General Description

The ME6212CxxM5G is a high accuracy, low noise, high speed CMOS Linear regulator with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small.The devices offer a new level of cost effective performance in cellular phones,laptop and ebook computers,and other portable devices.

The current limiter's fold-back circuit also operates as a short circuit protection and an output current limiter at the output pin.

The ME6212CxxM5G regulators are available in standard SOT-23-5L package.Standard products are Pb-free and Halogen-free.

Features

- Input voltage:1.5V~6.5V
- Output range:1.2V~5.0V
- Maximum output current: 400mA@VOUT=3.3V
- PSRR: 60dB@1KHz
- Dropout voltage:180mV @ IOUT=100mA
- Quiescent current: 0.5uA Typ
- Shut-down current:<1μA
- Recommend capacitor:1uF
- Built-in Short-Circuit Protection, Current Limiter

Application

- Radio control systems
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable consumer equipments

Pin Configuration And Descriptions

SOT-23-5L(Top View)

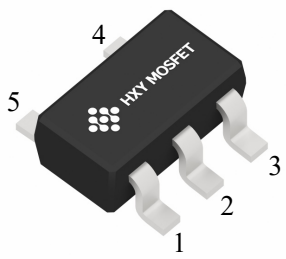


Table2: ME6212CxxM5G series (SOT-23-5L PKG)

PIN NO	PIN NAME	FUNCTION
1	VIN	Input
2	GND	Ground
3	EN	Enable(Active high, not floating)
4	NC	Not connected
5	VOUT	Output

Order Information

Orderable Device	Package	Output Voltage	Packing Option
ME6212CxxM5G	SOT-23-5L	1.2V-5.0V	3000/Reel

xx:From 12-50

Absolute Maximum Ratings

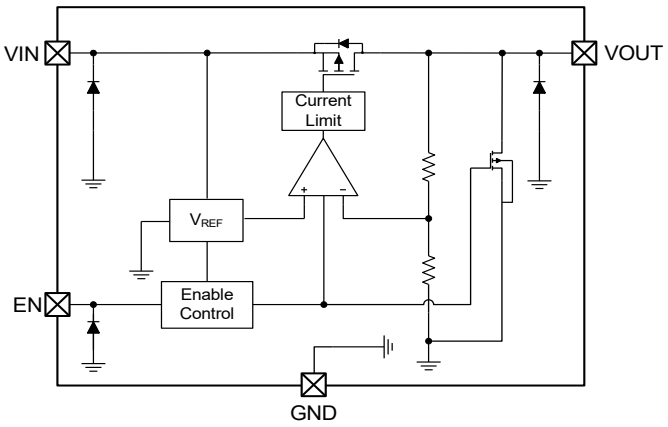
Description	Symbol	Value Range	Unit
Input Voltage	V_{IN}	-0.3～+8	V
Storage Temperature Range	T_{STG}	-55～+150	°C
Operating Free-air Temperature Range	T_A	-40～+125	°C
Output Current		450	mA
Package Lead Soldering Temperature		260	°C

Note:Stresses greater than those listed under "Absolute Maximum Ratingsmay" 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 Conditionsis" not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Heat Dissipation

Description	Symbol	Package	Value Range	Unit
Thermal resistance	èJA	SOT-23-5L	260	°C/W
Power dissipation	PW	SOT-23-5L	0.4	W

Block Diagram

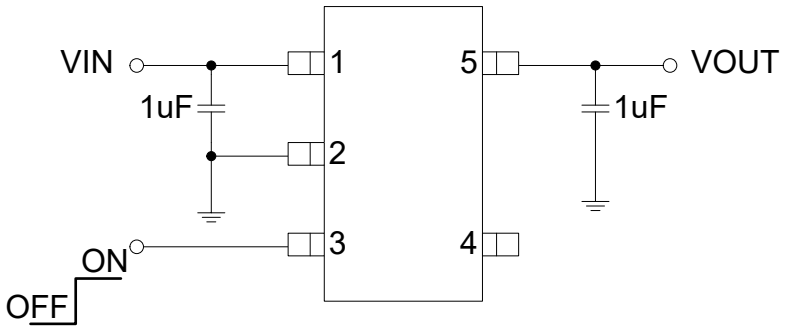


DC Characteristics (unless otherwise noted T_A= 25°C)

SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage		1.5	--	6.5	V
V_{OUT}	Output Range	V_{OUT}≤2.5V , I_{OUT}=1mA	V_{OUT}-50	V_{OUT}	V_{OUT}+50	mV
		2.5V≤V_{OUT}≤5V , I_{OUT}=1mA	-2	V_{OUT}	2	%
I_Q	Quiescent Current	V_{OUT}=3.3V, I_{OUT}=0	--	0.5	--	μA
I_{LIMIT}	Current Limit	V_{IN}=V_{EN}=4.5V	--	400	--	mA
V_{DROP}	Dropout Voltage	V_{OUT}=3.3V, I_{OUT}=100mA	--	180	--	mV
		V_{OUT}=3.3V, I_{OUT}=200mA	--	400	--	
△V_{LINE}	Line Regulation	V_{IN}=2.7~5.5V, I_{OUT}=1mA	--	0.01	0.15	%/V
△V_{LOAD}	Load Regulation	V_{OUT}=3.3V, I_{OUT}=1~300mA	--	40	--	mV
I_{SHORT}	Short Current	V_{EN}=V_{IN}, V_{OUT} Short to GND with 1Ω	--	35	--	mA
I_{SHDN}	Shut-down Current	V_{EN}=0V	--	--	1	μA
PSRR	Power Supply Rejection Rate	V_{IN}=5V_{DC}+0.5V_{P-P} F=1KHz, I_{OUT}=10mA		60		dB
V_{ENH}	EN logic high voltage	V_{IN}=5.5V, I_{OUT}=1mA	1.2	--	V_{IN}	V
V_{ENL}	EN logic low voltage	V_{IN}=5.5V, V_{OUT}=0V	--	--	0.4	V
I_{EN}	EN Input Current	V_{EN}= 0 to 5.5V	--	--	1	μA

Application Circuit

Basic Circuits



Function Description

In general,all the capacitors need to be low leakage,Any leakage the capacitors have will reduce efficiency,will reduce efficiency,increase the quiescent current.

A recent trend in the design of portable deviceshas been to use ceramic capacitors to filterDC-DC converter inputs.Ceramic capacitorsare often chosen because of their small sizelow equivalent series resistance (ESR) a nd high RMS current capability. Also,recently, designers have been looking to ceramic capacitors due to shorta ges of tantalum capacitors.

Unfortunately,using ceramic capacitors for input filtering can cause problems. Applying a voltage step to a ceramic capacitor causes alarge current surge that stores energy in the inductance of the power leads. A large voltage spike is created when the stored energy is transferred from these inductance into the ceramic capacitor.These voltage spikes caneasily be twice the amplitude of the input voltage step.

Many types of capacitors can be used for input by-pass,however, caution must be exercised when using multi layer ceramic capacitors (MLCC). Because of the self-resonant be generated under some start-up conditions , such as connecting the LDO input to a live power source.

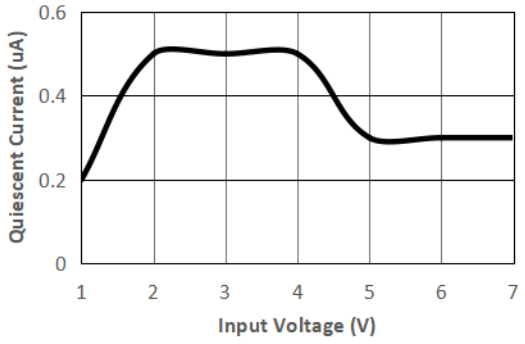
The LDO also requires an output capacitor for loop stability. Connect a 1uF tantalum capacitor from OUT to GND close to the pins. For improved transient response, this output capacitor may be ceramic.

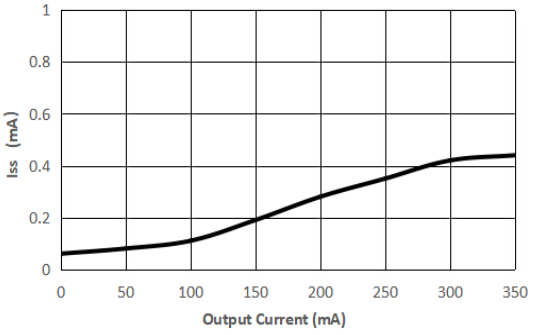
Typical Characteristics

C_{IN}=1uF, C_{OUT}=1uF, V_{IN}=4.5V, V_{OUT}=3.3V ,SOT-23-5L,T_A=25°C

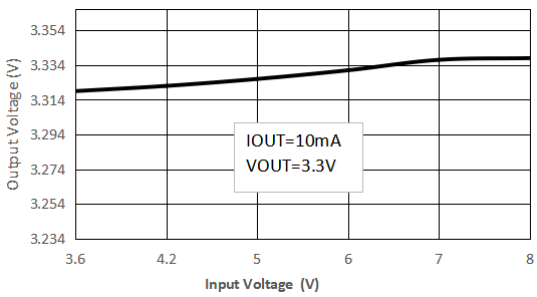
(Unless specified otherwise.Package:SOT-23-5L）

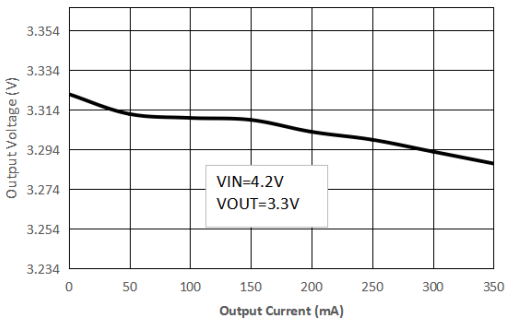
(1) Quiescent current vs Input voltage



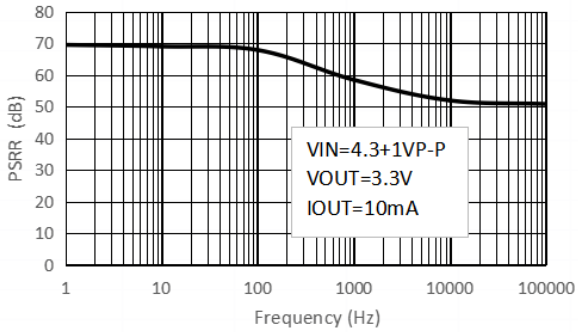


(2) Output Voltage vs Input voltage

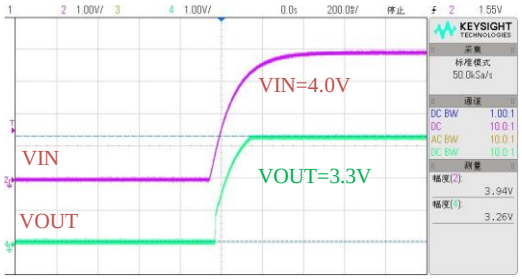


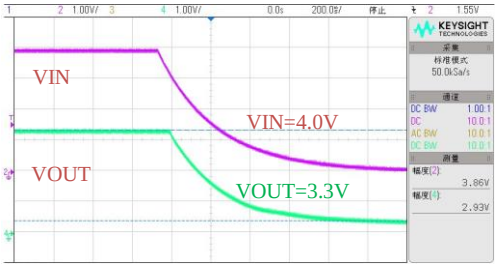


(3) PSRR vs Frequency

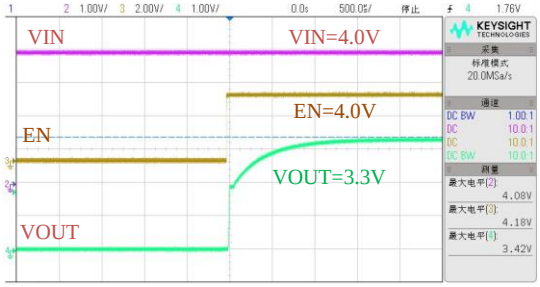


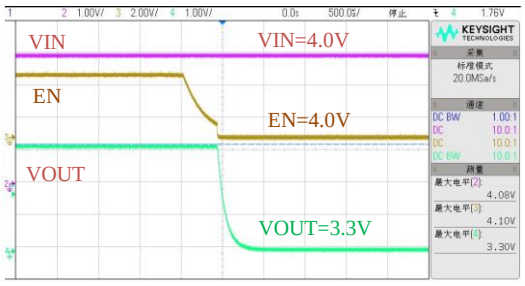
Power ON / OFF



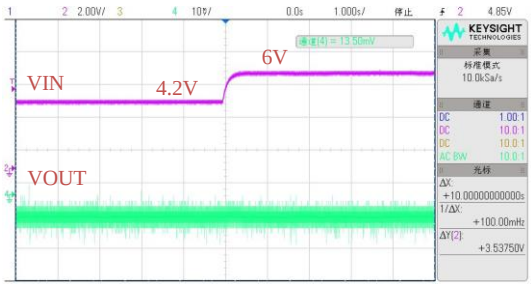


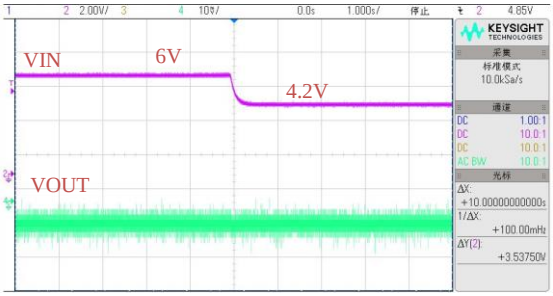
EN ON/OFF



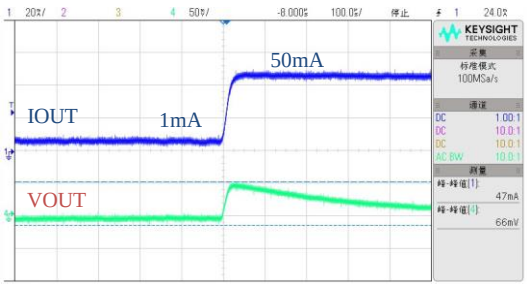


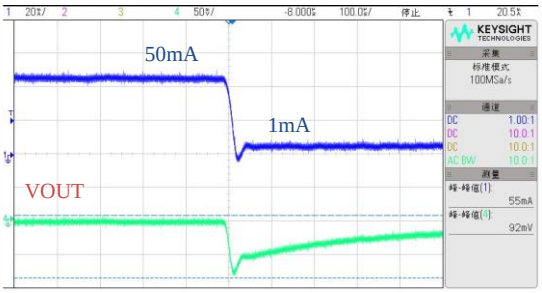
Line Transient





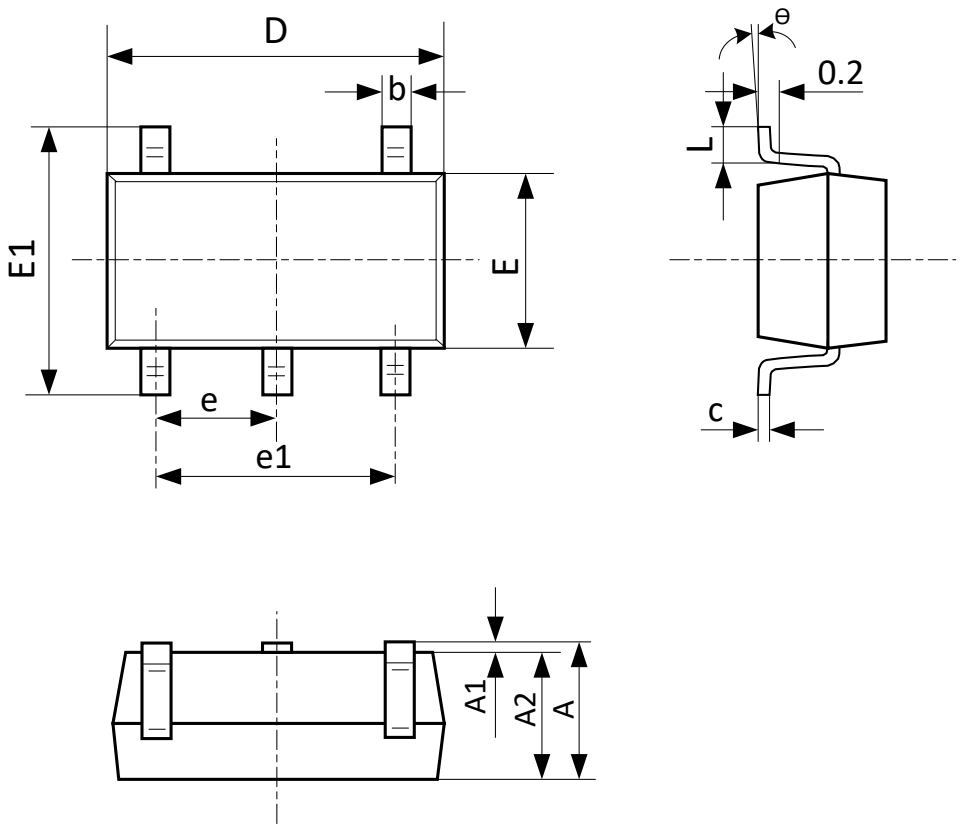
Load Transient





Package Outline Dimensions

SOT-23-5L



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℃

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.