

**15V Input , 150mA , Low Current Consumption , CMOS LDO**
**Description**

The AF75XXM series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 15V. They are available with several fixed output voltages ranging from 3V to 5V. CMOS technology ensures low voltage drop and low quiescent current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

**Applications**

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

**Device Information**

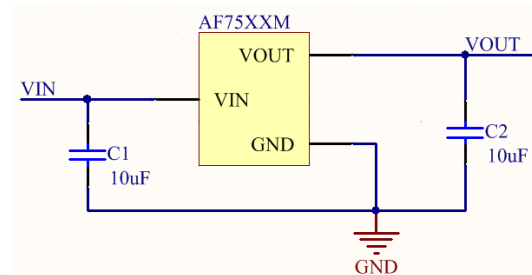
AF 75 XX M – P/N R/G

① ② ③ ④ ⑤ ⑥

①	Standard
②	Product Series
③	Output Voltage e.g. 30 = 3.0V
④	Medium Voltage
⑤	P: SOT-89-3 Package
	N: SOT-23 Package
⑥	R: RoHS / Pb Free
	G: Halogen Free

**Features**

- Input Voltage Range: up to 15V
- Output Voltage Range: 3V~5V
- Output Current: 150mA
- Quiescent Current: 2uA
- Dropout Voltage : 200mV@20mA
- Fixed Voltage Accuracy:  $\pm 2\%$ (Typ.)
- PSRR: 40dB at 1kHz
- Low Output Noise
- Excellent Line and Load Transient Response
- Short-Circuit Protection, Built-in Current Limiter

**Typical Application**

**Pin Configuration**

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

**✚ 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		$V_{IN}$	-0.3~18	V
Output Voltage		$V_{OUT}$	-0.3~ $V_{IN}$	V
Power Dissipation	SOT23	$P_D$	0.25	W
	SOT89-3		0.5	W
Operating Junction Temperature Range		$T_J$	-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 may affect device reliability.

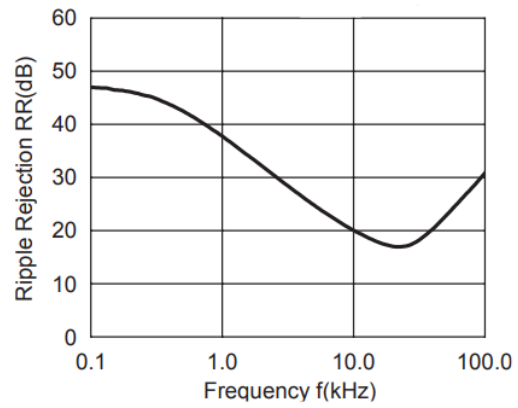
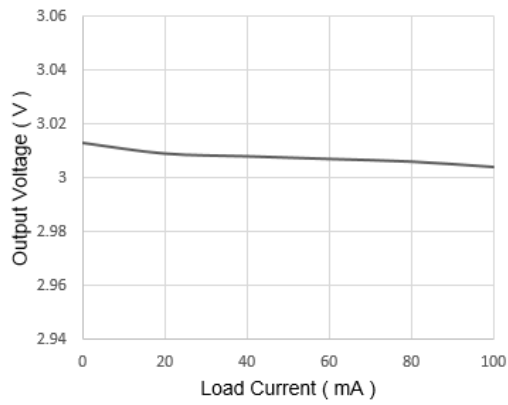
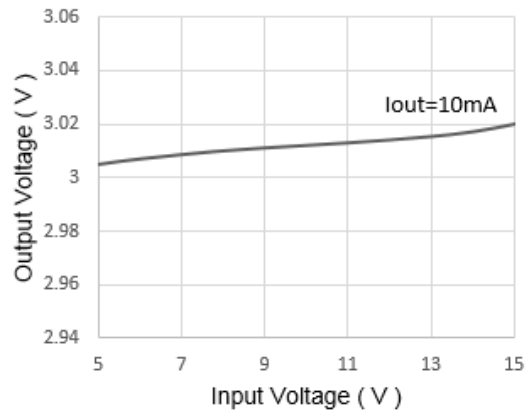
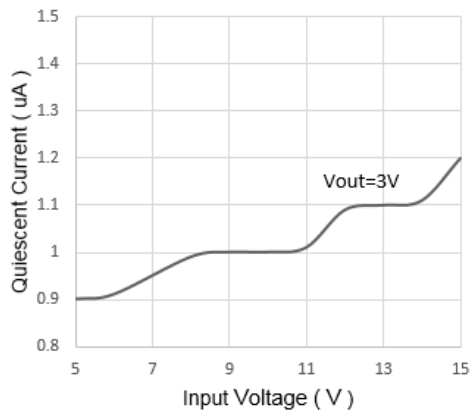
**✚ Electronics Characteristics**

 (Unless otherwise specified,  $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=C_{OUT}=1\mu F$ , TA=25°C)

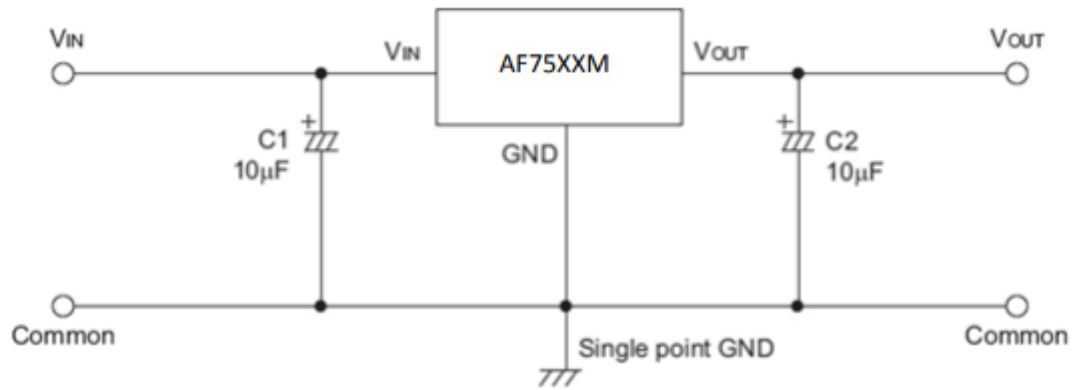
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	$V_{IN}$				15	V
Output Voltage	$V_{OUT}$		0.98 $V_{OUT}$	$V_{OUT}$	1.02 $V_{OUT}$	V
Dropout Voltage	$V_{DIF}$	$I_{OUT}=20mA$		200		mV
Quiescent Current	$I_Q$	$I_{OUT}=0$		1.5	2	uA
Line Regulation	$\Delta V_{LINE}$	$I_{OUT}=1mA$ $3V \leq V_{IN} \leq 16V$		0.2		%/V
Load Regulation	$\Delta V_{LOAD}$	$V_{IN}=V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 50mA$		60	150	mV
Temperature Coefficient	TC	$V_{OUT}=3.3V$ $I_{OUT}=10mA$ $0^\circ C < T_A < 70^\circ C$		$\pm 0.5$		mV/ °C
Current Limit	$I_{LIM}$	$V_{OUT}=0.5 \times V_{OUT}$ $V_{IN}=5V$		250		mA
Power Supply Rejection Ratio	PSRR	$I_{OUT}=1mA$ 1kHz		40		dB

## Typical Characteristics

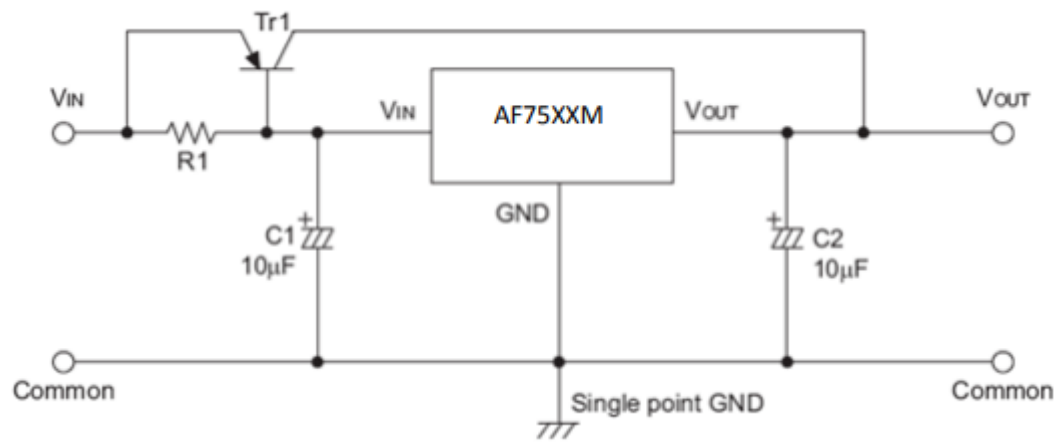
(Unless otherwise specified,  $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=C_{OUT}=1\mu F$ ,  $T_A=25^\circ C$ )



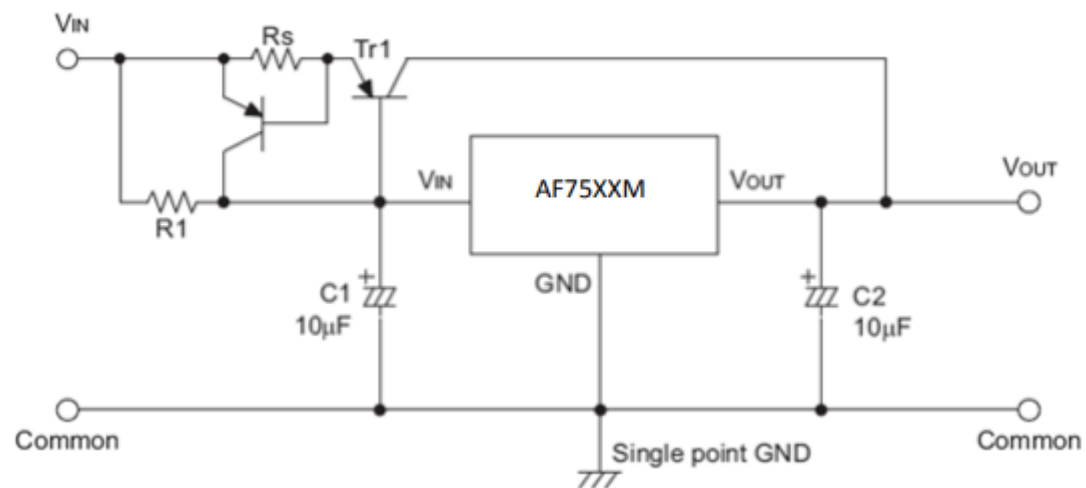
**Application Circuits**



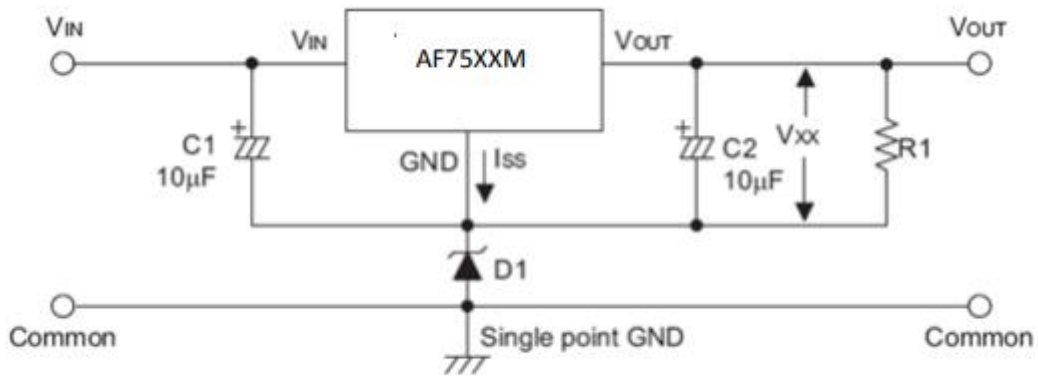
**Basic Circuits**



**High Output Current Positive Voltage Regulator**

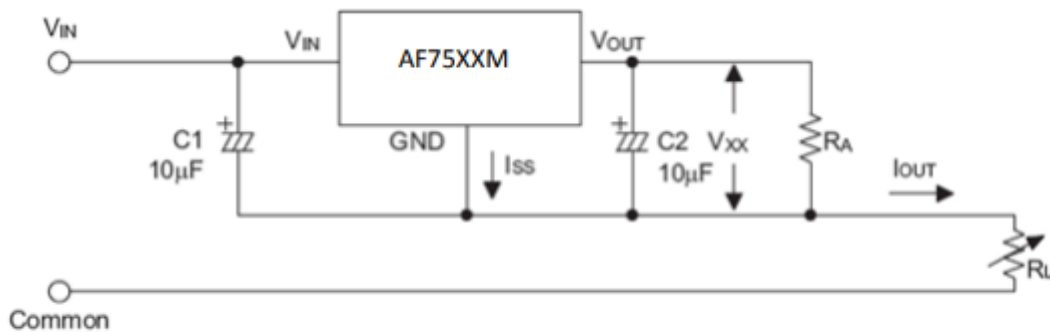


**Short-Circuit Protection by Tr1**



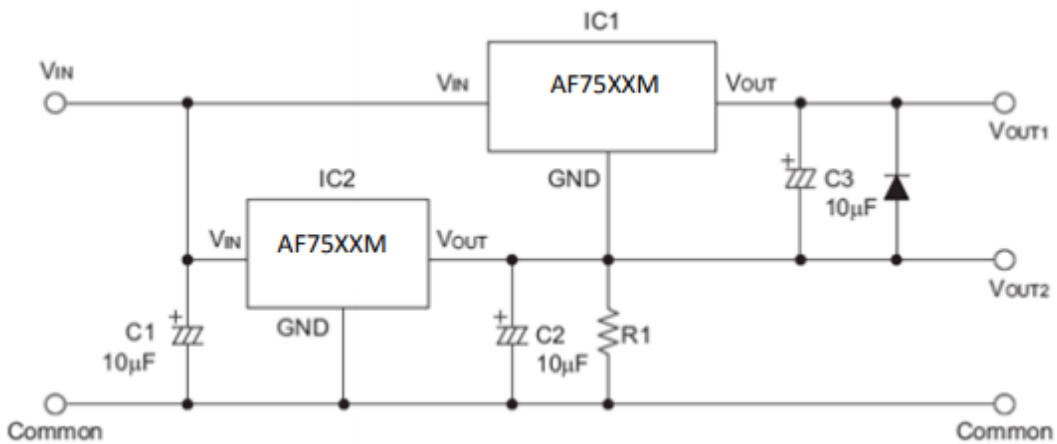
$$V_{OUT} = V_{XX} + V_{D1}$$

**Circuit for Increasing Output Voltage**

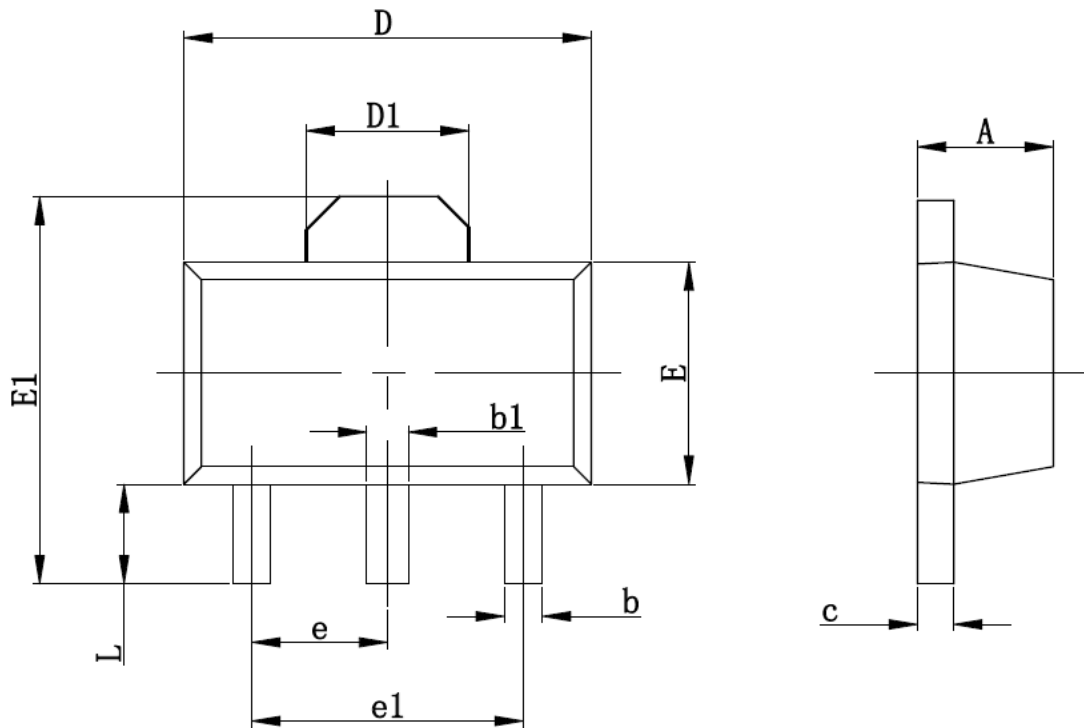


$$I_{OUT} = \frac{V_{XX}}{R_A} + I_{SS}$$

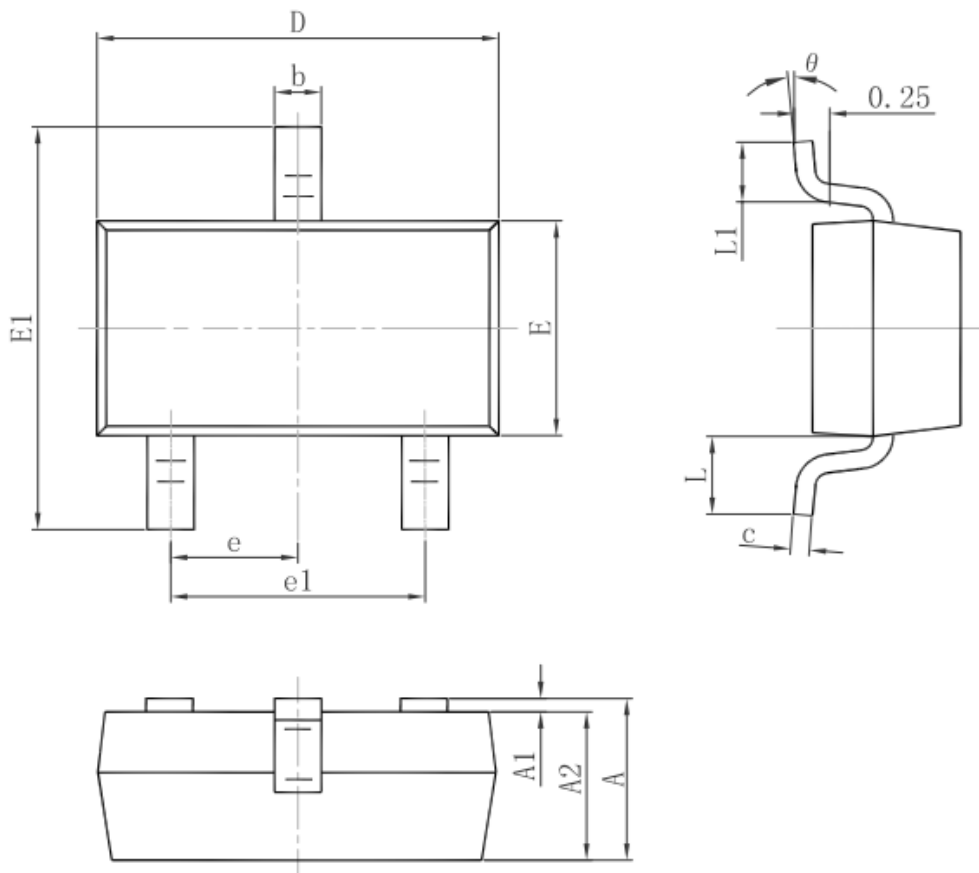
**Constant Current Regulator**



**Dual Supply**

**Package Information**

**SOT89-3**

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		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047


**SOT23**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°



**Order Information**

Voltage	SOT89-3	Marking	SOT23	Marking
3.0	√	7530-1	√	HT30
3.3	√	7533-1	√	HT33
3.6	√	7536-1	√	HT36
4.0	√	7540-1	√	HT40
4.4	√	7544-1	√	HT44
5.0	√	7550-1	√	HT50

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

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