Low Consumption Current High PSRR 300mA CMOS Voltage Regulators

Features

- Low Quiescent Current: 5μA
- Operating Voltage Range: 2.0V~7.0V
- Low Dropout Voltage： 150mV@150mA
- Output Voltage:1.2~ 5.0V
- High Accuracy: ±2%(Typ.)
- High Ripple Rejection: 65dB@1kHz
- TTL-Logic-Controlled Shutdown Input
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. “Green” Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

Applications

- Cellular and Smart Phones
- Radio Control Systems
- Laptop, Palmtops and PDAs
- Digital Still and Video Cameras
- MP3,MP4 Player
- Battery-Powered Equipment

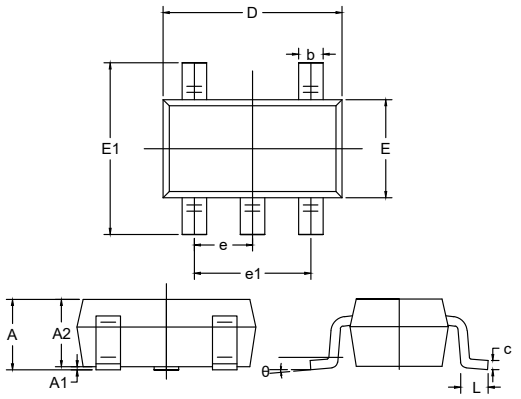
Description

The MC6230 series are a group of positive voltage regulators manufactured by CMOS technologies with high ripple rejection, ultra-low noise, low power consumption and low dropout voltage, which can prolong battery life in portable electronics. The MC6230 series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The MC6230 series consume less than 0.1μA in shutdown mode and have fast turn-on time less than 50μS.The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

MCC Part Number	Device Marking
MC6230-1.2	9VBM
MC6230-1.5	B9qYM
MC6230-1.8	9VKM
MC6230-2.5	B9vYM
MC6230-2.8	9VXM
MC6230-3.0	B9zYM
MC6230-3.3	9A2M
MC6230-3.6	9A5M

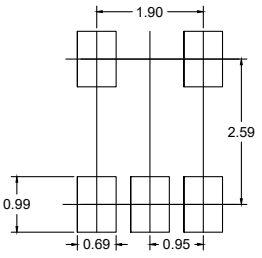
Note：
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

SOT23-5L

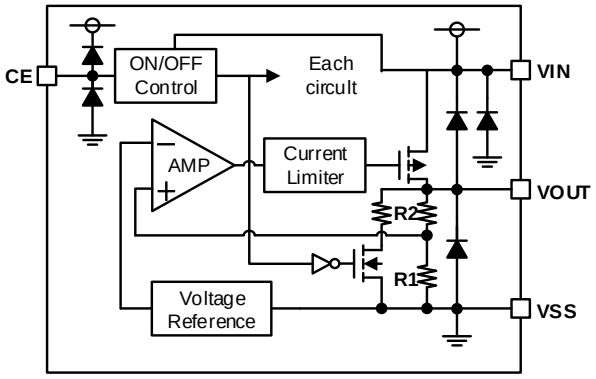


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.041	0.049	1.05	1.25	
A1	0.000	0.004	0.00	0.10	
A2	0.041	0.045	1.05	1.15	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.111	0.119	2.82	3.02	
E	0.059	0.067	1.50	1.70	
E1	0.104	0.116	2.65	2.95	
e	0.037(BSC)		0.950(BSC)		
e1	0.071	0.079	1.80	2.00	
L	0.012	0.024	0.30	0.60	
θ	0°	8°	0°	8°	

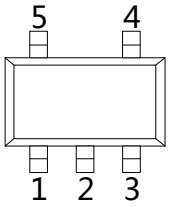
Suggested Solder Pad Layout



Functional Block Diagram

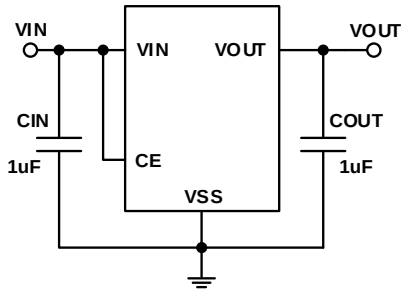


Pin Configuration and Functions (Top View)



Number	Name	Function
1	V_{IN}	Power Input Pin
2	V_{SS}	Ground
3	CE	Chip Enable Pin
4	NC	No Connection
5	V_{OUT}	Output Pin

Typical Application Circuit



Absolute Maximum Ratings

- Input Voltage: V_{SS}-0.3V ~ V_{SS}+8V
- Output Voltage: VSS-0.3V ~ VIN+0.3V
- Output Current: 300mA
- Power Dissipation: 500mW
- Operating Free Air Temperature Range: -40~+85°C
- Operating Junction Temperature Range: -40~+125°C
- Storage Temperature Range: -40~+125°C
- Lead Temperature & Time: 260°C, 10s

Electrical Characteristics

(V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, T_A=25°C, unless otherwise specified)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage		$V_{OUT}(E)$ (1)	I_{OUT}=1mA	V_{OUT} *0.98	V_{OUT}	V_{OUT} *1.02	V
Supply Current		I_{SS}	I_{OUT}=0		5	10	μA
Standby Current		I_{STBY}	CE = V_{SS}			0.1	μA
Output Current		I_{OUT}	—	300			mA
Dropout Voltage(2)		V_{dif}	I_{OUT} =150mA V_{OUT}≥3.0V		150		mV
Load Regulation		ΔV_{OUT}	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤100mA		10		mV
Line Regulation		$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	I_{OUT} =10mA V_{OUT} +1V≤V_{IN}≤6V		0.01	0.2	%/V
Output Voltage Temperature Characteristics		$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} =10mA -40≤T≤+85		100		ppm
Current Limit		I_{LIM}	V_{OUT}= 0.5 x $V_{OUT(Normal)}$ V_{IN} =V_{OUT}+1V	350	750		mA
Short Current		I_{Short}	V_{OUT} =V_{SS}		50		mA
Input Voltage		V_{IN}	—	2.0		7.0	V
Power Supply Rejection Rate	1kHz	PSRR	I_{OUT}=50mA		65		dB
	10kHz				50		
CE "High" Voltage		V_{CE}"H"		1.5		V_{IN}	V
CE "Low" Voltage		V_{CE}"L"				0.3	V

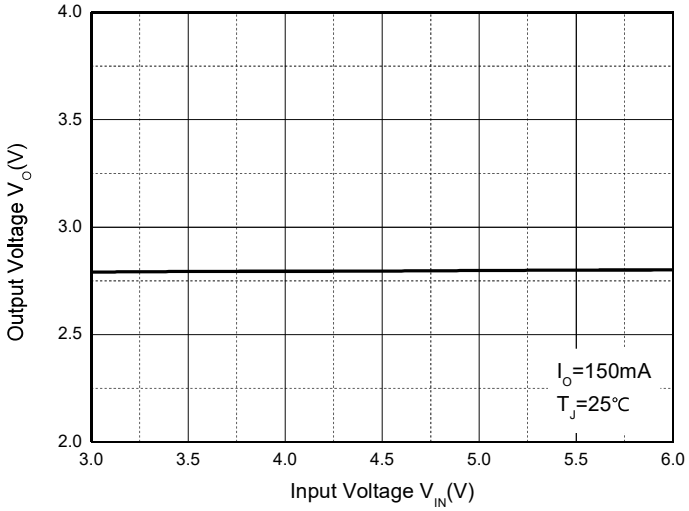
Note:

1.$V_{OUT}(E)$: Effective Output Voltage (Ie. The output voltage when V_{IN}=(V_{OUT} +1.0V) and maintain a certain I_{OUT} Value).

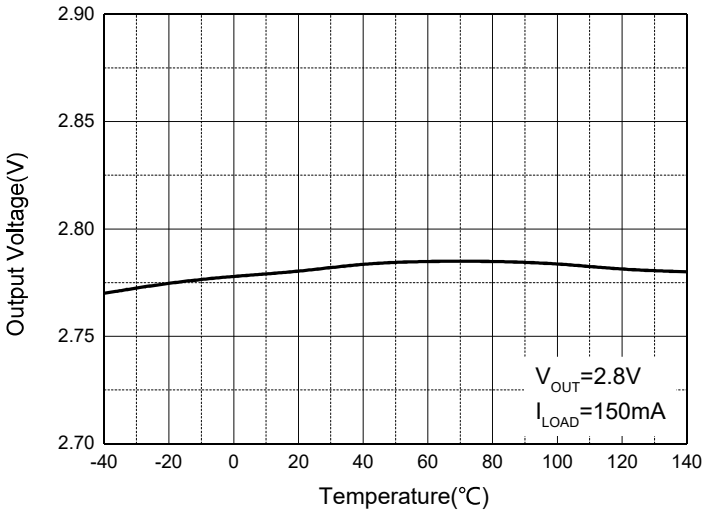
2. V_{dif} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of $V_{OUT}(E)$.

Curve Characteristics

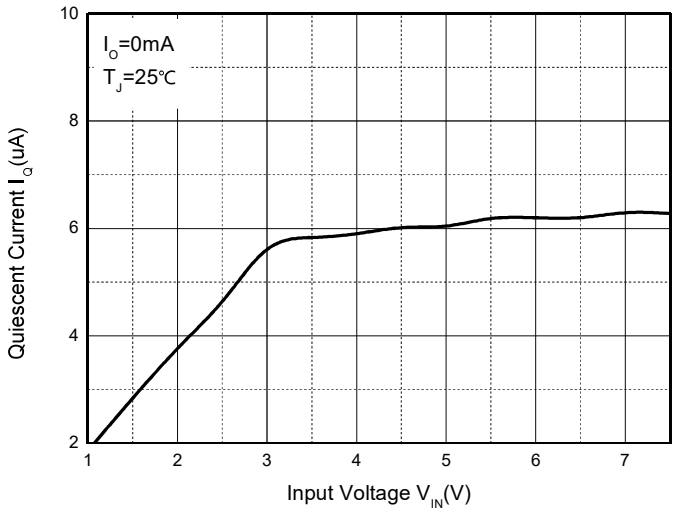
Output Characteristics



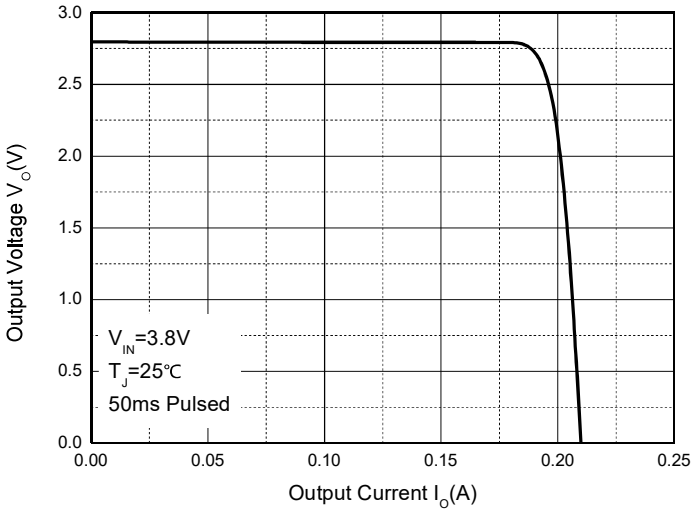
Output Voltage vs. Temperature



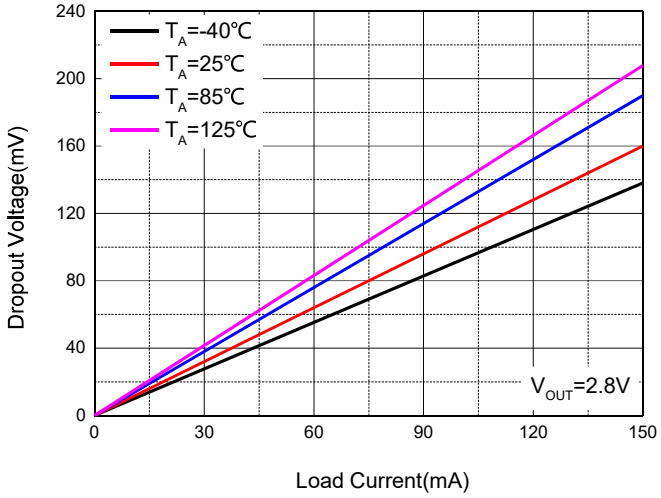
Quiescent Current



Current Cut-off Grid Voltage



Dropout Voltage vs. Load Current



PSRR vs. Frequenc