CMOS Regulator
Monolithic IC MM327□ Series

Outline

This IC is a regulator IC that provides ultra-low current consumption (0.8μA), and low input voltage (V_O+0.3~6.0V), and has been developed using the CMOS process. Moreover, in addition to characteristics such as ultra-low current consumption and low dropout voltage, it supports long lifetime of batteries with a chip enable function.
The mount area is set to 1.10x1.40mm using a surface mount type leadless 4pin package, whichrealizes microminiaturization.

Features

1. Input Voltage Range	V_O+0.3~6.0V
2. Output Voltage Range	0.8~5.0V
3. Output Voltage accuracy	V_{OUT}±2%
4. Maximum Output Current	150mA
5. Supply Current	0.8μA typ. (I_{OUT}=0mA)
	0.1μA typ. (OFF)
6. Output Capacitor	0.1μF
7. Dropout Voltage	30mV Typ (I_{OUT}=10mA)
8. Chip enable function	High: ON, Low: OFF
9. Output Short-Circuit Current	60mA

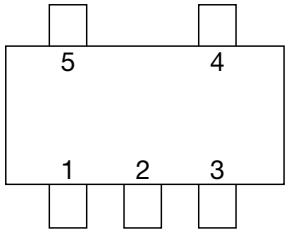
Package

SOT-25A
SC-82ABA
SC-82ABB
SSON-4

Applications

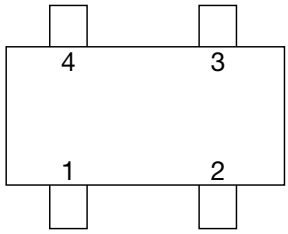
1. Cellular phone, Smart phone
2. Portable game device
3. Digital camera
4. Note PC
5. Tablet

Pin Assignment



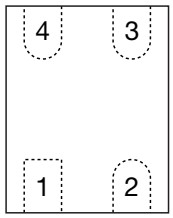
SOT-25A
(TOP VIEW)

1	VDD
2	GND
3	CE
4	NC
5	VOUT



SC-82ABA
SC-82ABB
(TOP VIEW)

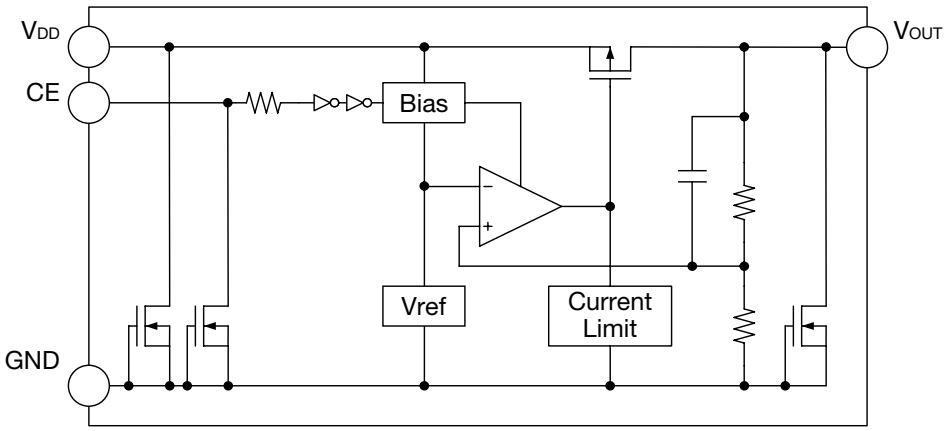
1	CE
2	GND
3	VOUT
4	VDD



SSON-4
(TOP VIEW)

1	CE
2	VDD
3	VOUT
4	GND

Block Diagram



Pin Description

Pin No.			Pin name	Functions
SOT-25A	SC-82ABA SC-82ABB	SSON-4		
1	4	2	VDD	Voltage-supply pin
2	2	4	GND	GND pin
3	1	1	CE	ON/OFF-control pin CE: L → OFF, H → ON Connect CE pin with VDD pin, when it is not used.
4			NC	
5	3	3	VOUT	Output pin

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Unit
Storage Temperature	T_{STG}	–55~+150	°C
Supply Voltage	V_{DD}	6.5	V
CE Input Voltage	V_{CE}	–0.3~+6.5	V
Output Voltage	V_{OUT}	–0.3~V_{DD}+0.3	V
Output Current	I_{OUT}	200	mA
Allowable loss (Note1)	Pd	350 (SOT-25A) 150 (SC-82ABA) 150 (SC-82ABB) 330 (SSON-4)	mW

Note1 : With PC Board of glass epoxy
SOT-25A : 60×40×1.6^t mm
SC-82ABA, SC-82ABB : 100×100×1.6^t mm
SSON-4 : 110×40×0.8^t mm

Recommended Operating Conditions (Ta=25°C)

Item	Symbol	Ratings	Unit
Operating Ambient Temperature	Tj_{DDOP}	–40~+85	°C
Operating Voltage	V_{DDOP}	Vo+0.3~6.0	V
Output Current	I_{OUT}	0~150	mA

Electrical Characteristics (Unless otherwise noted, Ta=25°C, V_{DD}=V_{OUT} (typ.) +1V, V_{CE}=V_{DD})

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Unit
Input Current (OFF)	I_{DDoff}	V_{CE}=0V		0.1		µA
No-Load Input Current	I_{DD}	I_{OUT}=0mA		0.8	2.0	µA
Output Voltage (Note3)	V_{OUT}	I_{OUT}=1mA	×0.98		×1.02	V
Line Regulation	V_{LINE}	I_{OUT}=1mA V_{DD}=Vo+0.5V→ 6V		0.05	0.20	%/V
Load Regulation	V_{LODE}	1mA ≦ I_{OUT} ≦ 150mA		30	90	mV
Dropout Voltage (Note2)	Vio	Please refer to another page		0.03	0.05	V
Output Short-Circuit Current (Note2)	Ilim	V_{OUT}=0V		60		mA
V_{OUT} Temperature Coefficient	$\Delta V_{OUT}/\Delta V_{OP}$	I_{OUT}=30mA, –40°C ≦ Top ≦ +85°C		±100		ppm/°C
CE High Threshold Voltage	V_{CEH}		1.0		6.0	V
CE Low Threshold Voltage	V_{CEL}		0		0.3	V

Note2 : The parameter is guaranteed by design.
Note3 : The Output Voltage accuracy is ±30mV in the model less than V_{OUT} 1.4V.

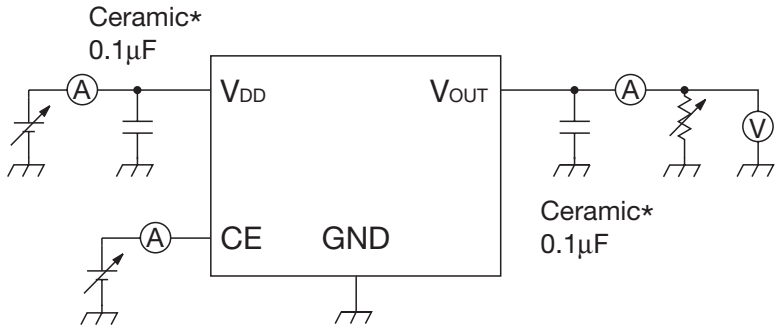
Electrical Characteristics 2 (Unless otherwise noted, Ta=25°C, V_{DD}=V_{OUT} (typ.) +1V, V_{CE}=V_{DD})

Product Name	Parameter							
	Output Voltage (Note4)				Dropout Voltage			
	V_{OUT} (V)				V_{DIF} (V)			
	Test Conditions	Min.	Typ.	Max.	Test Conditions	Min.	Typ.	Max.
MM3270J	I_{OUT}=1mA	0.770	0.8	0.830	(Note5)			
MM3270K		0.870	0.9	0.930				
MM3271A		0.970	1.0	1.030				
MM3271B		1.070	1.1	1.130				
MM3271C		1.170	1.2	1.230				
MM3271D		1.270	1.3	1.330				
MM3271E		1.370	1.4	1.430				
MM3271F		1.470	1.5	1.530	I_{OUT}=10mA 1.5V ≦ V_{OUT} ≦ 1.9V		0.12	0.15
MM3271G		1.568	1.6	1.632				
MM3271H		1.666	1.7	1.734				
MM3271J		1.764	1.8	1.836				
MM3271K		1.862	1.9	1.938				
MM3272A		1.960	2.0	2.040	I_{OUT}=10mA 2.0V ≦ V_{OUT} ≦ 2.4V		0.08	0.12
MM3272B		2.058	2.1	2.142				
MM3272C		2.156	2.2	2.244				
MM3272D		2.254	2.3	2.346				
MM3272E		2.352	2.4	2.448				
MM3272F		2.450	2.5	2.550	I_{OUT}=10mA 2.5V ≦ V_{OUT} ≦ 2.9V		0.06	0.08
MM3272G		2.548	2.6	2.652				
MM3272H		2.646	2.7	2.754				
MM3272J		2.744	2.8	2.856				
MM3272K		2.842	2.9	2.958				
MM3273A		2.940	3.0	3.060	I_{OUT}=10mA 3.0V ≦ V_{OUT} ≦ 3.2V		0.05	0.07
MM3273B		3.038	3.1	3.162				
MM3273C		3.136	3.2	3.264				
MM3273D		3.234	3.3	3.366	I_{OUT}=10mA 3.3V ≦ V_{OUT} ≦ 5.0V		0.03	0.05
MM3273E		3.332	3.4	3.468				
MM3273F		3.430	3.5	3.570				
MM3273G		3.528	3.6	3.672				
MM3273H		3.626	3.7	3.774				
MM3273J		3.724	3.8	3.876				
MM3273K		3.822	3.9	3.978				
MM3274A		3.920	4.0	4.080				
MM3274B		4.018	4.1	4.182				
MM3274C		4.116	4.2	4.284				
MM3274D		4.214	4.3	4.386				
MM3274E		4.312	4.4	4.488				
MM3274F		4.410	4.5	4.590				
MM3274G		4.508	4.6	4.692				
MM3274H		4.606	4.7	4.794				
MM3274J		4.704	4.8	4.896				
MM3274K		4.802	4.9	4.998				
MM3275A		4.900	5.0	5.100				

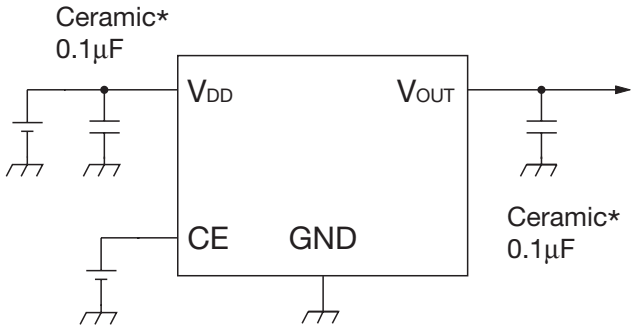
Note4 : The Output Voltage accuracy is ±30mV in the model less than V_{OUT} 1.4V.

Note5 : The parameter is guaranteed in the model less than V_{OUT} 1.4V.

Measuring Circuit



Typical Application Circuit



Note

1. The output capacitor is required between output and GND to prevent oscillation.
2. The ESR of capacitor must be defined in ESR stability area.
   It is possible to use a ceramic capacitor without ESR resistance for output.
   The ceramic capacitor must be used more than 0.1µF and B temperature characteristics.
3. The wire of V_{CC} and GND is required to print full ground plane for noise and stability.
4. The input capacitor must be connected a distance of less then 1cm from input pin.
5. In case the output voltage is above the input voltage, the overcurrent flow by internal parastic diode from output to input.