

High Input Voltage LDO Regulators ME6203 Series

General Description

The ME6203 series are highly accurate, low noise, LDO Voltage Regulators that are manufactured using CMOS technology and the input voltage of ME6203 series is in Excess of 30 V. This series contains three fixed output voltages of 3.0V, 3.3V and 5.0V that have no minimum load requirement to maintain regulation. On chip trimming adjusts the output voltage to within $\pm 2.5\%$ accuracy. ME6203 consists of a output current limiting, a driver transistor, a precision reference voltage and an error amplifier. Output voltage is selectable in 100mV steps between 1.5V ~ 6.0V. The Devices are available in SOT-89(500mW).

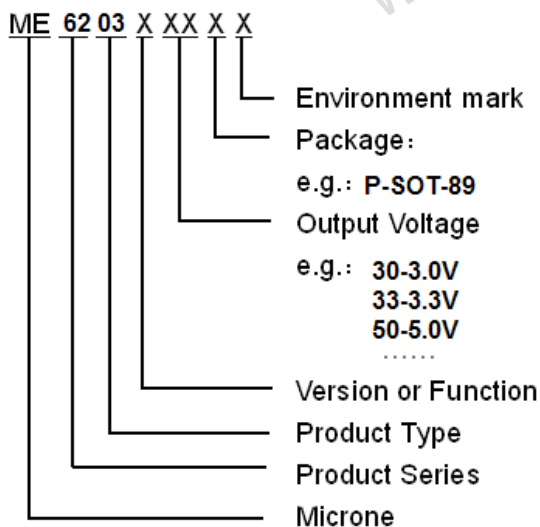
Features

- Output Current in Excess of 100mA
- Operating Voltage Range: 7V~30V
- Highly Accuracy: $\pm 2.5\%$
- Small Standby Current: 13 μ A (TPY.)
- Ripple Rejection: 40dB@1KHz (ME6203A33)
- Line Regulation: 0.5% (TYP.)
- Temperature Stability: 0.5% (TYP.)
- Operational Temperature Range: 0 $^{\circ}$ C ~ 100 $^{\circ}$ C
- Small Packages: SOT-89

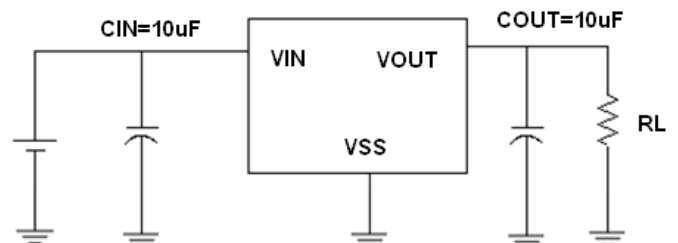
Typical Application

- Consumer and Industrial Equipment Point of Regulation
- Portable AV equipment
- Battery powered equipment
- Cameras, video recorders
- Reference voltage

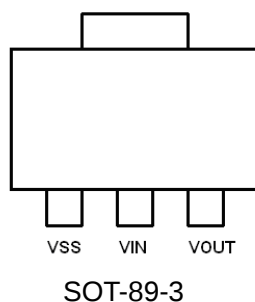
Selection Guide



Typical Application Circuit



Pin Configuration

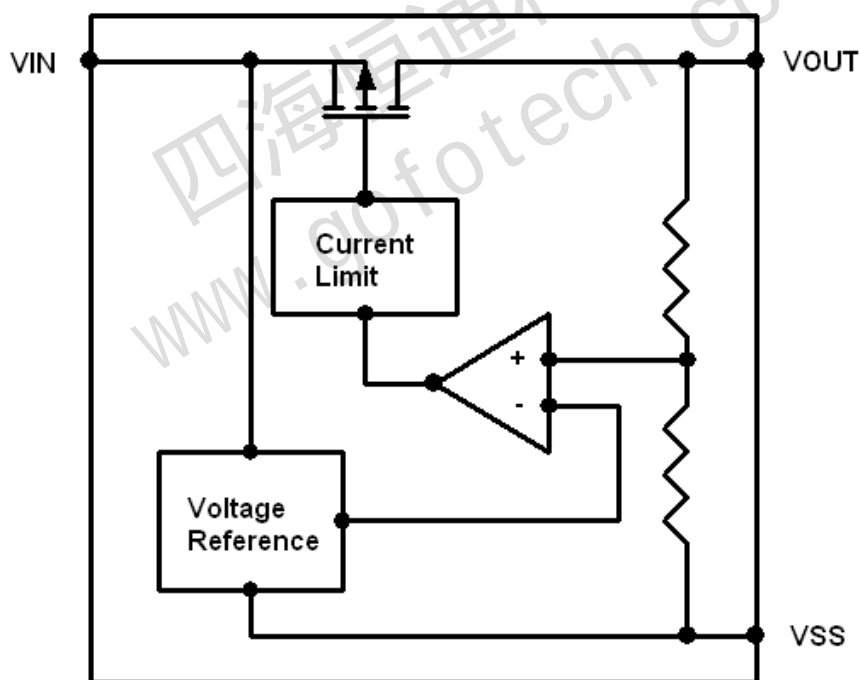


Pin Assignment

ME6203AXX

Pin Number	Pin Name	Functions
1	V _{SS}	Ground
2	V _{IN}	Input
3	V _{OUT}	Output

Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Input Voltage	V_{IN}	36	V
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{IN} +0.3$	V
Power Dissipation	SOT-89 P_D	500	mW
Operating Temperature Range	T_{OPR}	$0 \sim +100$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-40 \sim +150$	$^{\circ}\text{C}$
Lead Temperature	SOT-89	260°C , 10sec	

Electrical Characteristics

ME6203A30

($V_{IN}=7\text{V}$, $C_{IN}=C_L=10\mu\text{F}$, $T_a=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10\text{mA}$, $7\text{V} \leq V_{IN} \leq 30\text{V}$	X 0.975	$V_{OUT(T)}$ (Note 1)	X 1.025	V
Input Voltage	V_{IN}		7		30	V
Maximum Output Current	I_{OUTMAX}	$V_{IN}=7\text{V}$		100		mA
		$V_{IN}=24\text{V}$		20		
		$V_{IN}=30\text{V}$		15		
Load Regulation	ΔV_{OUT}	$V_{IN}=7\text{V}$, $0\text{mA} \leq I_{OUT} \leq 100\text{mA}$		10	30	mV
Line Regulation	ΔV_{OUT}	$I_{OUT}=10\text{mA}$, $7\text{V} \leq V_{IN} \leq 30\text{V}$		10	35	mV
Temperature Stability	ΔV_{OUT}	$V_{IN}=7\text{V}$, $I_{OUT}=10\text{mA}$, $0 \sim 100^{\circ}\text{C}$		0.5	1.5	%
Quiescent Current	I_s			13	18	μA
short-circuit current	I_{short}	$V_{IN}=7\text{V}$		13	30	mA
Ripple Rejection Rate	PSRR	$V_{IN}=12\text{V}+1\text{Vp-pAC}$ $I_{OUT}=5\text{mA}, 1\text{kHz}$		40		dB

ME6203A33

($V_{IN}=7V$, $C_{IN}=C_L=10\mu F$, $T_a=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA$, $7V \leq V_{IN} \leq 30V$	X 0.975	$V_{OUT(T)}$ (Note 1)	X 1.025	V
Input Voltage	V_{IN}		7		30	V
Maximum Output Current	I_{OUTMAX}	$V_{IN}=7V$		100		mA
		$V_{IN}=24V$		20		
		$V_{IN}=30V$		15		
Load Regulation	ΔV_{OUT}	$V_{IN}=7V$, $0mA \leq I_{OUT} \leq 100mA$		10	30	mV
Line Regulation	ΔV_{OUT}	$I_{OUT}=10mA$, $7V \leq V_{IN} \leq 30V$		10	35	mV
Temperature Stability	ΔV_{OUT}	$V_{IN}=7V$, $I_{OUT}=10mA$, $0 \sim 100^{\circ}C$		0.5	1.5	%
Quiescent Current	I_s			13	18	μA
short-circuit current	I_{short}	$V_{IN}=7V$		13	30	mA
Ripple Rejection Rate	PSRR	$V_{IN}=12V+1Vp-pAC$ $I_{OUT}=5mA, 1kHz$		40		dB

ME6203A50

($V_{IN}=7V$, $C_{IN}=C_L=10\mu F$, $T_a=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA$, $7V \leq V_{IN} \leq 30V$	X 0.975	$V_{OUT(T)}$ (Note 1)	X 1.025	V
Input Voltage	V_{IN}		7		30	V
Maximum Output Current	I_{OUTMAX}	$V_{IN}=7V$		100		mA
		$V_{IN}=24V$		20		
		$V_{IN}=30V$		15		
Load Regulation	ΔV_{OUT}	$V_{IN}=7V$, $0mA \leq I_{OUT} \leq 100mA$		10	40	mV
Line Regulation	ΔV_{OUT}	$I_{OUT}=10mA$, $7V \leq V_{IN} \leq 30V$		10	45	mV
Temperature Stability	ΔV_{OUT}	$V_{IN}=7V$, $I_{OUT}=10mA$, $0 \sim 100^{\circ}C$		0.5	1.5	%
Quiescent Current	I_s			15	18	μA
short-circuit current	I_{short}	$V_{IN}=7V$		15	30	mA
Ripple Rejection Rate	PSRR	$V_{IN}=12V+1Vp-pAC$ $I_{OUT}=5mA, 1kHz$		40		dB

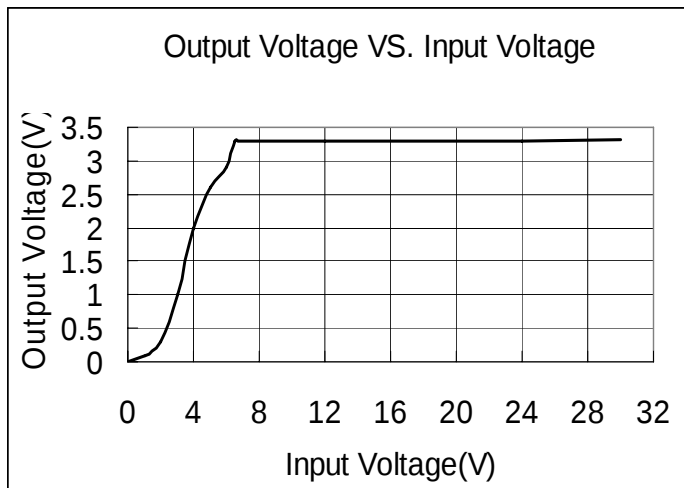
Note :

1. $V_{OUT(T)}$: Specified Output Voltage
2. $V_{OUT(E)}$: Effective Output Voltage

Type Characteristics

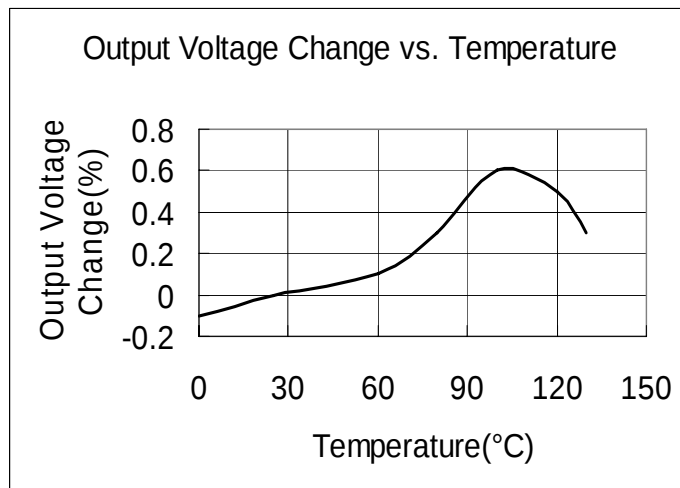
(1) Output Voltage VS. Input Voltage

($I_{OUT}=10mA$, $T_a = 25\text{ }^{\circ}C$)



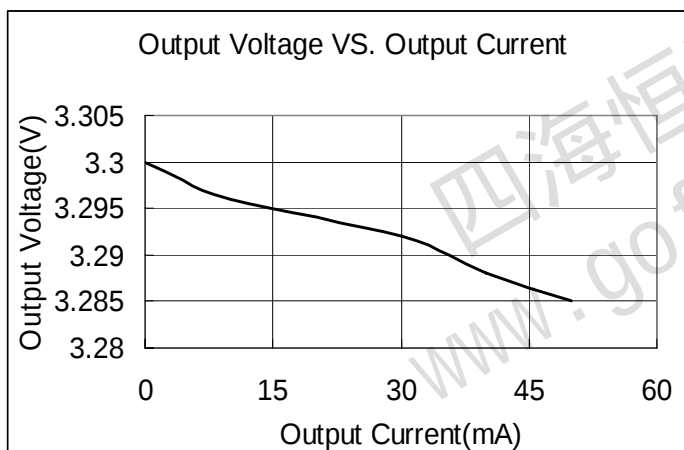
(2) Output Voltage Change vs. Temperature

($V_{IN}=7V$, $I_{OUT}=10mA$)



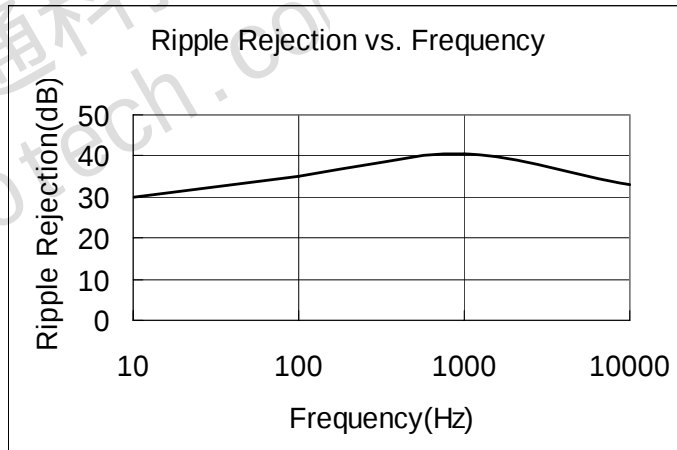
(3) Output Voltage VS. Output Current

($V_{IN}=7V$, $T_a = 25\text{ }^{\circ}C$)



(4) Ripple Rejection vs. Frequency

($V_{IN} = 12V + 1Vp-pAC$, $I_{OUT}=5mA$, $T_a = 25\text{ }^{\circ}C$)

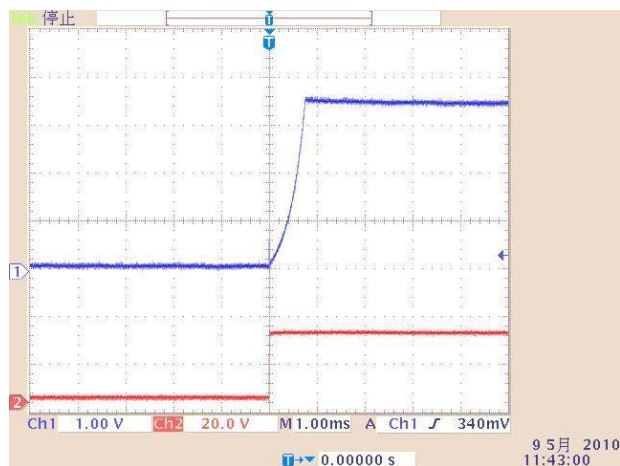


(5) Line Transient Response

ME6203A33

Ch1: Output Voltage Ch2: Input Voltage

$V_{IN}=30V, I_{OUT}=0mA, T_a = 25^\circ C$

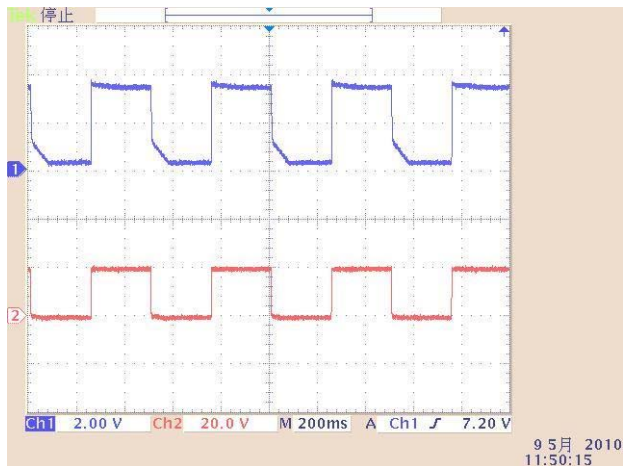


(6) rectangle wave Transient Response

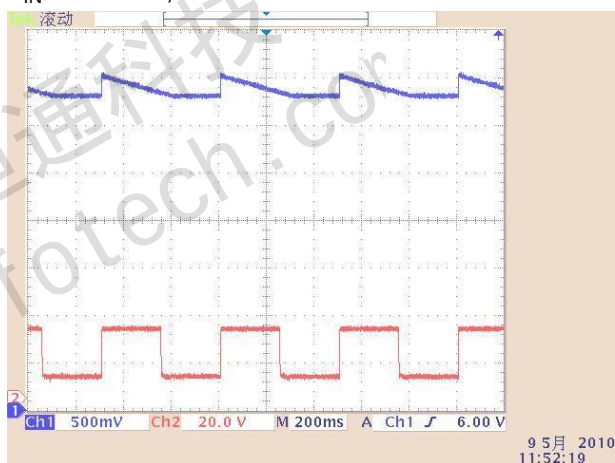
ME6203A33

Ch1: Output Voltage Ch2: Input Voltage

$V_{IN}:0V\sim20V, T_a = 25^\circ C$

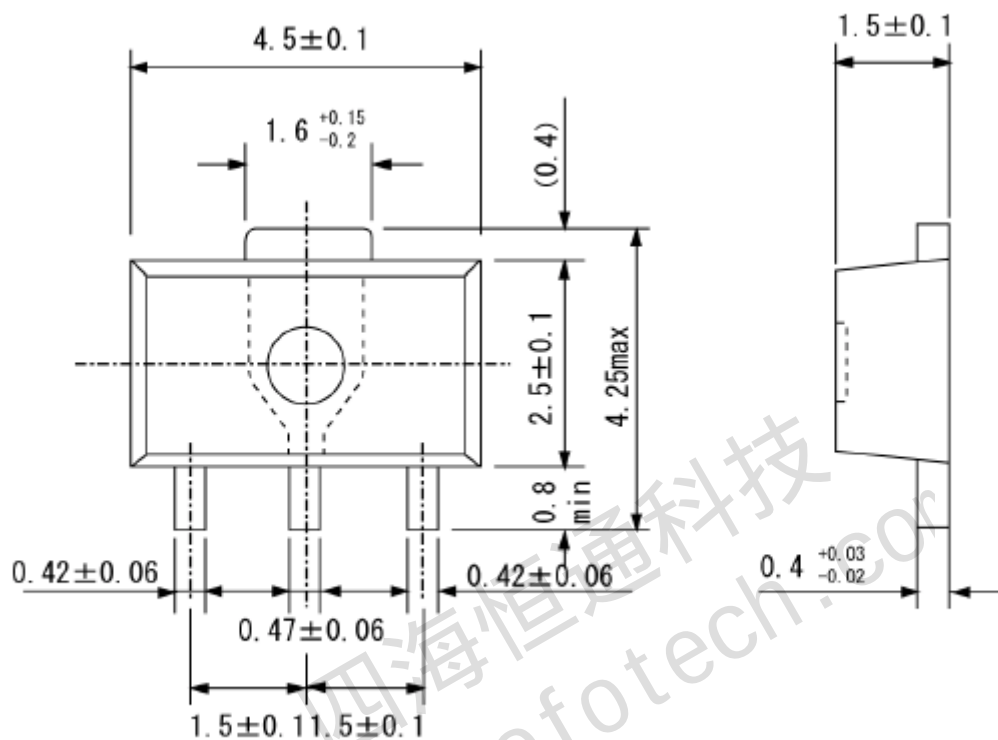


$V_{IN}:10V\sim30V, T_a = 25^\circ C$



Packaging Information:

SOT-89-3



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