Low Noise CMOS Voltage Regulators

Features

- Low Quiescent Current: 50μA
- Low Output Noise: 40μVRMS(10Hz~100kHz)
- Operating Voltage Range: 1.8V ~ 6.0V
- Low Dropout Voltage: 50mV@100mA
- Output Voltage:1.05~ 5.0V
- High Accuracy: ±2%(Typ.)
- TTL-Logic-Controlled Shutdown Input
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- ESD Protected up to 4KV (HBM),200V(MM)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- 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

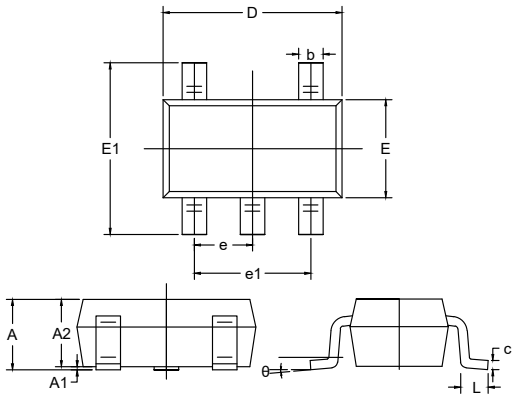
Description

The MC6225 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 MC6225 series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The MC6225 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
MC6225-1.2	ADdXX(1)
MC6225-1.8	ADJXX(1)
MC6225-2.5	ADqXX(1)
MC6225-3.0	ADvXX(1)
MC6225-3.3	ADyXX(1)

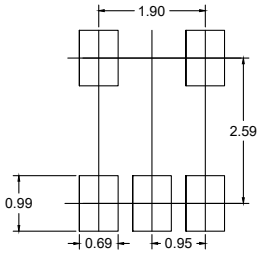
Note:
1. "XX" indicate DateCode.

SOT23-5L

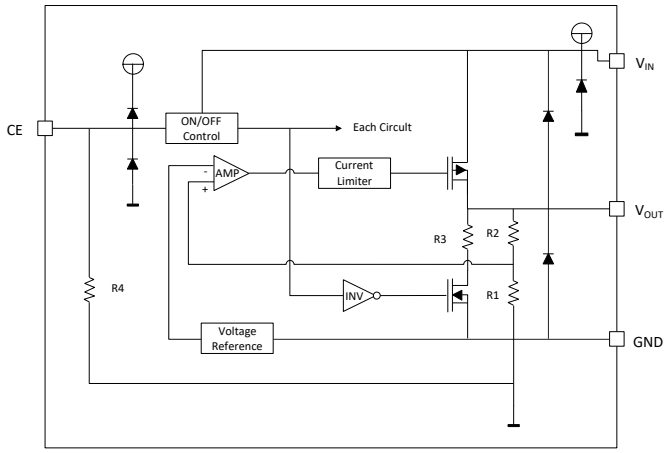


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.041	0.049	1.05	1.25	
A1	0.000	0.004	0.00	0.10	
A2	0.041	0.045	1.05	1.15	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.111	0.119	2.82	3.02	
E	0.059	0.067	1.50	1.70	
E1	0.104	0.116	2.65	2.95	
e	0.037(BSC)		0.950(BSC)		
e1	0.071	0.079	1.80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

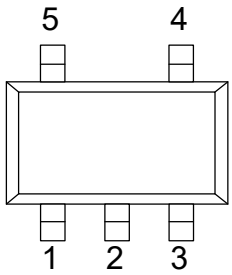
Suggested Solder Pad Layout



Functional Block Diagram

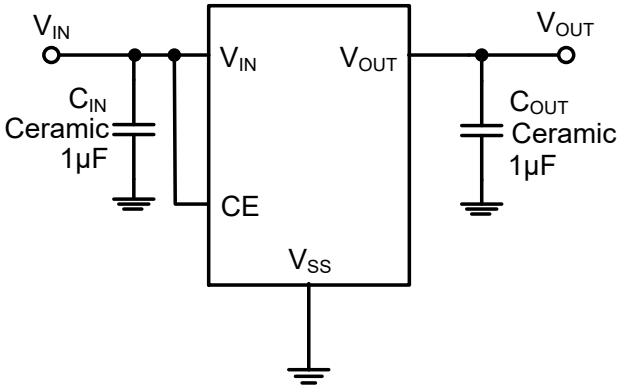


Pin Configuration and Functions (Top View)



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

- Operating Free Air Temperature Range: -40~+85°C
- Operating Junction Temperature Range: -40~+125°C
- Storage Temperature Range: -40~+125°C
- Thermal Resistance: 258°C/W Junction to Ambient
- Thermal Resistance: 82°C/W Junction to Case

Parameter	Symbol	Ratings	Units
Input Voltage	V_{IN}	V_{SS}-0.3 ~ V_{SS}+7	V
Output Voltage	V_{OUT}	V_{SS}-0.3 ~ V_{IN}+0.3	V
Output Current	I_{OUT}	500	mA
Power Dissipation	P_D	0.38	W

Electrical Characteristics(V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, T_A=25℃, unless otherwise specified)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage		$V_{OUT(E)}$ (2)	I_{OUT}=1mA	Vout*0.98	Vout	Vout*1.02	V
Supply Current		I_{SS}	I_{OUT}=0		50	100	μA
Standby Current		I_{STBY}	CE = V_{SS}		0.1	1	μA
Output Current		I_{OUT}	—	500			mA
Dropout Voltage		Vdif(3)	I_{OUT} =100mA V_{OUT}≥3.3V		50		mV
Load Regulation		ΔV_{OUT}	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤100mA		1		mV
Line Regulation			I_{OUT} =10mA V_{OUT} +1V≤V_{IN}≤6V		0.01	0.2	%/V
Output Voltage Temperature Characteristics			I_{OUT} =10mA -40≤T≤+85		50		ppm
Short Current		I_{Short}	V_{OUT} =V_{SS}		50		mA
Input Voltage		V_{IN}	—	1.8		6.0	V
Power Supply Rejection Rate	100Hz	PSRR	I_{OUT}=50mA		75		dB
	1kHz				80		
	10kHz				80		
CE "High" Voltage		$V_{CE"H"}$		1.5		V_{IN}	V
CE "Low" Voltage		$V_{CE"L"}$				0.3	V
C_{OUT} Auto-Discharge Resistance		$R_{DISCHRG}$	V_{IN}=5V,V_{OUT}=3.0V, V_{CE}=V_{SS}		60		Ω

Note:

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

Fig. 1 - Output Voltage vs Input Voltage

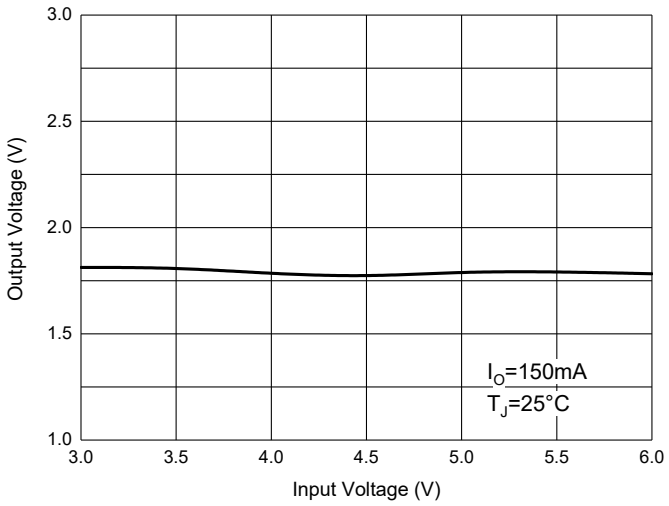


Fig. 2 - Output Voltage vs Temperature

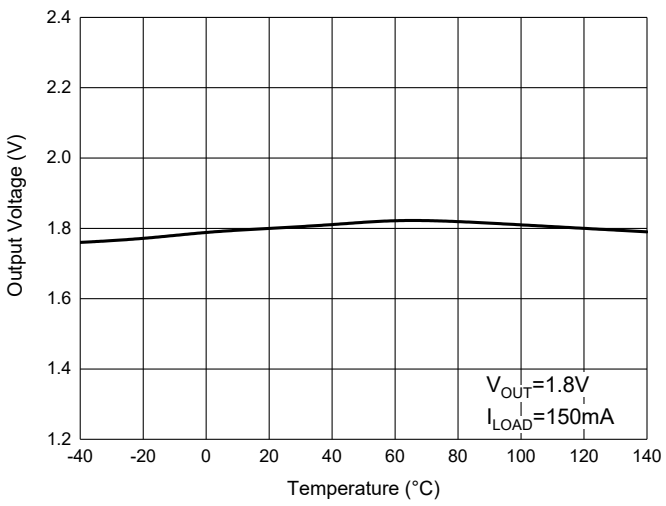


Fig. 3 - Quiescent Current

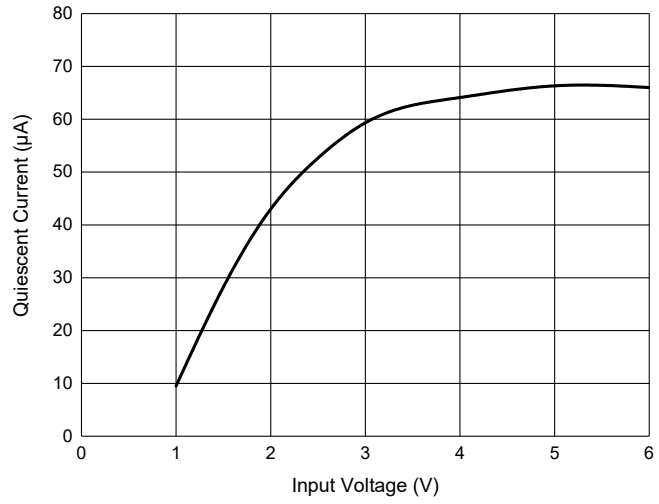


Fig. 4 - Current Cut-off Grid Voltage

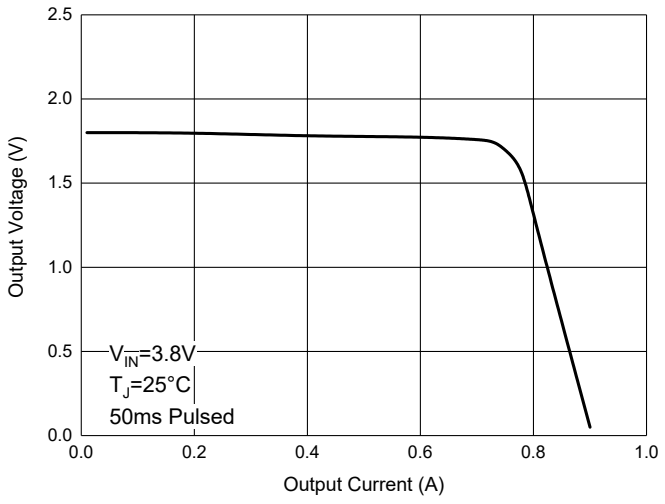
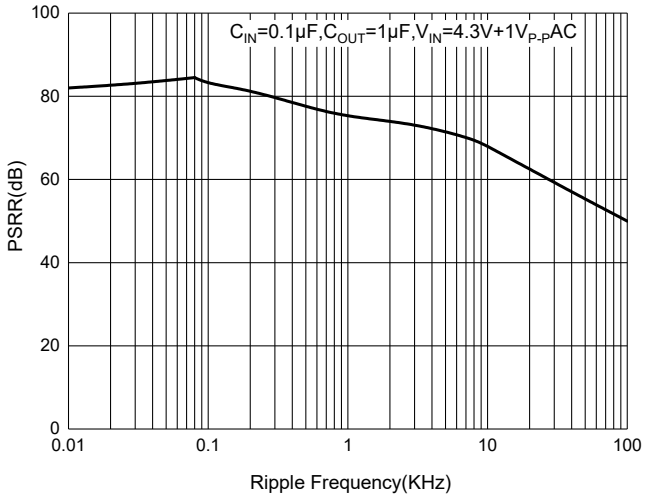


Fig. 5 - PSRR vs. Frequency



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel