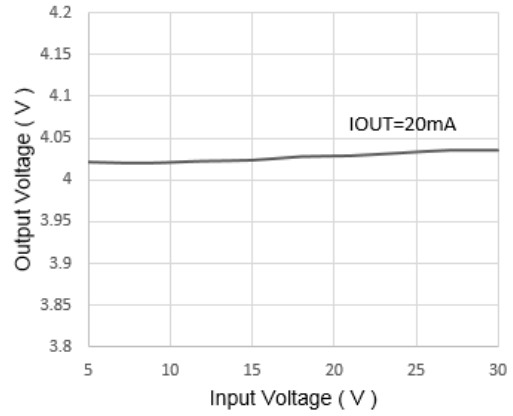
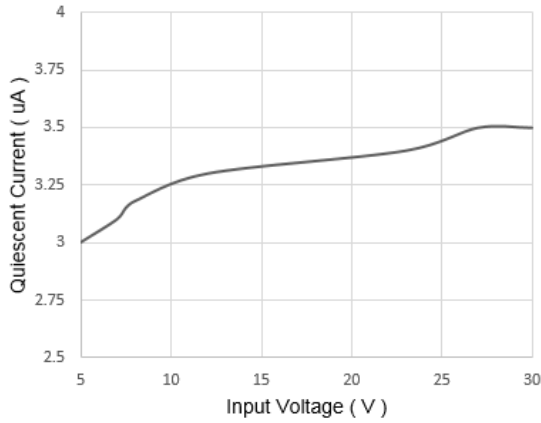
(5)  $V_{dif}$ : The difference of output voltage and input voltage when input voltage is decreased gradually till output voltage equals to 98% of  $v_{out}$  (E).

### Typical Characteristics

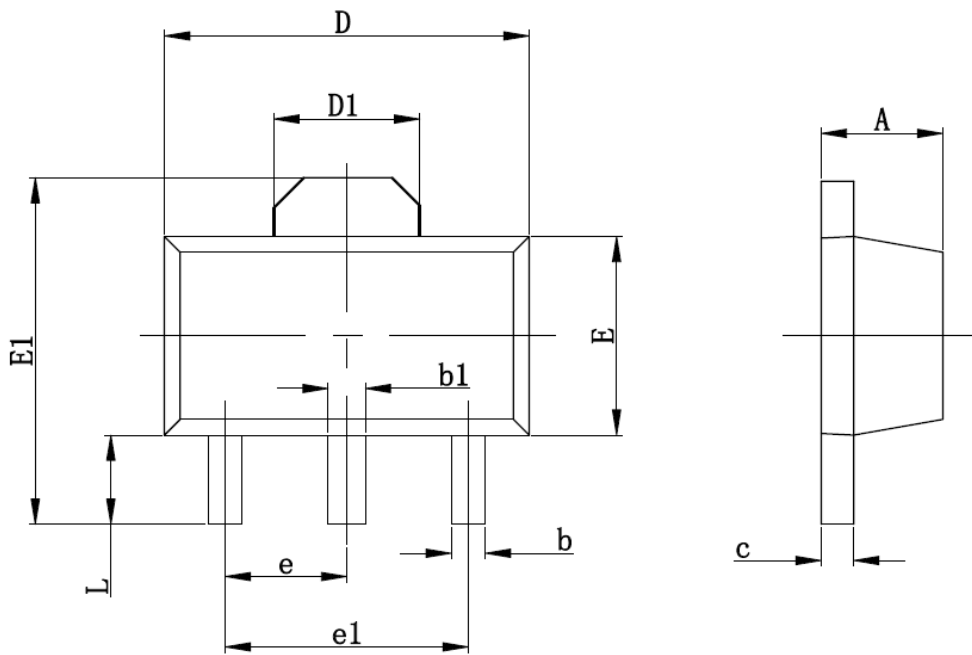
(Unless otherwise specified,  $V_{IN} = V_{OUT} + 1\text{V}$ ,  $C_{IN} = C_{OUT} = 1\mu\text{F}$ ,  $T_A = 25^\circ\text{C}$ )



## AF77XXH Series



### Package Information



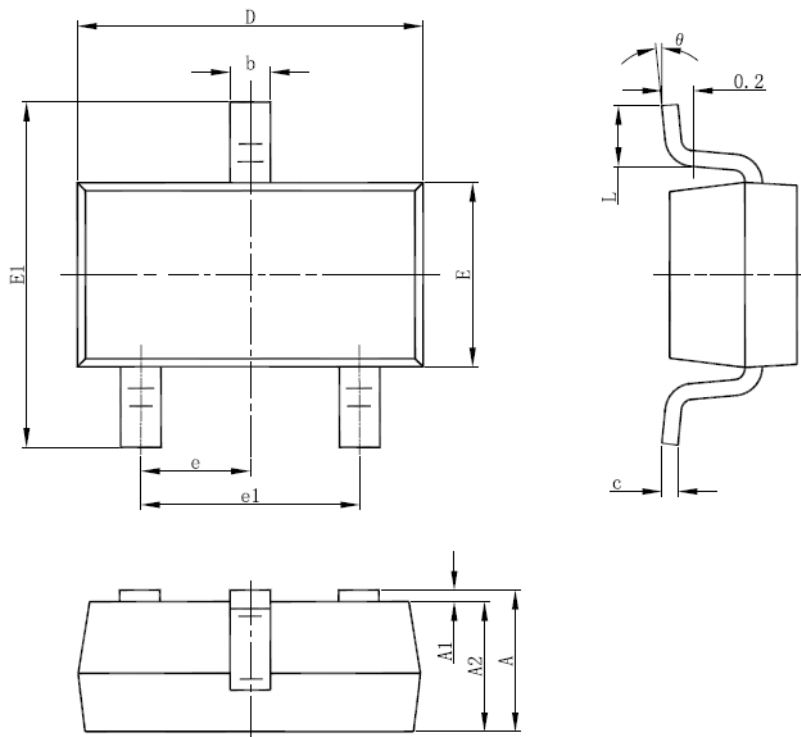
### SOT89-3

Symbol	Dimensions In Millimeters	Dimensions In Inches
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## AF77XXH Series

	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047



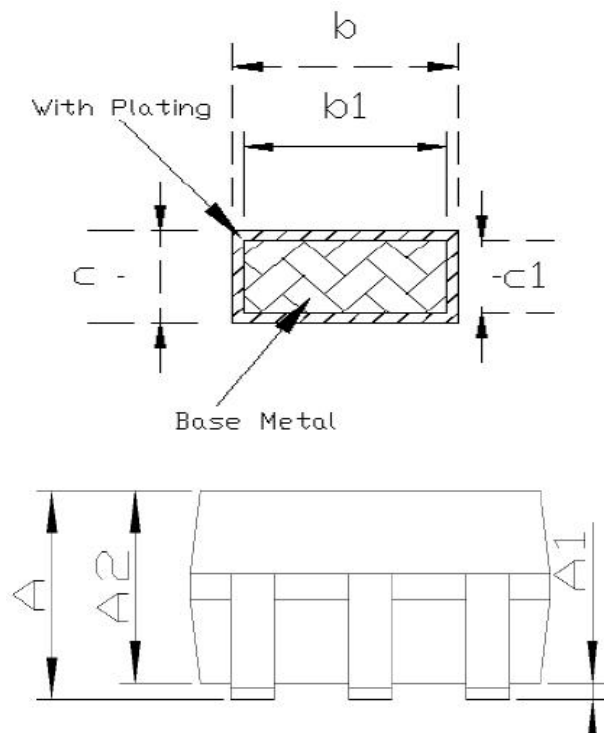
### SOT23-3

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119



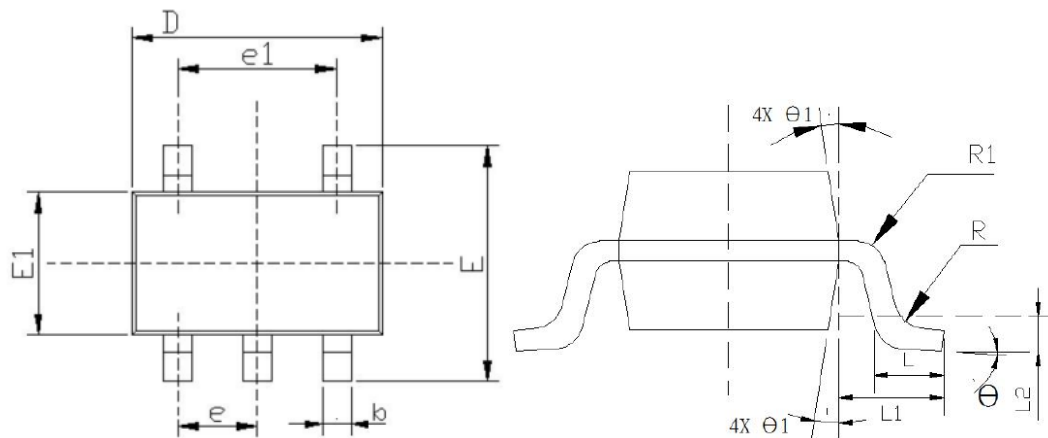
## AF77XXH Series

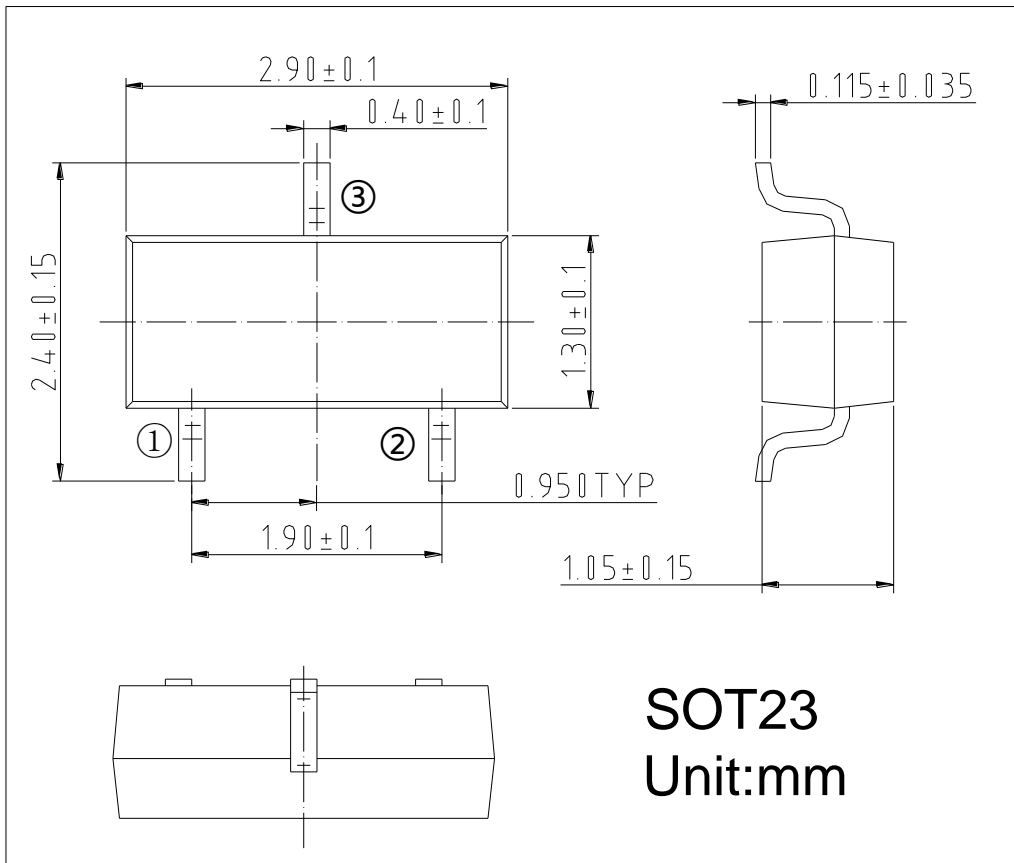
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°



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
$\theta$	0°	4°	8°
$\theta_1$	5°	10°	15°

SOT23-5L







**Order Information**

AF77XXH-XXC/M/N/P series

Voltage	SOT89-3	Marking	SOT23-3	Marking	SOT23	Marking	SOT23-5	Marking
3								
3.3	√	7733H	√	7733H	√	7733H		
3.6							√	7736H
4.0								
5.0	√	7750H						

Package	Packing	Shipping
SOT23	Tape and Reel	3K/Reel
SOT23-3		3K/Reel
SOT89-3		1K/Reel
SOT23-5		3K/Reel

**Revision History**

Document ID	Change Notice	Release date
AF77XXH	Product datasheet	2023-04-06

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