

Features

- Low voltage drop: 0.17V@100mA
- High input voltage: 18V
- Low temperature coefficient
- Large Output Current: >0.5A
- Low Quiescent Current: 1uA at 6.0V
- Output voltage accuracy: tolerance $\pm 2\%$
- Built-in current limiter

Applications

- Battery-powered equipment
- Hand-Hold Equipment
- GRS Receivers
- Wireless LAN

General Description

The HM78XX series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and laser trimming technologies.

The HM78XX consists of a high-precision voltage reference, an error amplification circuit, and a current limited output driver. Transient response to load variations have improved in comparison to the existing series. SOT89-3 TO92 SOT223 TO252 TO263 and TO220 packages are available.⑤

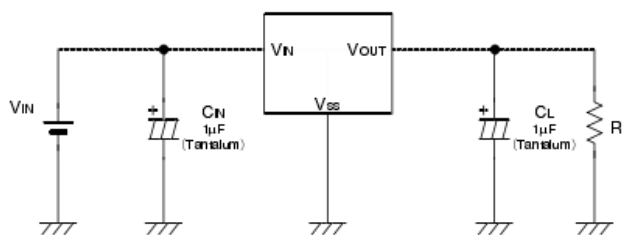
Order Information

HM78XX-①②③④

Designator	Symbol	Description
① ②	Integer	Output Voltage(2.1~5.0V)
③	T	Package:TO-92
	P	Package:SOT89-3
	N	Package:SOT23
	M	Package:SOT23-3
	M5	Package:SOT23-5
④	R	RoHS / Pb Free
	G	Halogen Free

Note: "①②" stands for output voltages. Other voltages can be specially customized

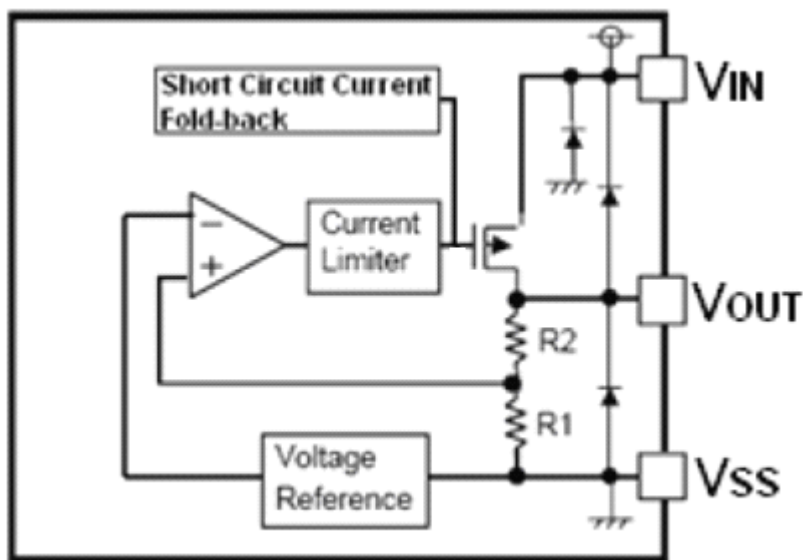
Typical Application



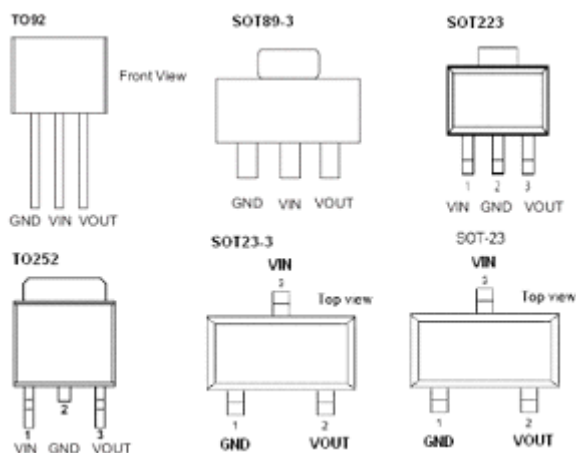
Note1: Input capacitor $C_{IN}=1\mu F$.

Note2: Output capacitor $C_{OUT}=1\mu F/6.8\mu F$ (1uF Tantalum capacitor or 6.8uF ceramic capacitor is recommended).

Block Diagram



Pin Assignment



Absolute Maximum Ratings

Supply Voltage	-0.3V to 18V	Operating Temperature	-40°C to 85°C
Output Current.....	0.8A	Storage Temperature	-40°C to 125°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

HM78XX for any output voltage

(Ta=25°C)

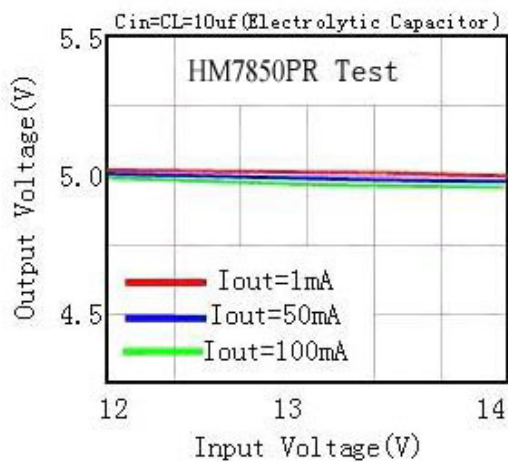
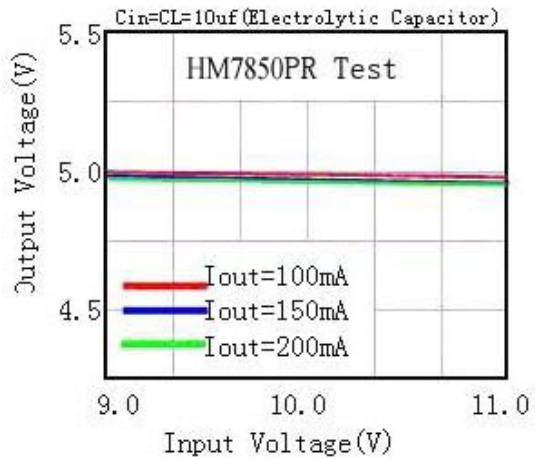
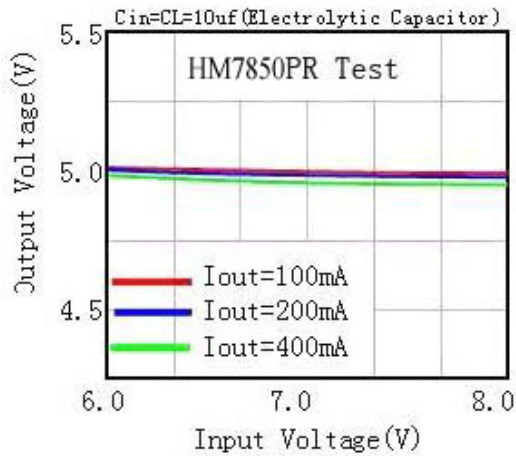
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	Vout	Vin=Vout+1V 1.0mA≤Iout≤30mA	Vout×0.98	--	Vout×1.02	V
Output Current*1	Iout	Vin-Vout=1V	500	--	--	mA
Low dropout*2	Vdrop	Refer to the next table				
Line Regulation	$\Delta V_{out1}/(V_{in}-V_{out})$	1.6V≤Vin≤8V Iout=100mA	--	0.05	0.2	%/V
Load Regulation	ΔV_{out}	Vin= Vout+1V 1.0mA≤Iout≤100mA	--	12	30	mV
Output voltage Temperature Coefficiency	$\Delta V_{out}/(T_a \cdot V_{out})$	Iout=30mA 0°C≤Ta≤70°C	--	±100	--	Ppm/°C
PSRR	PSRR	F=1KHz Vin=Vout+1V	--	40	--	dB
Supply Current	Iss1	--	--	1	2	uA
Input Voltage	Vin	--	--	--	15	V

Electrical Characteristics by Output Voltage:

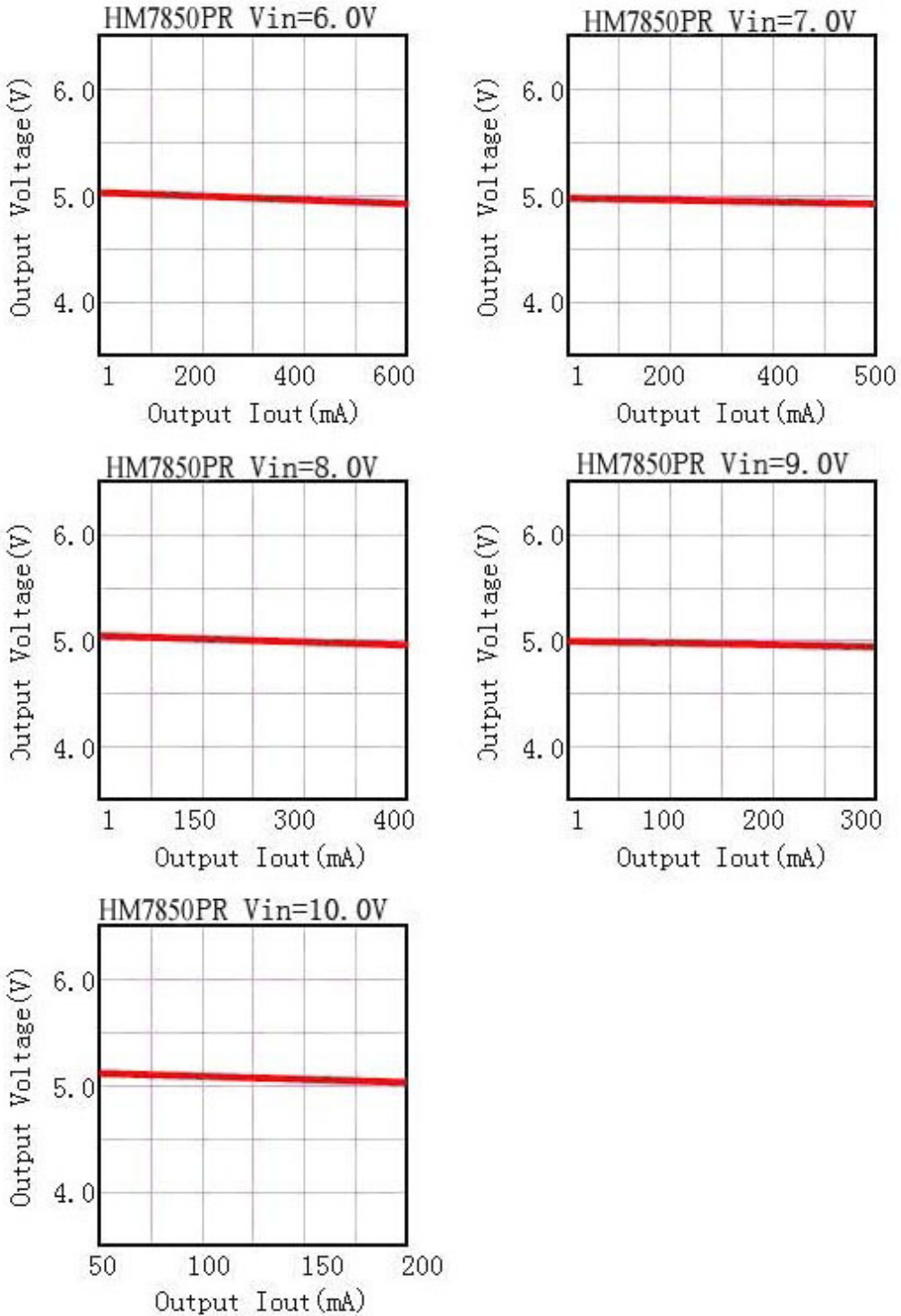
Output Voltage Vout(V)	Dropout Voltage Vdif (V)		
	Conditions	Typ.	Max.
Vout ≤ 2.0V	Iout=60 mA	0.1	0.12
2.0 < Vout ≤ 3.0	Iout=80 mA	0.12	0.14
3.0 < Vout ≤ 4.0	Iout=100 mA	0.16	0.18
4.0 < Vout ≤ 5.0		0.17	0.18
3.0 < Vout ≤ 4.0	Iout=200 mA	0.21	0.24
4.0 < Vout ≤ 14.0		0.20	0.22
3.0 < Vout ≤ 4.0	Iout=500 mA	0.7	0.75
4.0 < Vout ≤ 14.0		0.72	0.76

Typical Performance Characteristics

(1) Output Voltage vs Input voltage



(2) Output Voltage vs. Output Current



(3) Output Voltage vs.Ambient Temperature

