

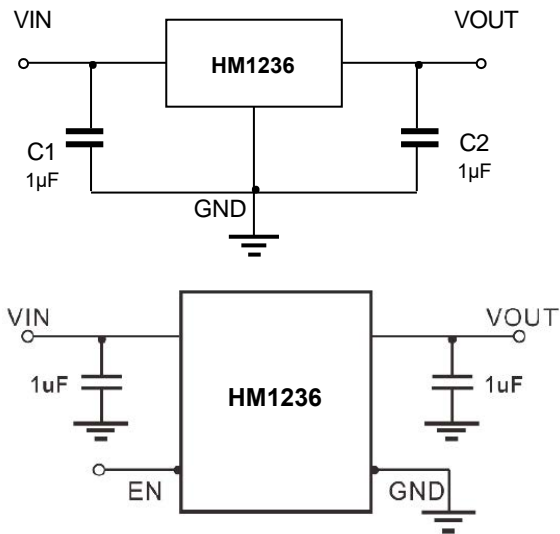
5.5V 300mA Low Dropout Linear Regulator

■ Description

PTFGH is a high ripple rejection, low power consumption, low dropout CMOS voltage regulator with short circuit protection. Its quiescent current at no-load is as low as 0.5uA, and it can provide 300mA output current under the condition that the input and output voltage difference is extremely small, and still maintain a good regulation rate, which is very suitable for portable battery-powered products, voice and imaging equipment products.

PTFGH retains all common features of low dropout regulators, including low dropout PMOS pass devices, short circuit protection and thermal shutdown.

■ Typical Application Circuit



■ Features

- $\pm 2\%$ output voltage tolerance over temperature
- VIN range up to 5.5V
- Ultra-low quiescent current 0.5uA
- When the output current is 300mA, the input and output voltage difference is 500mV
- Built-in Thermal Protection
- Built-in Overcurrent Protection

■ Application

- Portable battery powered devices (wearable watches, body fat scales, etc.)
- Security (cameras, dash cams, etc.)
- Mobile terminals (POS machines, power banks, etc.)
- Smart meters (electricity, gas, etc.)
- Sensors

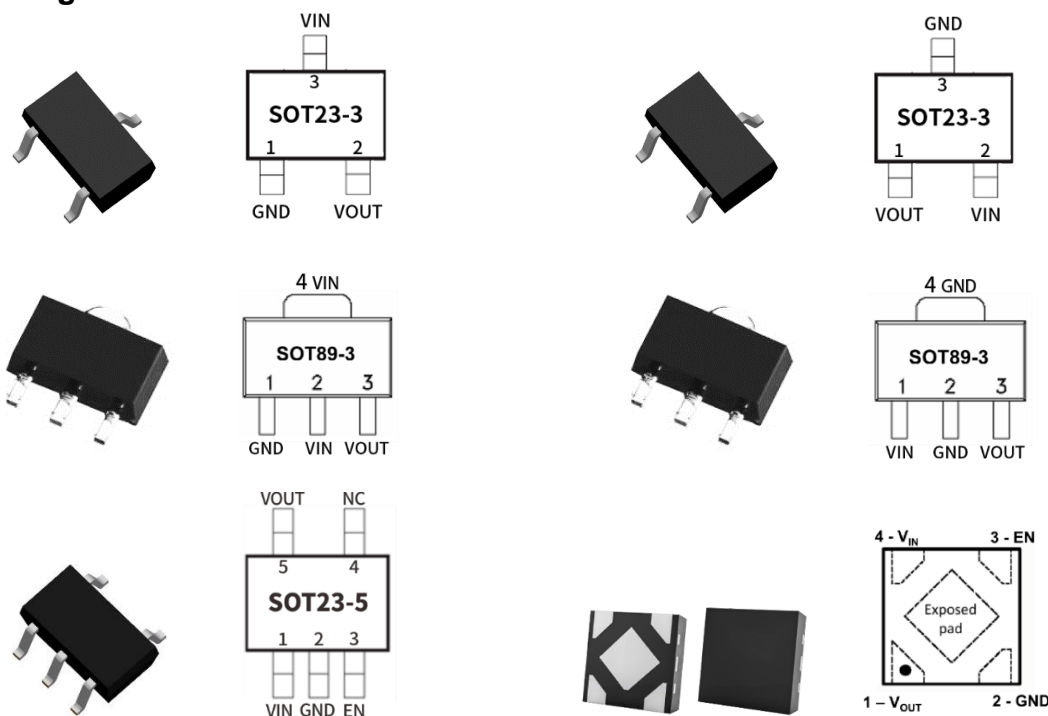
■ Package (RoHS Compliant)

- SOT23-3
- SOT23-5
- SOT89-3
- DFN1X1-4L

■ Ordering Information

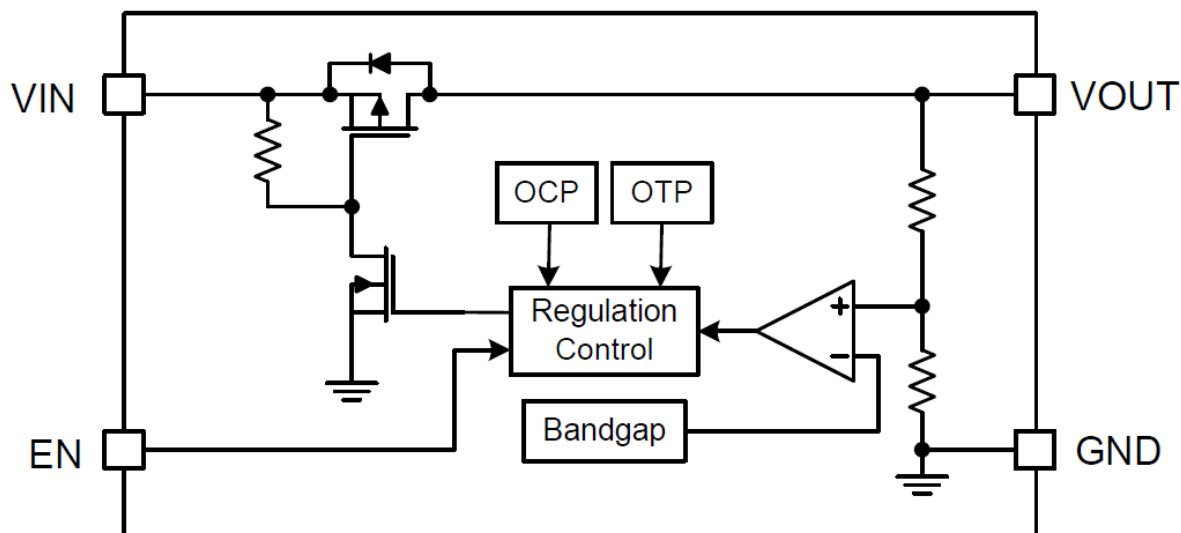
Part Number	Input voltage (V)	Output voltage (V)	Maximum output current (mA)	Quiescent Current (uA)	Output precision	PSRR (dB@ 1KHz)	Dropout (mV)	Enable
PTFGH	2.5~5.5	1.2~5.0	300	0.5	$\pm 2\%$	45	150@100mA	✓

■ Pin configuration



Pin Name	SOT23-3		SOT89-3		SOT23-5	DFN1X1-4L	Pin Function
VOUT	2	1	3	3	5	1	Output Voltage Pin
GND	1	3	1	2、4	2	2	Ground
VIN	3	2	2、4	1	1	4	Input Voltage Pin
EN	—	—	—	—	3	3	Enable Pin
NC	—	—	—	—	4	—	Not connected

■ Functional block diagram



■ Absolute Maximum Ratings

Project	Symbol	Value	Units
Input voltage	V_{IN}	-0.3 ~ +6.5	V
Lead Temperature (Soldering, 10 sec.)	—	300	°C
Storage Temperature	T_{stg}	-65 ~ +150	°C
Junction Temperature	T_J	125	°C

■ Recommended Operating Conditions

Project	Symbol	Value	Units
Input voltage	V_{IN}	2.5 ~ 5.5	V
Junction Temperature	T_J	-40 ~ +125	°C

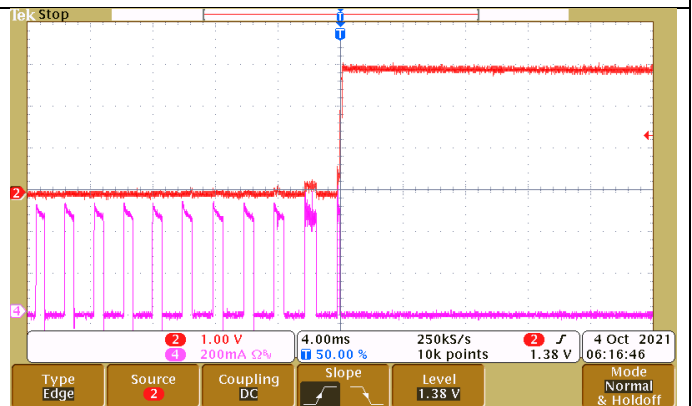
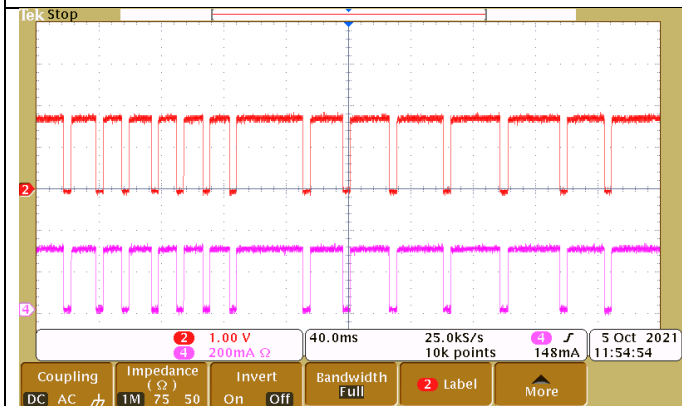
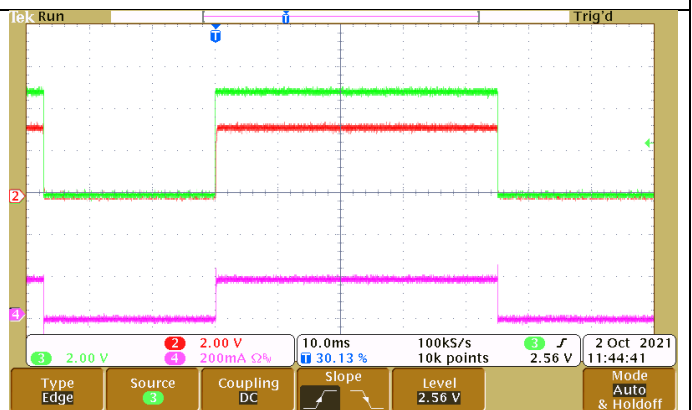
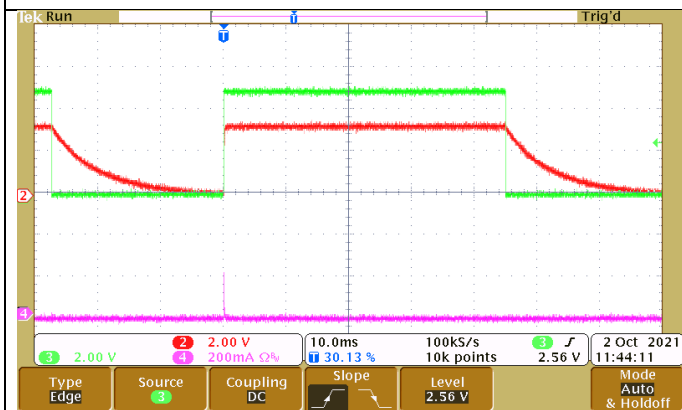
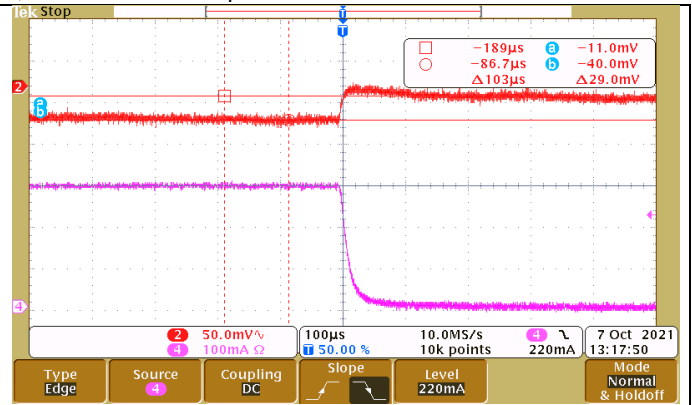
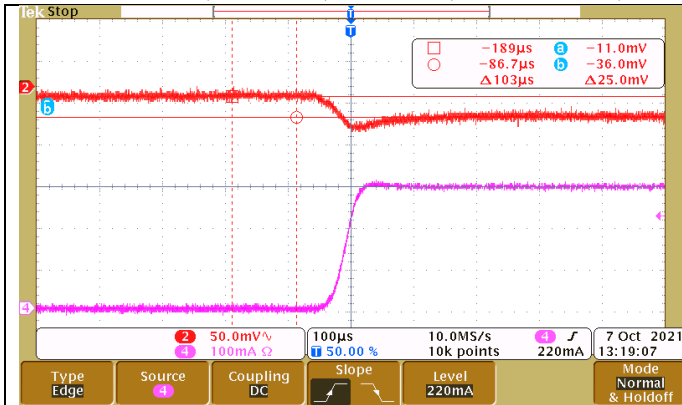
■ Electrical Characteristics

$V_{IN} = V_{OUT} + 1V$, $I_{OUT} = 1mA$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V_{OUT}	Output Voltage Accuracy		-2%		2%	V
ΔV_{LINE}	Line Regulation	$V_{IN} = V_{OUT} + 1V \sim 5.5V$		20	50	mV
ΔV_{LOAD}	Load Regulation	$I_{OUT} = 1mA \sim 300mA$		1.5		%
V_{DROP}	Dropout Voltage	$I_{OUT} = 100mA$, $V_{OUT} = 3.3V$		150		mV
		$I_{OUT} = 300mA$, $V_{OUT} = 3.3V$		500		mV
I_Q	Quiescent Current			0.5	1	uA
I_{CL}	Current Limit		360	560		mA
V_{ENHI}	Enable high level		0.6			V
V_{ENLO}	Enable low level				0.2	V
PSRR	Power-supply rejection ratio	$f = 1KHz$		45		dB
T_{SD}	Thermal Shutdown			150		°C
T_{SDHY}	Thermal Shutdown Hy			20		°C

■ Typical Characteristics

$V_{IN} = V_{OUT} + 1V$, $I_{OUT} = 1mA$, $V_{OUT} = 3.3V$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless otherwise specified



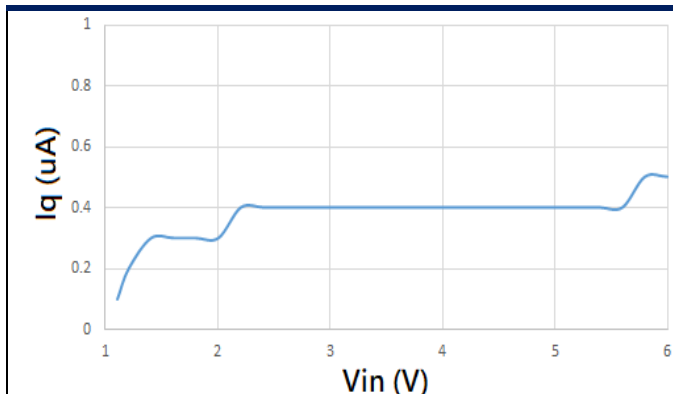


Fig 7. I_q vs V_{in} ($I_{out} = 0mA$)

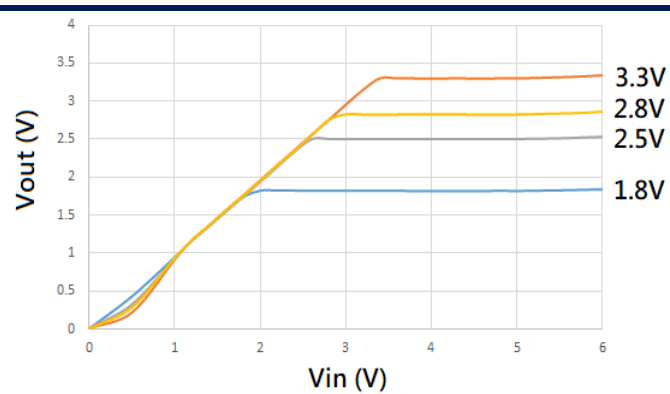


Fig 8. V_{out} vs V_{in} ($I_{out} = 1mA$)

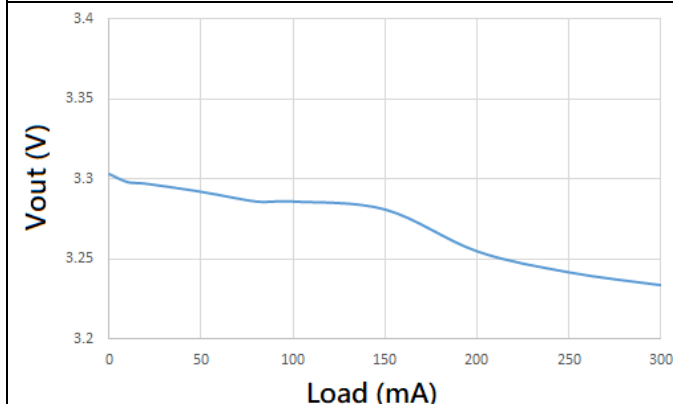


Fig 9. V_{out} vs Load

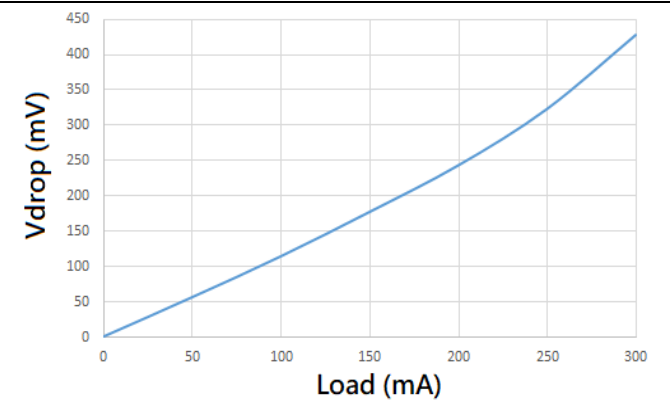


Fig 10. V_{drop} vs Load

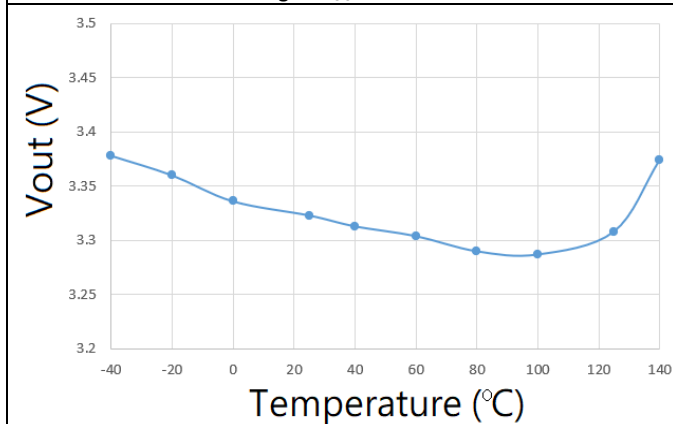


Fig 11. V_{out} vs Temperature ($I_{out} = 1mA$)

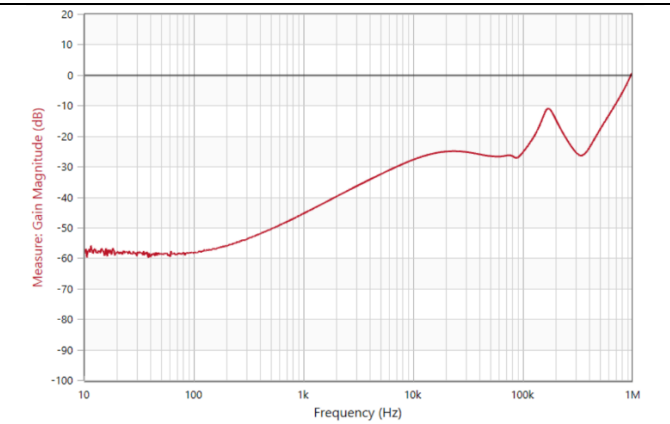
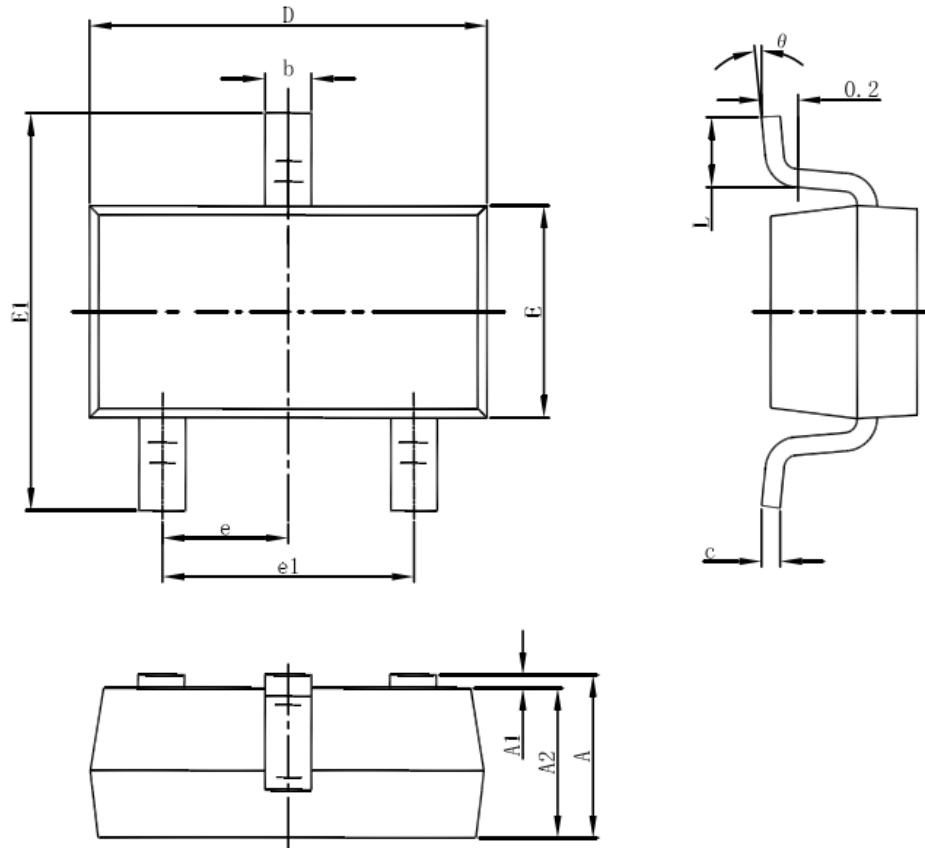


Fig 12. PSRR vs 频率 ($V_{in} = 3.8V$, $V_{out} = 1.8V$, $I_{out} = 100mA$)

SOT23-3 Package Information



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
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
θ	0°	8°	0°	8°