18V Input , 300mA , Low Current Consumption , CMOS LDO

Description

The AF76XXM series of low-dropout linear regulators are low quiescent current LDOs with excellent liner and ultra-fast load transient performance. The AF76XXM series is capable of delivering 300mA of output current and allow an input voltage as high as 18V.
The series are very suitable for the battery-powered equipment 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 Microcontroller

Device Information

AF 76 XX M C/M/P R

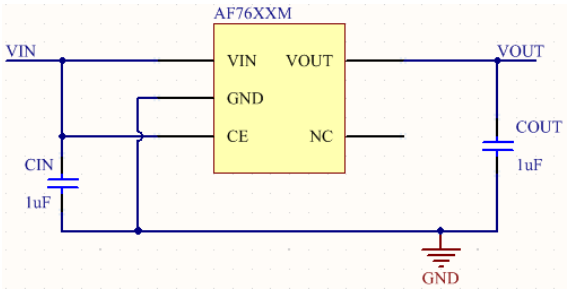
① ② ③ ④ ⑤ ⑥

①	Standard
②	Product Series
③	Output Voltage e.g. 36 = 3.6V
④	Medium voltage
⑤	C: SOT23-5L Package
	M: SOT23-3L Package
	P: SOT89-3L Package
⑥	RoHS2.0

Features

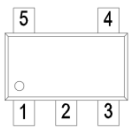
- Low Quiescent Current: 2uA
- Operating Voltage Range: 2.5V~18V
- Output Current: 300mA
- Low Dropout Voltage: 160mV@100mA(VOUT=3.3V)
- Output Voltage : 1.2V~5V
- High Accuracy: ±2%/±1%(Typ.)
- High Power Supply Rejection Ratio: 65dB at 1kHz
- Low Output Noise: $27xV_{OUT}$ uV_{RMS} (10Hz~100kHz)
- Excellent Line and Load Transient Response
- Built-in Current Limiter ,Short-Circuit Protection
- Over-Temperature Protection

Typical Application



Pin Configuration

Symbol	Package Pin		
	SOT23-5L	SOT23-3L	SOT89-3L
VIN	1	3	2
GND	2	1	1
CE	3		
NC	4		
OUT	5	2	3



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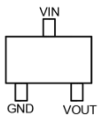

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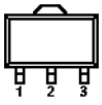


SOT89-3L

Absolute Maximum Ratings(1)

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

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage(2)		V_{IN}	-0.3~24	V
CE Pin Voltage		V_{CE}	-0.3~24	V
Output Voltage(2)		V_{OUT}	-0.3~10	V
Output Current		I_{OUT}	600	mA
Power Dissipation	SOT23-3	P_D	0.4	W
	SOT23-5		0.5	
	SOT89-3		0.6	
Operating Junction Temperature Range(3)		T_J	-40~125	°C
Storage Temperature		T_{STG}	-40~125	°C
Lead Temperature(Soldering, 10 sec)		T_L	260	°C
ESD rating(4)		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 my affect device reliability.

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

(3) The AF76XXM 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. Continuous operation above the specified maximum operating junction temperature may impair device reliability.

(4) ESD testing is performed according to the respective JESD22 JEDEC standard. The human body model is a 100 pF capacitor discharged through a 1.5kΩ resistor into each pin. The machine model is a 200pF capacitor discharged directly into each pin.

Recommended Operating Condition

Parameters	Min.	Typ.	Max.	Units
Input Voltage Range	2.5		18	V
Output Current			300	mA
Operating Junction Temperature Range	-40		125	°C

Electronics Characteristics

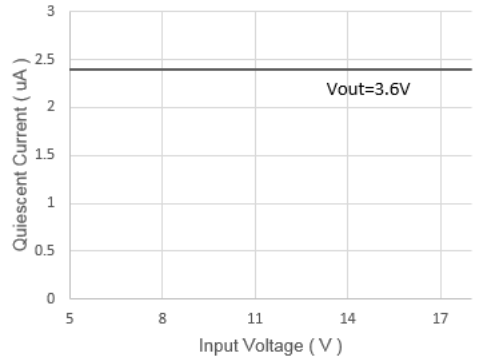
(Unless otherwise specified, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, T_A=25°C)

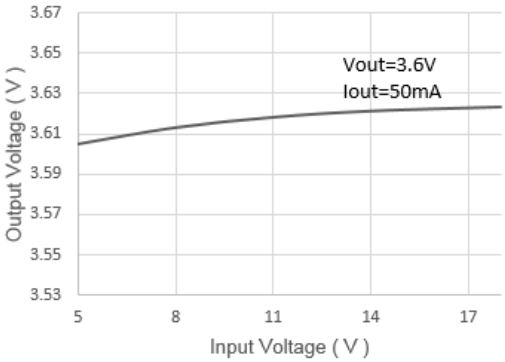
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}			2.5		18	V
Output Voltage Range	V_{OUT}			1.2		5	V
Dropout Voltage	V_{dif}(6)	I_{OUT}=100mA,V_{OUT}=3.3V			160		mV
Supply Current	I_{SS}	I_{OUT}=0A			2	5	uA
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	I_{OUT} =10mA V_{OUT}+1V≤V_{IN}≤18V			0.01	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=V_{OUT}+1V 1mA≤I_{OUT}≤100mA			10		mV
Temperature Coefficient	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta T_A}$	I_{OUT}=10mA -40°C<T_A<125°C			50		ppm
Output Current Limit	I_{LIM}	V_{OUT}= 0.5 x $V_{OUT(Normal)}$, V_{IN} = 5V		350	500		mA
Short Current	I_{SHORT}	V_{OUT} =V_{SS}			100		mA
DC Output Accuracy		I_{OUT} =1mA		-2		2	%
				-1		1	%
Output Noise Voltage	V_{ON}	BW=10Hz to 100kHz			27 x V_{OUT}		μV_{RMS}
Power Supply Rejection Ratio	PSRR	I_{OUT}=50mA	100Hz		80		dB
			1kHz		65		
			10kHz		50		
			100 kHz		45		
Thermal Shutdown Temperature	T_{SD}				150		°C
Thermal Shutdown Hysteresis	$\triangle T_{SD}$	——		—	20	—	°C
Standby Current	I_{STBY}	CE = V_{SS}				0.2	μA
CE "High" Voltage	V_{CE}“H”			1.5		V_{IN}	V
CE "Low" Voltage	V_{CE}“L”					0.3	V
C_{OUT} Auto-	$R_{DISCHRG}$	V_{IN}=5V, V_{OUT}=3.0V,			150		Ω

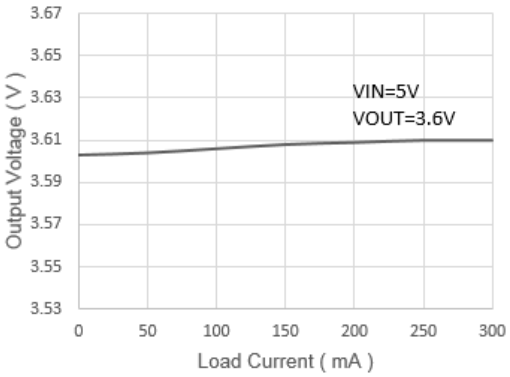
Discharge Resistance		V_{CE}=V_{SS}				

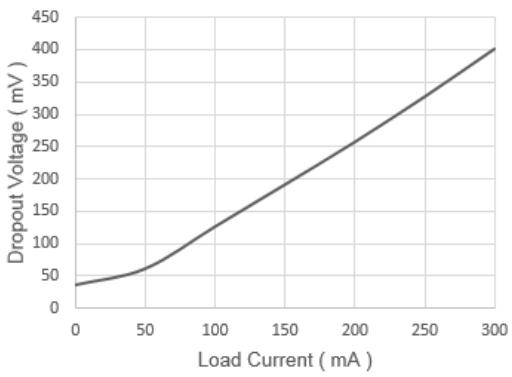
Typical Characteristics

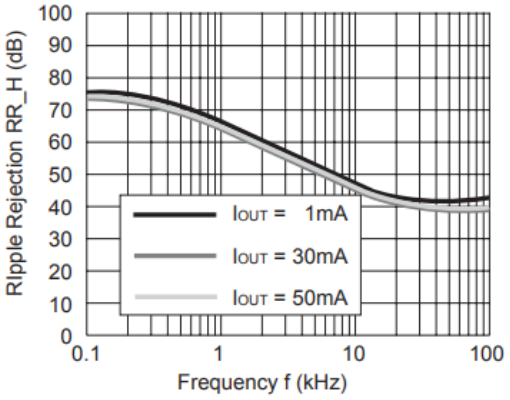
(Unless otherwise specified, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, T_A=25°C)

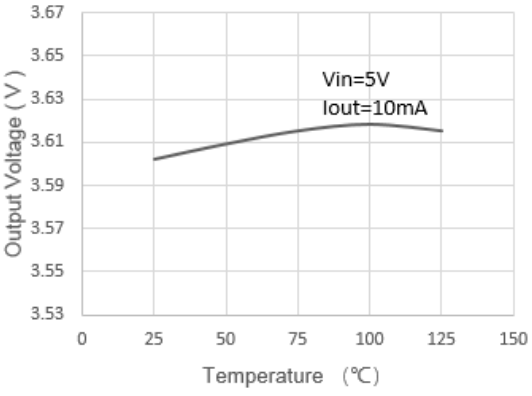


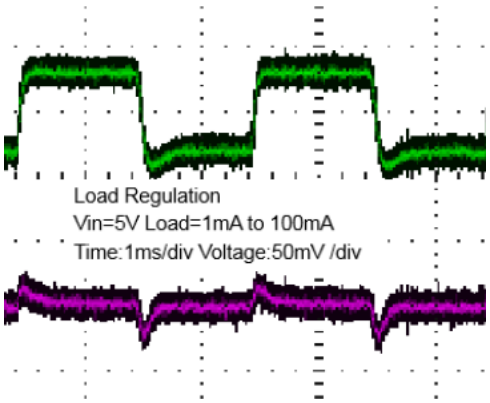


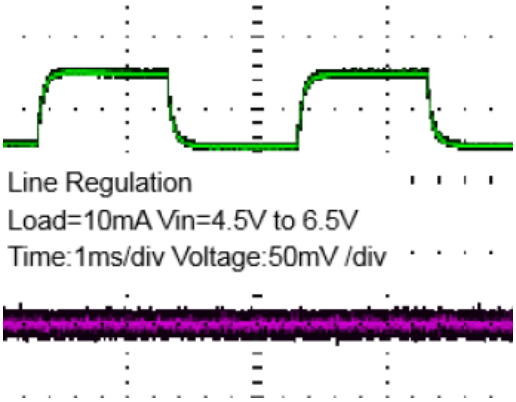




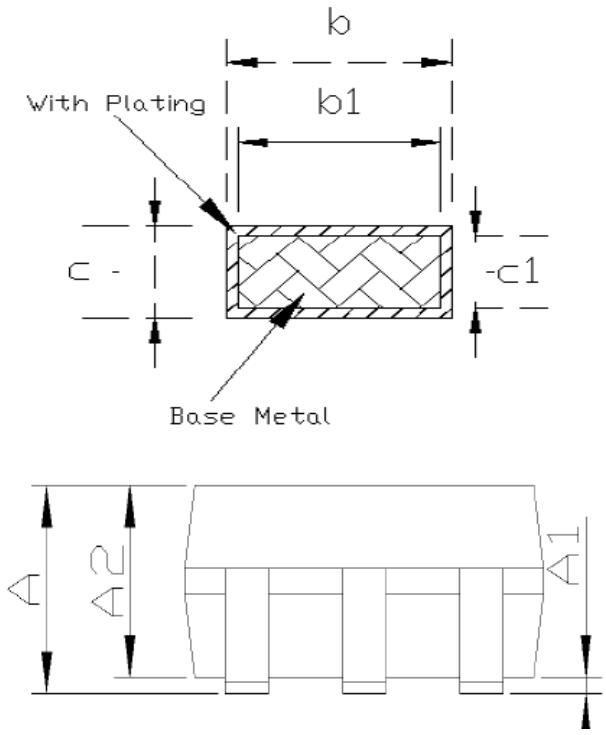






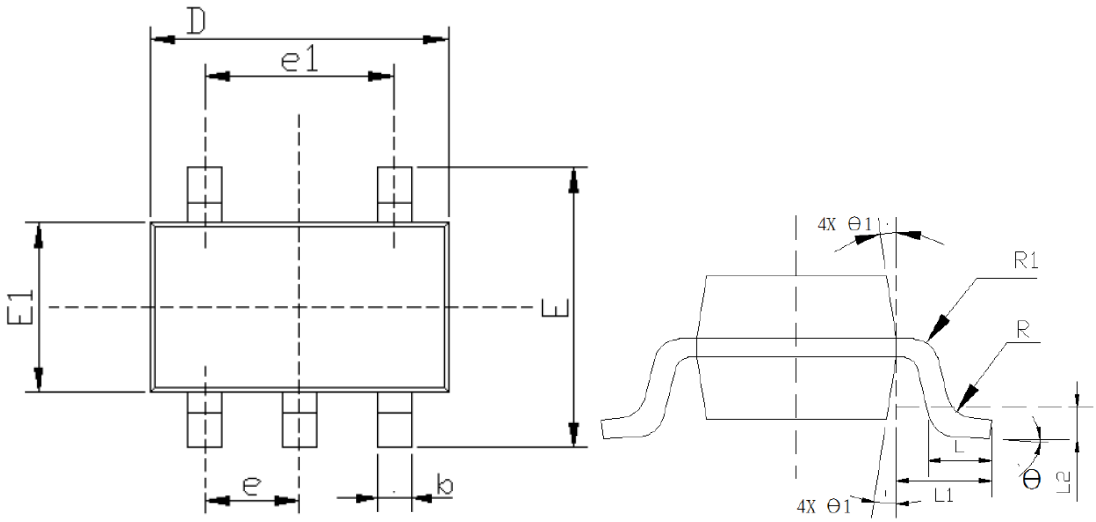


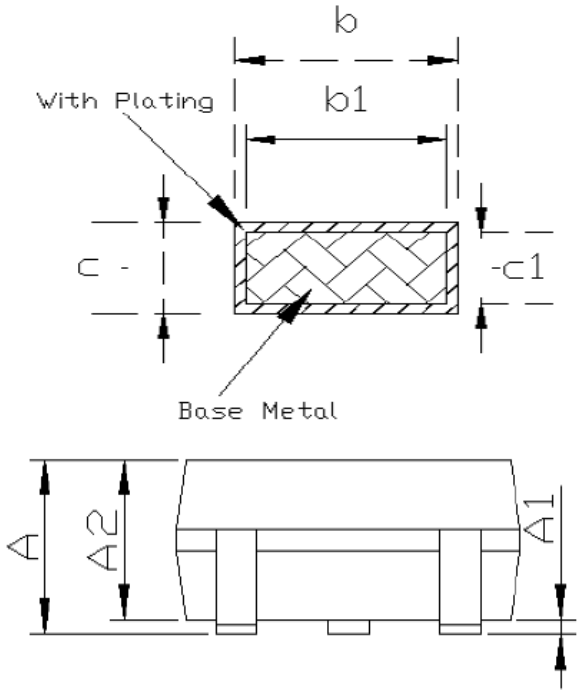
Package Information



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





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c1	0.14	0.15	0.16
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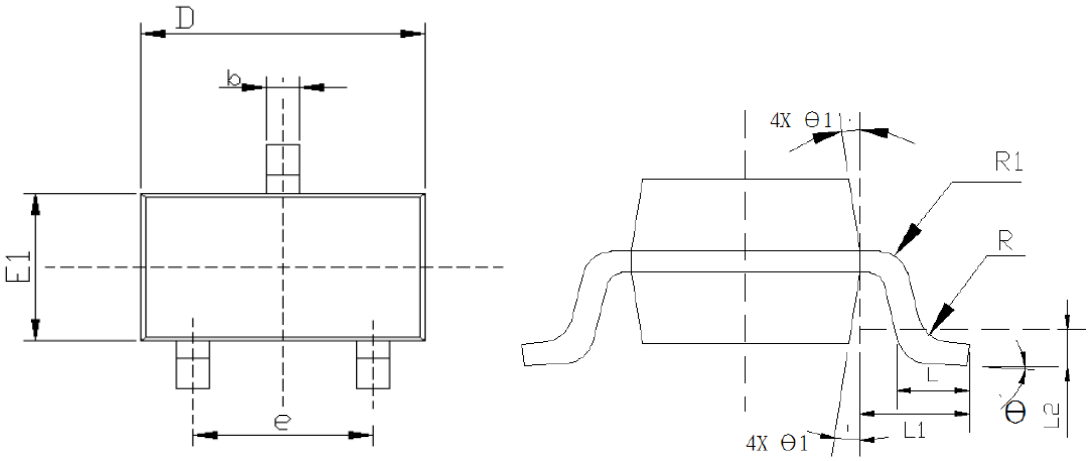
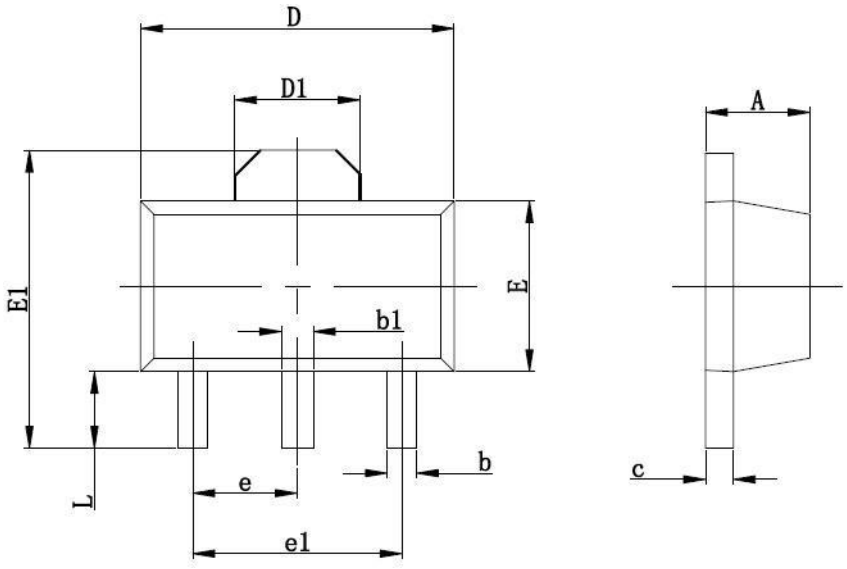
L2	0.25 REF		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	4°	8°
θ 1	5°	10°	15°

SOT23-3L





SOT89-3L

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	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	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TVP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.100	0.035	0.047

Order Information

Voltage	SOT23-5	Marking	Shipping	SOT23-3	Marking	Shipping
1.2			Tape and Reel, 3K			Tape and Reel, 3K
1.5						
3.0	√	7630		√	7630	
3.3	√	7633		√	7633	
3.6	√	7636				
4.5	√	7645				
5.0	√	7650		√	7650	

Voltage	SOT89-3L	Marking	Shipping		Marking	Shipping
1.2			Tape and Reel, 1K			
1.5						
3.0						
3.3	√	7633				
3.6						
5.0	√	7650				

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